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FINAL EXCAVATION WORK PLAN FOR SOLID WASTE MANAGEMENT UNITS 19 AND 64
AND AREA OF CONCERN 19 NAS FORT WORTH TX
8/1/2001
HYDROGEOLOGIC

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**NAVAL AIR STATION
FORT WORTH JRB
CARSWELL FIELD
TEXAS**

**ADMINISTRATIVE RECORD
COVER SHEET**

AR File Number 607



**FINAL EXCAVATION WORK PLAN
SWMUS 19, 64, AND AOC 19
NAS FORT WORTH JRB, TEXAS**

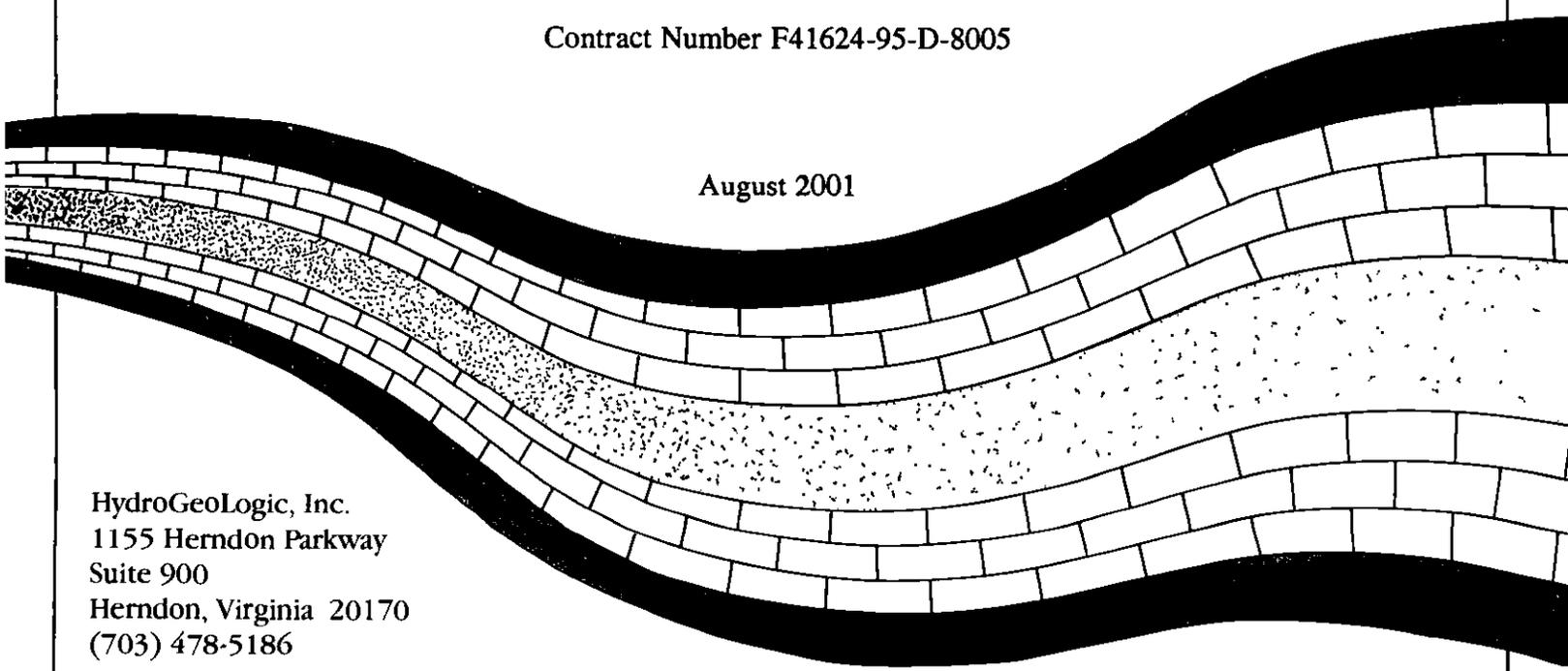


Prepared for

U.S. Air Force Center for Environmental Excellence
Brooks AFB, Texas

Contract Number F41624-95-D-8005

August 2001



HydroGeoLogic, Inc.
1155 Herndon Parkway
Suite 900
Herndon, Virginia 20170
(703) 478-5186



August 10, 2001

Mr. Don Ficklen
HQ AFCEE/ERD
3207 North Road, Bldg. 532
Brooks AFB, TX 78235-5363

**Re: Final Excavation Work Plan
SWMUs 19, 64, and AOC 19
NAS Fort Worth JRB, Texas
F41624-95-D-8005-0016 and 0026**

Dear Mr. Ficklen:

Please find enclosed one copy of the above referenced document. The Response to Comments is included inside the front cover for reference.

If you have any questions or comments, please call me at (703) 736-4511.

Sincerely,

Michele Mahal for Miquette Rochford

Miquette E. Rochford, P.G.
Project Manager

Enclosure (1 copy)

cc: Mr. Michael Dodyk
AFCEE/ERD
Building 1619, Intersection of Doolittle and Carswell Ave.
NAS Fort Worth JRB, Texas 76127

Ms. Audrie Medina (Unitec)
2100 Bypass Road
Building 580
Brooks AFB, TX 78235

**RESPONSES TO COMMENTS:
DRAFT EXCAVATION WORK PLAN
SWMUs 19, 64, AND AOC 19
NAS FORT WORTH JRB, TEXAS**

Responses to Comments

Comment 1 *Page 1.1, Section 1.0, 2nd paragraph, 1st sentence. Please replace "for" with "included in".*

Response **This change has been made as requested.**

Comment 2 *Figure 1.3. The figure shows high concentrations of metal in a number of places within and around AOC 19. Please explain in greater detail why only the anomaly in the southeast corner is being excavated.*

Response **All of the anomalies, with the exception of A-14 in the southeast corner, follow along the road, and are entirely or partially within the boundary of SWMU 25/Landfill 8. SWMU 25 has been investigated and received closure. Eight test pits were installed at SWMU 25 in 1997, three of which are within the AOC 19 boundary. Analytical data from the AOC 19 investigation, as well as the portion of the SWMU 25 investigation within AOC 19, does not indicate there has been a release at this site. Consequently, the source of the anomalies can be attributed to road construction and/or landfill material, similar to the contents in the 1997 test pit THGLTA026. Based on this comment, the 1997 and 2001 geophysical results were re-evaluated and three exploratory test pits added to the AOC 19 excavation plan. These three test pits will be placed above two high concentration anomalies (A-4 and A-13) to more fully characterize the exact nature of the anomalies along the road. These test pits will be outside the boundary of SWMU 25.**

Text explaining the anomaly selection rationale and a table summarizing the wastes encountered in the 1997 test pits at SWMU 25/Landfill 8 have been added to the text in section 1.1.2 on page 1-4 and 1-5.

Comment 3 *Page 2-1, Section 2.1.1, 2nd paragraph, 3rd sentence. Please describe the sampling device in greater detail.*

Response **The sample will be collected from the center of the excavator bucket in the area where the soil has had the least amount of contact with it. The text has been revised to reflect this information.**

The sampling scheme has also been revised on pages 2-1, 2-2, and 2-10 to reflect the difference between the excavation at SWMU 64 and the excavations at SWMU 19 and AOC 19. The SWMU 64 excavation is known and definitive (the removal of the French Underdrain System), and requires a specific sampling approach. However, the SWMU 19 and AOC 19 test pits are exploratory in nature and no sample collection is planned unless the excavated soil is suspected of being contaminated (stained, strong odor, elevated PID readings). Excavated soil that does not appear contaminated, and objects that do not pose a risk of release to the unit, will be backfilled in the trenches.

Comment 4 *Page 2-3, Section 2.1.3, 4th paragraph. When discussing OSHA requirements for excavation and confined space entry, please state that workers and supervisors have met the appropriate training standards. This comment applies to all areas in the text, not just this section.*

Response **The text has been revised to reflect this information.**

Comment 5 *Page 2-10, Section 2.2.3.3. For laboratory methods, please state that these are EPA or other methods, as appropriate.*

Response **EPA, or TNRCC for TX1005, has been inserted before the laboratory methods.**

**FINAL EXCAVATION WORK PLAN
SWMUS 19, 64, AND AOC 19
NAS FORT WORTH JRB, TEXAS**

Prepared for

U.S. Air Force Center for Environmental Excellence
Brooks AFB, Texas

Contract Number F41624-95-D-8005

Prepared by

HydroGeoLogic, Inc.
1155 Herndon Parkway, Suite 900
Herndon, VA 20170

August 2001

TAB

WORK PLAN

REPORT DOCUMENTATION PAGE			Form Approved	
			QMB No 0704-0188	
Public reporting for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1024, Arlington, VA 22202-1302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503				
1 AGENCY USE ONLY <i>(Leave blank)</i>	2 REPORT DATE August 2001	3 REPORT TYPE AND DATES COVERED Final Excavation Work Plan		
4 TITLE AND SUBTITLE Final Excavation Work Plan for SWMUs 19 and 64, and AOC 19, NAS Fort Worth JRB, Texas		4. FUNDING NUMBERS F41624-95-D-8005 Delivery Orders 0016 and 0026		
6 AUTHOR(S) HydroGeoLogic, Inc				
7. PERFORMANCE ORGANIZATION NAME(S) AND ADDRESS(S) HydroGeoLogic, Inc. 1155 Herndon Parkway, Suite 900 Herndon, VA 20170		8 PERFORMANCE ORGANIZATION REPORT NUMBER AFC001		
9 SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(S) AFCEE/ERD Brooks AFB Texas 78235-5328		10 SPONSORING/MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES				
12a DISTRIBUTION/AVAILABILITY STATEMENT Unlimited		12b. DISTRIBUTION CODE		
13 ABSTRACT <i>(Maximum 200 words)</i> This document presents the Final Excavation Work Plan for the excavation of geophysical anomalies at SWMU 19 and AOC 19 and excavation of the French Underdrain System comprising SWMU 64 at NAS Fort Worth JRB, Texas. The Excavation Work Plan presents detailed procedures for the excavation, removal, and disposal of man-made subsurface anomalies found at SWMU 19 and AOC 19; and the excavation, removal, and disposal of the French Underdrain System comprising SWMU 64.				
14 SUBJECT TERMS		15 NUMBER OF PAGES		
		16 PRICE CODE		
17 SECURITY CLASSIFICATION OF REPORT Unclassified	18 SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19 SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20 LIMITATION OF ABSTRACT Unlimited	

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PREFACE

HydroGeoLogic, Inc.¹ (HydroGeoLogic) was contracted to perform interim remedial actions at two Solid Waste Management Units (SWMUs) and one Area of Concern (AOC) that require further investigation under the Installation Restoration Program (IRP) at the Naval Air Station (NAS) Fort Worth Joint Reserve Base (JRB), Fort Worth, Texas. Work will be conducted under Contract Number F41624-95-D-8005, Delivery Orders 0016 and 0026. Sites requiring action as part of this project include the following:

- SWMU 19 (Former Fire Training Area No. 2)
- AOC 19 (Suspected Former Fire Training Area B)
- SWMU 64 (French Underdrain System)

Responsible key HydroGeoLogic personnel are as follows:

Jim Costello, P.G.	Program Manager
Miquette E. Rochford, P.G.	Deputy Program Manager
Pete Dacyk	Project Manager (DO 16)
Melanie Costello	Project Manager (DO 26)

This contract is administered by the Defense Contracts Management Command, 10500 Battleview Pkwy, Suite 200, Manassas, Virginia 22110. The Contracting Officer is Mr. Cliff Trimble. The Contracting Officer's Representative (COR) will be Mr. Don Ficklen (210/536-5290), located at the U.S. Air Force Center for Environmental Excellence (AFCEE)/Environmental Restoration Division (ERD), 3207 North Road, Brooks Air Force Base (AFB), Texas 78235-5363.

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LIST OF ACRONYMS AND ABBREVIATIONS

AFCEE	U.S. Air Force Center for Environmental Excellence
AFB	Air Force Base
AFP-4	Air Force Plant 4
ANSI	American National Standards Institute
AOC	Area of Concern
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	below ground surface
°C	Celsius
CFR	Code of Federal Regulation
COR	Contracting Officer's Representative
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
ERD	Environmental Restoration Division
FSP	Field Sampling Plan
FTA-2	Fire Training Area 2
FUS	French Underdrain System
HSP	Health and Safety Plan
HydroGeoLogic	HydroGeoLogic, Inc.
IDW	investigation-derived waste
IRP	Installation Restoration Program
JP-4	jet propulsion grade 4 fuel
JRB	Joint Reserve Base
Law	Law Environmental Inc.
NAS	Naval Air Station
OSHA	Occupational Safety and Health Administration
OVA	organic vapor analyzer
PID	photoionization detector

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

Radian	Radian Corporation
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAC	Texas Administrative Code
TPH	total petroleum hydrocarbons
TNRCC	Texas Natural Resource Conservation Commission
USC	United States Code
USGS	United States Geological Survey
UST	underground storage tank
UXO	unexploded ordnance
VOC	volatile organic compound
WP	Work Plan

TAB

SECTION 4.0

FINAL EXCAVATION WORK PLAN SWMUs 19, 64, AND AOC 19 NAS FORT WORTH JRB, TEXAS

1.0 INTRODUCTION

This Excavation Work Plan (WP) describes the proposed activities for the excavation and removal of buried objects at two Solid Waste Management Units (SWMUs) and one Area of Concern (AOC) within Naval Air Station Fort Worth Joint Reserve Base (NAS Fort Worth JRB), Fort Worth, Texas. HydroGeoLogic, Inc. (HydroGeoLogic) will perform this work under Contract F41624-95-D-8005 with the Air Force Center for Environmental Excellence (AFCEE). The work to be performed, along with previous investigation activities at each of the sites, are described in the following sections.

The sites included in this WP are two SWMUs and one AOC. The sites are identified as follows:

- SWMU 19 (Fire Training Area No. 2 [FTA-2])
- AOC 19 (Suspected Former Fire Training Area B)
- SWMU 64 (French Underdrain System [FUS])

The locations of these sites on the base are presented on Figure 1.1. Table 1.1 provides a summary description of each area and lists the current status of each site. No excavation work is proposed at SWMU 20 and 21 as part of this work plan, but the two sites are immediately adjacent to, and associated with, SWMU 19. A complete account of the actual wastes handled at these sites is unknown. The wastes reported in Table 1.1 are based on the general disposal practices of the former Carswell AFB during the time the sites were in operation.

The investigative test pit trenching for SWMU 19 and AOC 19 is prompted by a February 2001 geophysical survey that indicated the existence of subsurface metal objects at each site. Materials disposed of at the two sites during the last several decades could include 55-gallon drums, underground storage tanks (USTs), piping, and waste containers. The removal action for SWMU 64 was prompted by an AFCEE initiative to remove and dispose of a previously deactivated FUS that operated from approximately 1965 until the mid 1990s.

The purpose of the proposed removal action at each of the three sites is to:

- Excavate and identify significant geophysical anomalies,
- Remove materials that are considered to pose environmental risks,
- Properly characterize and dispose of those materials at offsite landfills,
- Perform confirmation sampling and analysis where needed to ensure any contaminants are sufficiently removed,

Table 1.1
SWMU and AOC Summary Table
NAS Fort Worth JRB, Texas

SWMU/ AOC	Description	Waste Managed	Operational Period	Status
SWMU 19	Fire Training Area No. 2	Waste oils, recovered fuels, spent solvents and cleaners	1963-1993	Dumpsters removed from the inner bermed area in 1993. Site no longer in use.
SWMU 20	8,500-Gallon aboveground storage tank (AST)	Waste fuels and possibly solvents	1963-1993	AST and associated piping removed in 1993. Site no longer in use.
SWMU 21	12,000-Gallon UST	Waste oils and solvents	1963-1993	UST reported to have been removed prior to 1993. Site no longer in use.
SWMU 25 ¹	Former Landfill 8	Construction and road debris; waste metal; aircraft sections	1960s	Site closure received in June 2001 after a RCRA Facility Investigation.
AOC 19	Suspected Fire Training Area B	Waste oils, recovered fuels, spent solvents and cleaners	1954-1962	Suspected former fire training area filled in and covered with vegetation
SWMU 64	French Underdrain System	Petroleum substances in groundwater	1965-1996	Some portions dismantled in recent years. No longer in use.

¹ No excavation work is proposed at SWMU 25 as part of this work plan, but because this site overlaps a portion of AOC 19 it is included for reference.

Sources: A. T. Kearney 1989, RCRA Facility Assessment, PR/VSI Report, Carswell AFB, Fort Worth, Texas
 CH2M HILL, 1984, Installation Restoration Program Records Search for Carswell Air Force Base, Texas

- Backfill and compact each excavation area, and
- Re-grade and restore each site to its original surface condition.

1.1 SITE IDENTIFICATION AND DESCRIPTION

1.1.1 Description of SWMUs 19, 20, and 21

As illustrated in Figure 1.1, SWMU 19, the FTA-2, SWMU 20, the Waste Fuel Storage Tank, and SWMU 21, the Waste Oil Tank, were located between the north-south taxiway and the base boundary.

SWMU 19 was used as a fire training area from 1963 until approximately 1993 by the base fire department to simulate aircraft fires for training exercises. SWMU 19 consisted of a circular, gravel-lined pit with inner and outer earthen berms made of clayey soil around its perimeter (A.T. Kearney, 1989). The outer berm measured approximately 2 feet high, 260 feet in diameter, and encompassed an area measuring approximately 1.2 acres. A drainage pipe was located on the

northeast side of the outer bermed area. A manual valve controlled drainage from this pipe. The inner berm measured approximately 2 feet high, 120 feet in diameter, and encompassed a total area of approximately 0.25 acre (Dames & Moore, 1995). The area within the inner berm contained a gravel pit where 25-30 steel dumpsters were arranged in the shape of an aircraft. Periodically, the dumpsters were filled with oil and fuel wastes fed from two storage tanks (SWMUs 20 and 21) and ignited during fire training exercises to simulate an aircraft fire (Law Environmental Inc. [Law], 1996). In addition to the two bermed areas, a pit was reported to have existed at SWMU 19, which collected runoff from the bermed areas. This pit was eventually filled with sediment over time. The location and the time period during which the pit existed is unknown (Radian Corporation [Radian], 1989).

SWMU 20 was an 8,500-gallon concrete AST located approximately 50 feet from the southwest side of SWMU 19 and approximately 400 feet from a tributary of Farmers Branch Creek. SWMU 20 stored flammable liquid wastes including jet propulsion grade 4 fuel (JP-4), waste oils, kerosene and possibly solvents for use during fire training exercises. The liquid wastes were delivered from SWMU 20 to the dumpsters located within the inner bermed area of SWMU 19 by an aboveground pump and pipe system (A.T. Kearney, 1989). The dumpsters, AST and associated piping were removed from the site in 1993 (Dames & Moore, 1995).

SWMU 21 consisted of a 12,000-gallon² UST that was used to store waste oils and solvents from the flightline industrial shops, for eventual use at the inner bermed area of SWMU 19 during training exercises. SWMU 21 was reported to have been installed in 1963 and removed prior to 1993. According to a Liquid Fuel Systems map from 1986, SWMU 21 is located approximately 50 feet from the western side of SWMU 19 and 300 feet from a tributary of Farmers Branch Creek (Department of the Air Force, 1986). Although SWMU 21 was reported to have been removed, no documentation is available (Dames & Moore, 1995).

SWMUs 19, 20, and 21 were removed from service in 1993. During the removal effort the top 3 feet of soil was excavated from the bermed area of FTA-2, and was bioremediated in a biocell. A compacted clay liner was then placed in the bottom of the excavation and the bioremediated soil was returned to the surface. The filled area was contoured to facilitate runoff of rainwater, and the site was seeded with grass to prevent erosion (Dames & Moore, 1995).

Surface geophysical surveys were performed in February 2001 at SWMUs 19 and 20 to locate metal objects that may have been buried at this site during the past 30 years. The survey was performed using magnetic, time-domain electromagnetic (EM) induction and frequency-domain EM techniques. The instrumentation consisted of a Geometrics G-858G magnetic gradiometer for survey data acquisition, a Geonics EM61 high-sensitivity metal detector for the time-domain EM survey, and a Geonics EM31 terrain conductivity meter for the frequency-domain survey. Both Geonics units were coupled to an Omnidata DL720 digital data logger when in use. The results of these surveys revealed four distinct anomalies at SWMU 19. No significant anomalies were discovered at SWMU 20. The subject of the investigative excavation work will be the locations of

² The UST was described as a 9,500-gallon tank in A.T. Kearney's 1989 RCRA Facility Assessment.

these anomalies as plotted by the geophysical surveys. The four locations at SWMU 19 are shown on Figure 1.2.

1.1.2 Description of AOC 19

As illustrated in Figure 1.1, AOC 19 (Suspected Former Fire Training Area B) is located south of taxiway Charlie, and adjacent to the base boundary. Activity at this site was identified on aerial photographs of Carswell AFB during the period of February 3, 1954 through August 22, 1962 (U.S. Geological Survey [USGS], 1954; National Archives, 1962).

The operational history of AOC 19 is unknown. However, as the site was suspected to have operated as a fire training area during the 1950's and early 1960's, wastes received may have consisted of various waste oils, recovered fuels, and spent solvents and cleaners. Currently, the location of AOC 19 is covered by grass. The western portion of AOC 19 (approximately one-third of the site's area) overlaps SWMU 25 (former Landfill 8). A site map of AOC 19 is shown on Figure 1.3.

A surface geophysical survey was performed in February 2001 at AOC 19 to locate metal objects that may have been buried at this site during the past 30 years. The survey was performed using magnetic, time-domain electromagnetic (EM) induction and frequency-domain EM techniques. The instrumentation consisted of a Geometrics G-858G magnetic gradiometer for survey data acquisition, a Geonics EM61 high-sensitivity metal detector for the time-domain EM survey, and a Geonics EM31 terrain conductivity meter for the frequency-domain survey. Both Geonics units were coupled to an Omnidata DL720 digital data logger when in use.

The results of this survey revealed several distinct anomalies at AOC 19. The subject of the investigative excavation work will be three of the high concentration anomalies (A-4, A-13, and A-14) as shown on Figure 1.3. All of the anomalies, with the exception of A-14, are located along the perimeter road and within the boundary of SWMU 25/Landfill 8. It should be noted that a RCRA Facility Investigation (RFI) of SWMU 25 was conducted spanning several years and received closure in June 2001. Eight test pits were excavated at SWMU 25 in 1997, three of which are within the AOC 19 boundary (Figure 1.3). The anomalies along the road can be attributed to road fill and/or construction debris from the landfill, such as found in test pit THGLTA026 (Table 1.2). Analytical data from the AOC 19 site investigation, as well as the portion of the SWMU 25 investigation within the bounds of AOC 19, are not indicative of a release. Consequently, exploratory test pits will be excavated at the southeastern anomaly (A-14), the northern anomaly (A-4), and the south central anomaly (A-13) as depicted in Figure 1.3.

Table 1.2
Summary of Waste Encountered During 1997 Test Pit Excavations
SWMU 25/Landfill 8
NAS Fort Worth JRB, Texas

Trench Location	Length (feet)	Width (feet)	Depth (feet bgs)	Types of Wastes Encountered
THGLTA021 (not shown on Figure 1.3)	40	2.5	10	Construction debris (large pieces of asphalt, concrete with rebar, and gravel)
THGLTA022	40	2.5	11.5	Construction debris, pieces of asphalt and concrete, gravel, metal, copper tubing, small amount of tar
THGLTA023	40	2.5	11	Construction debris, gravel, asphalt, pieces of concrete, rebar, and some metal
THGLTA024 (not shown on Figure 1.3)	40	2.5	15	Construction debris, asphalt, sheet metal, section of aircraft, concrete, tar fragments, and rebar
THGLTA025	41	2.5 - 11	15	Construction debris, asphalt, very large pieces of concrete with rebar
THGLTA026	40	3	6	Construction debris, large pieces of asphalt and concrete, footing of an old building
THGLTA027	40	2	2	Sand encountered at 2 feet bgs
THGLTA028	40	2	9	No waste materials were encountered

Notes: bgs = below ground surface

Source: HydroGeoLogic, Inc 1997, Draft Report - RCRA Facility Investigation, Carswell AFB, Texas

1.1.3 Description of SWMU 64

The FUS consists of a below-ground drainage collection system installed in 1965 to manage petroleum-related compounds that had been released from a nearby fuel storage tank farm and/or from the former base refueling station into site groundwater. The underdrain is located at the southeast corner of the base, near Building 1337 (Figure 1.4). The southern end of the system, outside the current base boundary fence, was dismantled and removed between 1996 and 1999. The remaining portion of the FUS, located entirely within the base property boundary, consists of approximately 420 feet of 6-inch diameter corrugated metal pipe that runs almost parallel to the base sanitary sewer line. A few short sections of the remaining pipe inside the base boundary were excavated and removed in 1996 when the line was deactivated in order to stop preferential groundwater flow through the system. In some areas the FUS and the sanitary sewer line are believed to be located within the same excavation and may share coarse gravel backfill material. The most recent site research shows that the northern end of the system begins at the location of a small manhole cover located just inside the gate within the recreational vehicle parking area. This manhole was abandoned in place in the summer of 2000. A portion of the FUS runs beneath a paved parking lot associated with the former base refueling station. Potential groundwater contaminants that may have once been present in the water flowing through the underdrain include motor gasoline, JP-4 aviation fuel, and possibly diesel fuel.

1.2 DESCRIPTION OF WORK

Several large subsurface anomalies and various small anomalies were discovered in the vicinity of SWMU 19 during the February 2001 geophysical survey (Figure 1.2). Several anomalies were also discovered at AOC 19 during the same survey (Figure 1.3). No evidence of buried objects at SWMUs 20 and 21 were identified by this survey; therefore, no excavation work will be conducted at those sites. To further investigate four of the anomalies discovered at SWMU 19 and the six anomalies at AOC 19, exploratory test pits are needed to determine the nature and size of buried objects identified during the geophysical survey.

The work at SWMU 19 and AOC 19 shall consist of the excavation of overburden soils in the locations of the geophysical anomalies, and if necessary, removal, characterization, and disposal of the objects (and any contained liquids) representing the anomalies. Only items that could pose environmental threat will be removed. The locations of the four anomalies at SWMU 19 to be investigated are shown on Figure 1.2, and the six anomalies at AOC 19 are shown on Figure 1.3. Existing native soils are predominantly silty clay, clayey silt, fine to medium sand, and gravel. The average depth to groundwater at SWMU 19 is approximately 25 feet below the ground surface (bgs), and 9 to 10 ft bgs at AOC 19. Investigative results to date do not indicate that hazardous wastes exist buried at the site, but all work shall be given special consideration and operations shall conform with hazardous waste site operation protocol due to the nature of past operations performed at the site and the resulting materials and hazards potentially present.

Identification of the anomalies cannot be determined prior to site work. However, based on site knowledge and results of the geophysical survey, they have the potential to include USTs, 55-gallon drums, waste containers, piping, reinforced concrete, or other mixed materials containing metallic parts.

The exact location of the underdrain system at SWMU 64 is known (Figure 1.4); therefore, no geophysical survey was performed at that site. Upon excavation of overburden, the entire system will be removed, containerized, and disposed of at an offsite landfill.

1.3 SITE INVESTIGATION HISTORY

A summary of past investigative efforts at SWMUs 19, 20, 21, and 64 can be found in several documents, including *Final Work Plans, RCRA Facility Investigation of SWMUs 19, 20, 21 and 53* (HydroGeoLogic, 2000a); and *Status Summary Report, SWMUs 64, 67, 68, and AOC 7* (HydroGeoLogic, 1999a).

Prior to May 2000, there had been no investigative activities conducted for AOC 19. Historic aerial photographs of the site indicate a possible former fire training area. Although this parcel was not the primary focus of the investigative work, HydroGeoLogic performed a RFI at SWMU 25, which overlaps a portion of AOC 19 (HydroGeoLogic, 2001). Geophysical surveys conducted at the site identified anomalies in the vicinity of SWMU 25. Eight test pits were excavated during the course of the investigation, three of which, THGLTA026, THGLTA027, and THGLTA028,

were in the area of AOC 19. A description of the 1997 SWMU 25 test pits and the types of waste encountered are presented in Table 1.2. The locations of the test pits are shown on Figure 1.3.

1.4 SITE-SPECIFIC ENVIRONMENTAL SETTING

The following sections describe the site-specific environmental setting of NAS Fort Worth JRB. The information is derived from previous investigations that have been performed at or near the three sites.

1.4.1 Site-Specific Soils

The U.S. Soil Conservation Service has identified four major soil associations for the portions of the base that include the three sites. The first association is the surficial soils of the nearly level to gently sloping clayey soils of the Sanger-Purves-Slidell Association. Second is the Aledo-Bolar-Sanger Association, which is located within the southwestern portion of the Sanger-Purves-Slidell Association and is characterized as an increasingly loamy clayey soil of gentle to moderate slope. The third association, the Bastsil-Silawa Association separates the Sanger-Purves-Slidell Association from the Frio-Trinity Association. The Bastsil-Silawa Association is characterized as a sandy clay loam of nearly level slope (Environmental Science and Engineering, Inc., 1994). The clayey soils of the Frio-Trinity Association make up the fourth soil association and are located along the flood plain of the West Fork of the Trinity River.

1.4.2 Site-Specific Geology

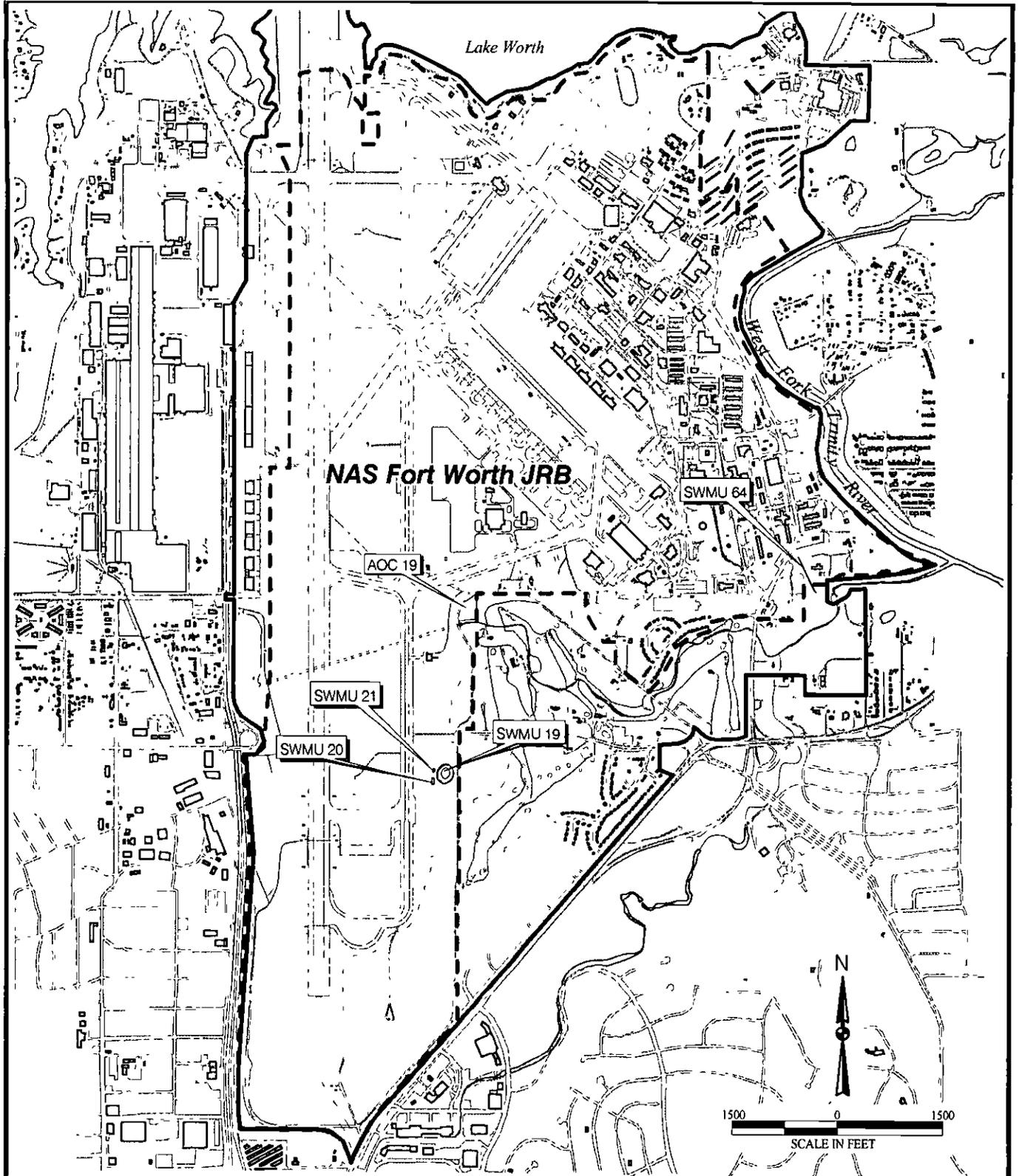
The majority of NAS Fort Worth JRB is covered by alluvium deposited by the Trinity River during flood stages. The Quaternary Period alluvium (Holocene Epoch) occurs downstream from the Lake Worth Dam in the current flood plain of the West Fork Trinity River, on the east side of the facility. Older alluvial deposits and terrace deposits (Pleistocene Epoch) also occur on-site. The alluvium is composed of gravel, sand, silt, and clay of varying thicknesses and lateral extent. The thickness of these materials ranges from 0 to 60 feet. Fill material is also included within these deposits where landfills, waste pits, excavation sites, and other construction activities have altered the original land surface. This fill material is made up of clay, silt, sand, and gravel mixtures, but may also contain debris and other waste (Radian, 1989).

Below the alluvial terrace deposits are the Cretaceous-age Goodland and Walnut Formations, which form the bedrock surface beneath NAS Fort Worth JRB. Both formations consist of interbedded, fossiliferous, hard limestone and calcareous shale. The upper formation, the Goodland Limestone, is exposed on the southern portion of the base, south of White Settlement Road. The Goodland is a chalky-white, fossiliferous limestone and marl. The thickness of the Goodland Limestone ranges from 20 to 25 feet. Below the Goodland Formation is the Walnut Formation (or Walnut Clay). The Walnut Formation is exposed in a small area along the shores of Lake Worth and Meandering Road Creek. This formation is a shell agglomerate limestone with varying amounts of clay and shale. It ranges in thickness from 25 to 35 feet throughout the site except where erosion has produced a few thinner areas. Other formations that are beyond the total depth of this investigation include the Paluxy Formation, which underlies all of NAS Fort Worth

JRB with a thickness that ranges from 130 to 175 feet, and the Glen Rose and Twin Mountains Formations, which lie underneath the Paluxy with a thickness of 100 to 300 feet (CH2M HILL, 1996).

The depth to bedrock at SWMU 19 ranges from approximately 20 feet to greater than 40 feet. Borings advanced at the site have typically encountered auger refusal at depths averaging about 30 feet, usually in limestone bedrock. At AOC 19, borings have encountered refusal at depths ranging from 7 feet to greater than 14 feet.

The depth to bedrock at SWMU 64 has been documented during various drilling and excavation activities that have been conducted at that site. Boreholes in the vicinity have encountered limestone bedrock at depths ranging from 12 to 25 feet. However, the average documented depth to bedrock in excavation trenches advanced within the underdrain pathway is approximately 13 feet.



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 swmu19-20-21 apr
 Project AFC001-26bb
 Created 08/17/99 cfarmer
 Revised 05/24/01 asp
 Source HydroGeologic, Inc—GIS Database



Legend

- NAS Fort Worth JRB Boundary
- Former Carswell AFB Boundary

Figure 1.1

**SWMU and AOC Locations
 NAS Fort Worth JRB, Texas**

Figure 1.2

**Excavation Location Map
 SWMU 19 - Fire Training Area No. 2**



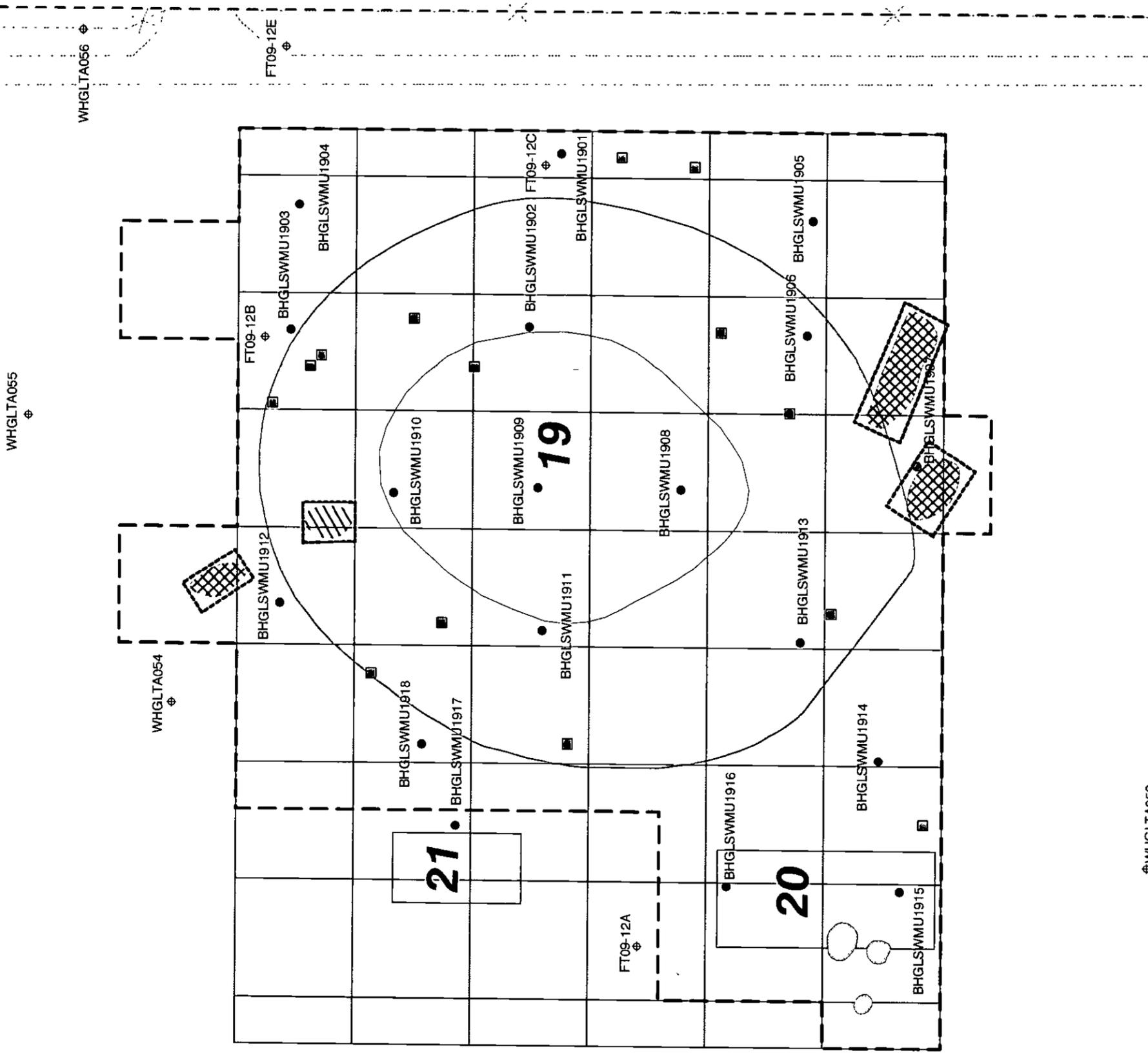
**U.S. Air Force Center For
 Environmental Excellence**

Legend

- NAS Fort Worth JRB (Carswell Field) Boundary
- - - Geophysical Boundary
- Buried Metal Location
- Soil Boring Location
- ⊕ Monitoring Well Location
- Solid Waste Management Unit (SWMU)
- ▨ High Concentration of Buried Metal
- ▧ Moderate Concentration of Buried Metal
- Low Concentration of Buried Metal
- ▭ Geophysical Grid - 50 ft. X 50 ft.
- Proposed Excavation Area



Filename X:\AFC001\26266\bigg_aoc19.apr
 Created 04/11/01 jbelcher
 Revised 05/25/01 cf
 Project AFC001-2688
 Map Source HydroGeoLogic, Inc.
 ArcView GIS Database, 2001
 IT Corporation, 2001



⊕ WHGLTA053

HydroGeoLogic, Inc.—Excavation Work Plan
NAS Fort Worth JRB, Texas

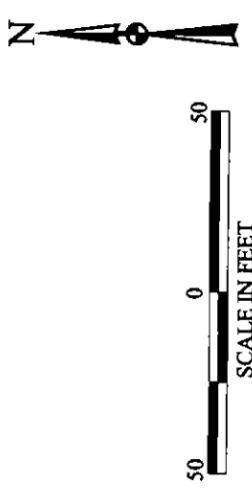
Figure 1.3

Excavation Location Map AOC 19 - Suspected Former Fire Training Area B

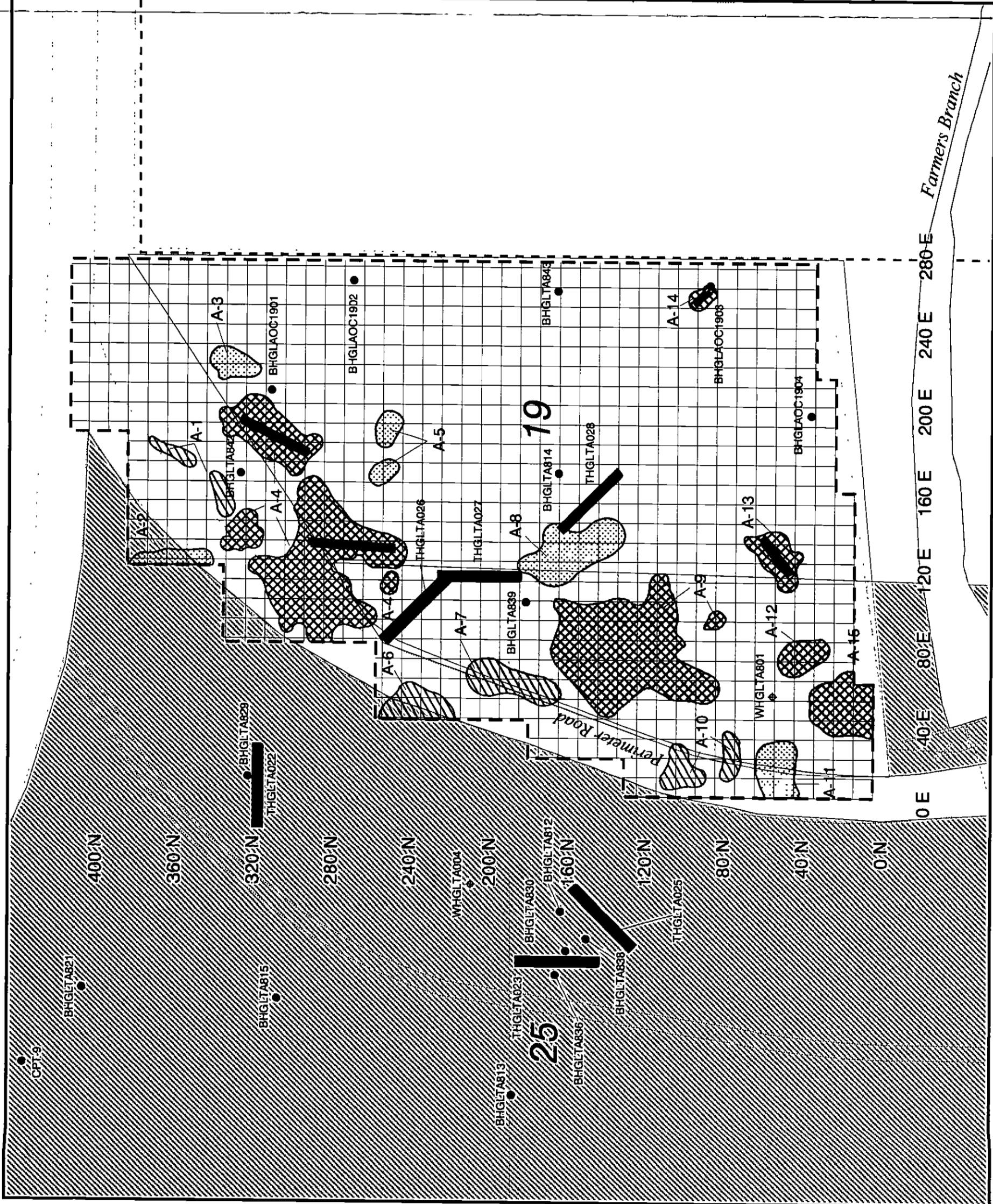


Legend

- NAS Fort Worth JRB (Carswell Field) Boundary
- - - Geophysical Boundary
- Test Pit (1997)
- Test Pit (Proposed)
- Soil Boring Location
- ◆ Monitoring Well Location
- THGLTA026 Solid Waste Management Unit 25 (Landfill 8)
- Area of Concern 19
- ▨ High Concentration of Buried Metal
- ▩ Moderate Concentration of Buried Metal
- ▧ Low Concentration of Buried Metal
- Geophysical Grid - 10 ft. x 10 ft.



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 Revised 08/10/01 jb
 Project AFC001-2688
 Map Source HydroGeoLogic, Inc.
 ArcView GIS Database, 2001
 IT Corporation, 2001



Farmers Branch



HydroGeoLogic, Inc.—Excavation Work Plan
 NAS Fort Worth JRB, Texas

Figure 1.4

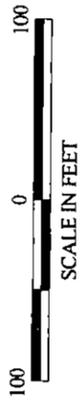
**Excavation Location Map
 SWMU 64 - French Underdrain System
 and Previous Excavation Locations**



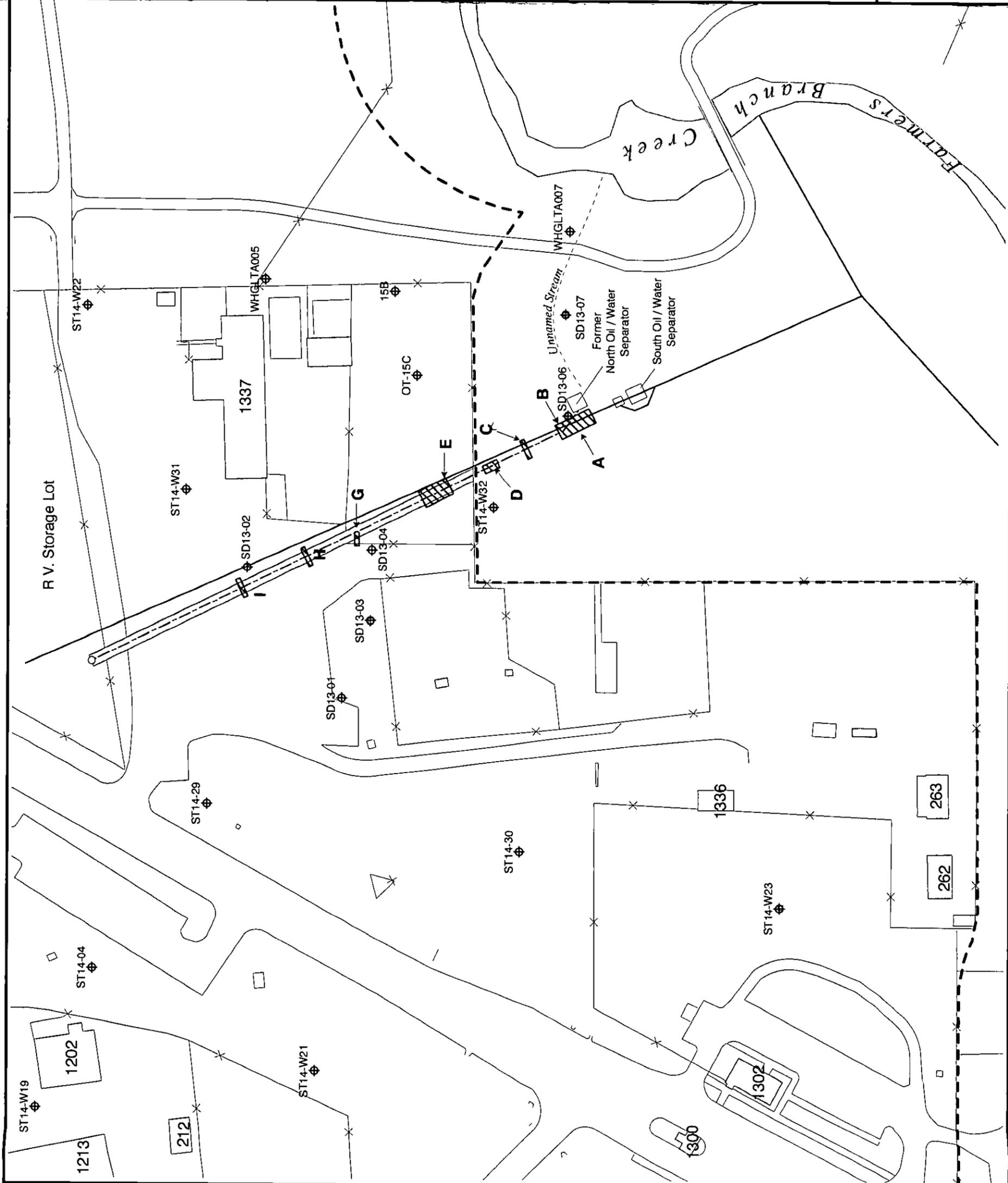
**U.S. Air Force Center for
 Environmental Excellence**

Legend

- NAS Fort Worth JRB (Carswell Field)
- - - French Underdrain Pipe (SWMU 64)
- Sanitary Sewer
- ▨ June 1996 Excavation (Parsons, 1997)
- Oil / Water Separator
- Proposed Excavation Area
- ⊕ Monitoring Well
- Manhole



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 Project AFC001-26bb
 Created 05/01/00.jbelcher
 Revised 06/20/01 cf
 Source HydroGeoLogic, Inc.—GIS Database, 2000;
 Parsons Engineering Science, Inc., 1997



TAB

SECTION 2.0

2.0 SUMMARY OF PROPOSED WORK

2.1 PROJECT OBJECTIVES

The objectives of the actions described in this document are to remove overburden materials at the locations designated in the three sites, extract the specified objects from the ground, determine if hazardous constituents within or near those features have been released into the environment, properly characterize and dispose of unearthed objects and contaminated soil and groundwater, and restore each site to its original condition. Specifically, that includes confirmation of the presence or absence of subsurface anomalies at SWMU 19 and AOC 19; removal of the existing underdrain system at SWMU 64; and the removal and disposal of those materials if necessary. The SWMUs and AOCs at NAS Fort Worth JRB are subject to the specific requirements of the Texas Natural Resource Conservation Commission's (TNRCC) HW Permit number HW-50289 and the TNRCC Risk Reduction Rules Program. These excavation activities are being conducted in support of the RFI for each of these units.

The proposed activities for each of the three sites are discussed in the following sections.

2.1.1 Proposed Activities at SWMU 19

The primary objective will be the location in the field of the four principal identified geophysical anomalies within SWMU 19, the excavation of soils overlying those and other discovered features, and if necessary, removal and disposal of the objects (and any contained liquids) representing the anomalies. The locations of the four principal anomalies to be investigated at SWMU 19 are shown on Figure 1.2. Existing native soils are predominantly silty clay, clayey silt, fine to medium sand, and gravel. The average depth to groundwater at SWMU 19 is approximately 25 feet bgs. Investigative results to date do not indicate that hazardous wastes exist buried at the site, but all work shall be given special consideration and operations shall conform with hazardous waste site operation protocol due to the nature of past operations performed at the site and the resulting materials and hazards potentially present.

The excavations at SWMU 19 are exploratory in nature and primarily intended to determine the nature of the geophysical anomalies; no specific sampling locations or frequencies are planned. Excavated materials will be visually inspected for staining by the HydroGeoLogic field team, and these inspections will be noted in the field log, as will other observations such as unusual or strong odors, and PID readings taken from excavated materials. Photographs will be taken and included in the project file. If there are no indicators of contamination (e.g., staining, odors, and elevated PID readings), no samples will be collected; however, if contamination is suspected, it will be characterized by sampling the potentially contaminated zone. HydroGeoLogic shall conduct all soil and water sampling in accordance with the *Final Work Plans, RCRA Facility Investigation of SWMUs 19, 20, 21 and 53* (HydroGeoLogic, 2000a) and the *2000 Basewide Quality Assurance Plan* (HydroGeoLogic, 2000b) during excavation activities. If sampling is necessary, the samples

will be collected from the center of the excavator bucket from soil that has not touched the bucket sides or bottom.

Soils removed from the excavations are to be stockpiled on an impermeable plastic liner. An impermeable cover shall be placed over each pile to prevent precipitation from contacting the stored material, and a berm shall be constructed around stockpiles to prevent runoff. Clean fill (i.e., no staining, odors, or elevated PID readings) removed from the test pits will be used to backfill the trenches. Stockpiled soils from the test pits suspected of being contaminated will be sampled and analyzed to support disposal or reuse. Any objects removed will be placed into “roll-off” containers for removal and disposal at the end of the excavation work.

Segregated soil stockpiles that appear to be or are suspected to be contaminated with petroleum products are to be containerized and disposed of in accordance with Section 2.2.4 of this Work Plan. Stockpiled soils subjected to chemical characterization sampling shall be used as backfill if they are found to conform to the requirements of clean fill per TNRCC regulation, 30 Texas Administrative Code (TAC) 334.503 (c)(3)(E), or if HydroGeoLogic receives approval for reuse from TNRCC field inspector. Clean replacement fill that is brought from offsite must also conform to the above regulatory requirement, and must be similar in composition to native soils at the site.

2.1.2 Proposed Activities at AOC 19

The primary objective at AOC 19 will be the location in the field of the selected geophysical anomalies, the excavation of soils overlying those and other discovered secondary features, and, if necessary, removal and disposal of the objects (and any contained liquids) representing the anomalies. The locations of the principal anomalies to be investigated at AOC 19 are shown on Figure 1.3. Existing native soils are predominantly silty clay, clayey silt, fine to medium sand, and gravel. The average depth to groundwater at AOC 19 is approximately 9 to 10 feet bgs. Investigative results to date do not indicate that hazardous wastes exist buried at the site, but all work shall be given special consideration and operations shall conform with hazardous waste site operation protocol due to the nature of past operations performed at the site and the resulting materials and hazards potentially present.

The excavations at AOC 19 are exploratory and primarily intended to determine the nature of the geophysical anomalies; no specific sampling locations or frequencies are planned. Excavated materials will be visually inspected for staining by the HydroGeoLogic field team, and these inspections will be noted in the field log, as will other observations such as unusual or strong odors, and PID readings taken from excavated materials. Photographs will be taken and included in the project file. If there are no indicators of contamination (e.g., staining, odors, and elevated PID readings), no samples will be collected; however, if contamination is suspected, it will be characterized by sampling the potentially contaminated zone. HydroGeoLogic shall conduct all soil and water sampling in accordance with *Final Work Plans, RCRA Facility Investigation of SWMUs 19, 20, 21 and 53* (HydroGeoLogic, 2000a) and the *Final 2000 Basewide Quality Assurance Project Plan* (HydroGeoLogic, 2000b) during excavation activities. If sampling is

necessary, the samples will be collected from the center of the excavator bucket from soil that has not touched the bucket sides or bottom.

Soils excavated from below the water table are to be segregated and stockpiled in separate piles on impermeable plastic liners. An impermeable cover shall be placed over each pile to prevent precipitation from contacting the stored material, and a berm shall be constructed around stockpiles to prevent runoff. Clean fill (i.e., no staining, odors, or elevated PID readings) removed from the test pits will be used to backfill the trenches. Stockpiled soils from the test pits suspected of being contaminated will be sampled and analyzed to support disposal or reuse. Any objects removed will be placed into “roll-off” containers for removal and disposal at the end of the excavation work.

Segregated soil stockpiles that appear to be or are suspected to be contaminated with petroleum products are to be containerized and disposed of in accordance with Section 2.2.4 of this Work Plan. Stockpiled soils subjected to chemical characterization sampling shall be used as backfill if they are found to conform to the requirements of clean fill per TNRCC regulation, 30 TAC 334.503 (c)(3)(E), or if HydroGeoLogic receives approval for reuse from TNRCC field inspector. Clean replacement fill that is brought from offsite must also conform to the above regulatory requirement, and must be similar in composition to native soils at the site. Boring logs from nearby monitoring wells indicate that site soils are made up of mostly silty clay from the ground surface to an approximate depth of 7 or 8 feet, grading to sand and gravel below that depth.

2.1.3 Proposed Activities at SWMU 64

The primary task will be to locate the exact alignment of the underdrain pipe, excavate overlying soils to uncover the entire length of the system, and remove the underdrain from the ground for disposal.

The work shall consist of excavation of overburden soils along the alignment of the 420-foot FUS, then removal, dismantling, and disposal of all sections of the system. The FUS is constructed of a single straight line of 6-inch diameter, galvanized, corrugated metal pipe. The pipeline is perforated with single rows of 0.25-inch diameter holes drilled along the bottom of the pipe at an approximate spacing of 8 holes per foot. The FUS is located as shown on Figure 1.4. Existing native soils are predominantly silty clay, sand, and gravel. The estimated depth to groundwater is approximately 9 feet bgs.

After the FUS pathway is located, an attempt will be made to excavate the trench by straddling the pipeline alignment with an excavator, then advancing along the axis of the pipe as soils are removed from the trench and deposited along the side of the excavation. The trench is to be excavated to the bottom of bedding, or the gravel pack below the underside of the pipeline. Soils and gravel are to be stockpiled along the sides of the trench on an impermeable plastic liner. Soils excavated from below the water table are to be segregated and stockpiled in separate piles on impermeable plastic liners. An impermeable cover shall be placed over each pile to prevent precipitation from contacting the stored material, and a berm shall be constructed around

stockpiles to prevent runoff. The FUS is estimated to range in depth from 11 to 13 feet bgs. Sections of the FUS and associated bedding material are to be extracted from the trench in short segments, approximately 10 feet in length, then placed into a “roll-off” container for removal and disposal at the end of the excavation work. Since groundwater is expected to be encountered at a depth of approximately 9 feet, dewatering of the trench and temporary water storage may be necessary. If water entering the trench is determined to be free from contamination, HydroGeoLogic may obtain permission from NAS Fort Worth JRB to pump water from the trench directly into a nearby sanitary sewer inlet. HydroGeoLogic will determine this by analyzing samples on a quick turn-around time. If water entering portions of the trench is found to be contaminated, that water will be removed from the site and disposed of in accordance with provisions outlined in Section 2.2.4.

When possible, the FUS pipeline will be extracted from the trench using the excavator arm and bucket, then cut into sections after portions are pulled above grade. If removal of the FUS utilizing the excavator arm is not possible along some portions of the pipeline, confined space entry into the trench will be necessary to dismantle and extract sections of pipe from the excavation. All workers and supervisors must have completed Occupational Safety and Health Administration (OSHA) confined space entry training. More detailed requirements for confined space entry are covered in Section 11.5 of the Health and Safety Plan (HSP), and site-specific procedures will be implemented if necessary. The Subcontractor shall follow OSHA rules, the Subcontractor’s HSP, and base regulations for excavation and confined space entry. Sheeting, bracing, or shoring shall be installed in the absence of adequate side slopes if there is a need for workers to enter the excavated area, in accordance with OSHA 3138 and 29 Code of Federal Regulations (CFR) 1910.146. The Subcontractor will submit specifications to HydroGeoLogic for sheeting, bracing, or shoring that shall be installed in the absence of adequate side slopes if there is a need for workers to enter any excavation areas that are greater than 4 feet deep. Under no circumstances will any HydroGeoLogic employee enter a confined space.

HydroGeoLogic shall conduct soil sampling in accordance with the *Final Work Plans, RCRA Facility Investigation of SWMUs 19, 20, 21 and 53* (HydroGeoLogic, 2000a) and the *Final 2000 Basewide Quality Assurance Project Plan* (HydroGeoLogic, 2000b) during excavation activities. Soils will be sampled approximately every 50 feet, as approved by the TNRCC project manager, along the trench sidewalls. The samples will be collected from the center of the excavator bucket from soil that has not touched the bucket sides or bottom. Stockpiled soils will also be sampled and analyzed after removal from the trench to support disposal or reuse.

If needed, water samples will also be collected to characterize volumes of liquids that may need to be containerized for disposal. All soil and water samples will be submitted for analysis by HydroGeoLogic’s laboratory. Unless field screening indicates the possibility of significant soil contamination within the trench, the trench will not remain open during the sample analysis turnaround period, but will be immediately backfilled following FUS removal and soil sampling to minimize costs and the impact on traffic flow in the area. If sample analyses indicate areas of significant contamination, additional investigative sampling will be performed at a later date to determine nature and extent.

Segregated soil stockpiles that appear to be or are suspected to be contaminated with petroleum products are to be containerized and disposed of in accordance with Section 2.4.2 of this Work Plan. Stockpiled soils subjected to characterization sampling shall be used as backfill if they are found to conform to the requirements of clean fill per TNRCC regulation, 30 TAC 334.503 (c)(3)(E), or if HydroGeoLogic receives approval for reuse from TNRCC field inspector. Clean replacement fill that is brought from offsite must also conform to the above regulatory requirement, and must be similar in composition to native soils at the site. Boring logs from nearby monitoring wells indicate that site soils are made up of mostly silty clay from the ground surface to an approximate depth of 7 or 8 feet, grading to sand and gravel below that depth.

A sanitary sewer line runs almost parallel to the FUS, and it may be located within the proposed area of excavation at the downgradient end of the site. If gravel pack material around the sanitary sewer is disturbed or removed while extracting the underdrain pipeline, it will be necessary to re-pack an approved material around the sewer line (typically #57 crushed stone, American Society for Testing and Materials [ASTM] C-33). It will not be necessary to replace gravel pack along areas where the FUS did not run adjacent to the sewer line. If the concrete sanitary sewer line is damaged during FUS removal, it will be repaired. If the damage is superficial, a concrete patch repair will be attempted. If the damage is significant, (i.e., interrupts sewer flow), a solids by-pass pump will be used to reroute sewer flow from the nearest upgradient manhole to the nearest downgradient manhole to allow for replacement of the damaged section of line. Any damage to the sewer line will be promptly reported to the AFCEE on-site engineer and the Navy Public Works office.

2.2 DESCRIPTION OF WORK

Figure 1.1 shows the location of each site. The areas to be excavated are shown on Figures 1.2, 1.3, and 1.4.

In the event that hazardous materials are discovered during excavation at any site, the excavation will be temporarily halted and the potential threat to human health and/or the environment will be evaluated and discussed with the AFCEE and TNRCC field inspector. Stockpiled soils from excavations that are awaiting analytical results will be stored in 55-gallon drums at the investigation-derived waste (IDW) storage yard until results are received and they can be disposed of properly. Potentially hazardous soils, liquids or similar materials that pose an immediate or short-term threat to human health or the environment will be handled as an emergency response.

If unexploded ordnance (UXO) is encountered, work will be halted and control of the site given over to the appropriate Air Force and Navy personnel. The excavation effort will resume only if clearance is given in writing by an Air Force or other Department of Defense representative with the appropriate authority.

The field work is anticipated to begin in August 2001 at SWMU 19 and AOC 19. Work is anticipated to begin in October 2001 at SWMU 64. The proposed project is divided into nine tasks:

- Task 1 - Mobilization/Demobilization
- Task 2 - Site Preparation and Clearance
- Task 3 - Excavation and Waste Characterization
- Task 4 - Transport and Disposal of Excavated Materials
- Task 5 - Temporary Storage and Disposal of Hazardous Materials
- Task 6 - Acquisition and Transport of Clean Fill
- Task 7 - Backfilling and Site Restoration
- Task 8 - Equipment Decontamination
- Task 9 - Reporting

Soil samples will be collected from each excavated area after target objects and other debris have been removed and before backfilling begins. The soil sampling effort is described in Section 2.2.3.3. All nine tasks are described in the following sections.

2.2.1 Task 1 - Mobilization/Demobilization

This task includes all necessary planning, site clearances, preparation of any permit applications and efforts needed to obtain necessary permits. It also includes any necessary site preparation and mobilizing necessary personnel and equipment to the site. HydroGeoLogic will act as the initial point of contact with the base for all activities and will obtain utility clearances from NAS Fort Worth JRB. Prior to mobilization, HydroGeoLogic will apply for base construction permits through the Navy Public Works office, and will keep these permits once obtained, in clear view at each work site. HydroGeoLogic will also obtain all other permits, applications, certificates, and other documents required by federal, state and local authorities to perform and complete each remedial action.

If necessary, traffic will be routed around each work site with minimal interference to normal traffic patterns. The Subcontractor will maintain access to the work site at all times and furnish all signs, barricades, and flagmen required to control traffic. All signs and barricades shall be in accordance with American National Standards Institute (ANSI) D6.1, Manual of Uniform Traffic Control Devices. If needed, temporary fencing or other barricades will be installed to restrict access to the work sites. Traffic patterns will minimize the chance of accidents and protect the public and worker safety. At SWMU 64, staff access to Building 1337 will be maintained during the project.

Prior to commencement of work, all excavation equipment shall be cleaned and decontaminated according to the guidelines described in Section 2.2.8. The equipment shall not leak any fluids that may enter the excavation or contaminate equipment that is placed in the pits. If hazardous material is encountered, any necessary permits for excavation, transport, and/or disposal of hazardous debris will be obtained in a timely manner.

2.2.2 Task 2 - Site Preparation and Clearance

No excavation shall be performed until a NAS Fort Worth JRB Digging Permit is acquired, underground utility clearances have been obtained, and site utilities have been field located. The Subcontractor shall take the necessary precautions to ensure no damage occurs to existing structures and utilities. At SWMU 64, overhead electric power lines cross a portion of the work area, at a height of approximately 20 feet. Although HydroGeoLogic will acquire the necessary utility clearances before work begins, the Subcontractor is required to verify the safe vertical limit of excavating equipment for working in the vicinity of active electrical components.

Decontamination areas will be constructed at each site before any excavation equipment is moved into the project areas. The decontamination area shall be large enough to allow storage of cleaned equipment and materials prior to use, as well as to stage drums of decontamination waste. The decontamination area shall be lined with a heavy gauge plastic sheeting, and designed with a collection system to capture decontamination waters. Solid wastes collected during decontamination activities shall be accumulated in 55-gallon drums. Smaller decontamination areas for personnel and portable equipment shall be provided as necessary. These locations shall include basins or tubs to capture decontamination fluids, which shall be transferred to a large accumulation tank as necessary. HydroGeoLogic's IDW storage lot is located in the Civil Engineering Storage Yard south of Building 1337, within the SWMU 64 project area. Containers of decontamination IDW from all three-excavation areas will be brought to this storage lot. IDW shall be properly containerized and temporarily stored at each site prior to transportation into the storage lot. General waste-handling procedures are discussed in Section 2.2.5.

In order to access a portion of the excavation area at SWMU 64, approximately 75 feet of 6-foot high chain-link fence will need to be removed. Figure 1.4 shows the location of the existing fence. The proposed excavation area crosses base's chain-link fence lines in at least two locations.

The Subcontractor will cut away necessary sections of these fences before commencement of work, then repair the fences to their original condition following completion of backfilling. If an affected fence protects a higher security area, such as the Building 1337 yard, it may be necessary to reconstruct the fence line quickly after backfilling of the trench. The Subcontractor will remove as much fence as is needed to complete the work safely. No fence removal is anticipated to be necessary for the proposed work at the SWMU 19 and the AOC 19 sites.

2.2.3 Task 3 - Excavation

Figures 1.2, 1.3, and 1.4 show the areas to be excavated for each site. The maximum depth to the top of buried debris at SWMU 19 and AOC 19 is believed to be 2 to 4 feet bgs. The depth of the underdrain system at SWMU 64 ranges from approximately 11 to 13 feet bgs, but may be deeper in some areas.

The location of each test pit will be clearly marked in the field before excavation activities commence. At each site, the Subcontractor will maintain an excavation of sufficient size to allow workers ample room to complete the work safely. Where possible, the Subcontractor shall remove

unearthed objects from the open excavation areas through use of the excavator bucket or other above-grade equipment. However, if extraction of objects in some areas is not possible by those means, then confined space entry into the excavation pits may become necessary in order to retrieve the target materials. All workers and supervisors must have completed OSHA confined space entry training. More detailed requirements for confined space entry are covered in Section 11.5 of the HSP, and site-specific procedures will be implemented if necessary. The Subcontractor shall follow OSHA rules, the Subcontractor's HSP, and base regulations for excavation and confined space entry. Sheeting, bracing, or shoring shall be installed in the absence of adequate side slopes if there is a need for workers to enter the excavated area, in accordance with OSHA 3138 and 29 CFR 1910.146. The Subcontractor will submit specifications to HydroGeoLogic for sheeting, bracing, or shoring that shall be installed in the absence of adequate side slopes if there is a need for workers to enter any excavation areas that are greater than 4 feet deep. Under no circumstances will any HydroGeoLogic employee enter a confined space.

Excavation and sampling activities will be monitored with an organic vapor monitor such as a photoionization detector (PID) or an organic vapor analyzer (OVA). Sustained detections of organic vapors will be monitored with Draeger colorimetric tubes. If detections of organic vapors exceed levels outlined in the Health and Safety Plan, work will be suspended until the source of the vapors has been contained. Although confined space entry is not expected during this field effort, a LEL/O₂ meter will be onsite to monitor atmosphere conditions at depth.

Surface water shall be diverted to prevent entry into the excavation. The Subcontractor will protect the site from puddling or running water, or accumulation of standing water in excavations. Excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times.

At SWMU 64, portions of the FUS lie below the water table, and dewatering of the trench may be necessary in order to commence with the system removal. Dewatering shall be limited to that necessary to assure adequate completion of the proposed work. If large volumes of water are to be pumped, the Subcontractor will station a portable water storage tank for collection of removed water. At SWMU 19 and AOC 19, dewatering is not anticipated due to the depths of the debris to be excavated. However, any dewatering that might be needed shall be limited to that necessary to assure adequate access, a safe excavation, and to ensure that compaction requirements can be met. There is no evidence or expectation of perched water within the proposed excavation areas at SWMU 19 or AOC 19.

The Subcontractor will treat areas subject to dust-producing activities with liquid palliatives that will not harm re-growth of vegetation, or another such method of dust control, which complies with base regulations. Likewise, excavated materials stored for subsequent use as backfill will be treated or protected to control the production of dust in accordance with base regulations.

In addition to the information required to be recorded in the field log book for all field activities listed in Section 7.0 of the *Final Work Plans for the RCRA Facility Investigation of SWMUs 19,*

20, 21, and 53 (HydroGeoLogic, 2000a), the following shall be recorded for each test pit: (1) the total depth, length, and width, (2) the depth and thickness of distinct soil or lithologic units, (3) a lithologic description of each unit, and (4) a description of any man-made materials or apparent contamination encountered.

2.2.3.1 Excavated Materials

The soil and debris to be removed is not anticipated to be hazardous. Field screening (PID and visual observations) and definitive analytical laboratory analysis will be used to verify that material is non-hazardous. HydroGeoLogic will maintain a log of the materials and any visible signs of contamination encountered during excavation.

Soil that adheres to removed objects or debris will be removed from those materials prior to transportation to an off-site facility. If washing with high pressure water does not sufficiently clean the debris in the judgment of the HydroGeoLogic Field Supervisor, then the affected area will be manually cleaned. Rinse water and solids removed will be contained for characterization and disposal.

The Subcontractor shall segregate and containerize any potentially hazardous materials found during excavation. All materials will be handled, transported, stored, and disposed of in accordance with applicable federal, state, and local laws, ordinances, or other rulings having the effect of law, including but not limited to the items listed below:

1. Resource Conservation and Recovery Act (42 United States Code [USC] 6901)
2. Clean Water Act (33 USC 1251)
3. Clean Air Act (42 USC 7401-7642)
4. Toxic Substances Control Act (15 USC 260)
5. National Environmental Policy Act (42 USC 4321-4347)
6. Hazard Communication (OSHA Std 29 CFR 1910.1200)

The TNRCC will be notified when the removal is completed. All materials removed will be identified as to waste classification (hazardous, non-hazardous or solid waste) and disposition and will be documented.

2.2.3.2 Removal of Objects During Excavation

Excavation at each site will continue until all target subsurface objects have been removed from the areas designated in Figures 1.2, 1.3, and 1.4. At SWMU 64, the nature and approximate depth of the buried object has been defined, so excavation and removal of that material will proceed as described in Section 2.1.3. At SWMU 19 and AOC 19, where the exact depths and identification of buried objects are not known, the excavation process will proceed in stages as described below.

At the suspected location of buried objects, overburden will be excavated and removed to the estimated depth of each object. If no buried materials are encountered, the excavation will be deepened in 6-inch layers until materials are uncovered. After the target objects have been located and extracted from the excavation area, the excavation will resume for another 6-inch layer to test for the presence of other related materials. If that excavation layer shows that additional debris remains, then such debris will be excavated and the depth at which it was found will become the new test depth. The excavation will be deepened another 6-inches in those areas around the debris just removed and process will be repeated. If no new debris is visible, then that layer will become the bottom sample depth. The excavation will continue until no buried debris remains, or until it is determined that the remaining materials do not pose an environmental threat.

2.2.3.3 Sampling Procedures

HydroGeoLogic shall conduct all soil and water sampling in accordance with TNRCC regulations, the *Final Work Plans, RCRA Facility Investigation of SWMUs 19, 20, 21 and 53* (HydroGeoLogic, 2000a) and the *Final 2000 Basewide Quality Assurance Project Plan* (HydroGeoLogic 2000b) during excavation activities. If soil encountered in the test pits at SWMU 19 and AOC 19 is suspected to be contaminated, samples will be collected from the potentially contaminated area. At SWMU 64, the FUS removal, subsurface soils will be collected approximately every 50 feet along the trench sidewall; samples will be collected more frequently if areas of suspected contamination are encountered. The samples will be collected from the center of the excavator bucket from soil that has not touched the bucket sides or bottom. Stockpiled soil from the test pits suspected of being contaminated will be characterized after removal from the trench. One sample will be collected for each 100 cubic yards of stockpile soil at each site. Each sample shall be homogenized and quartered before being containerized. Samples collected for volatile organic compounds (VOCs) analysis shall be containerized prior to sample homogenization. Stainless steel scoops or trowels, glass jars with Teflon™ lids, or equivalent equipment compatible with the chemical analyses proposed shall be used to collect and store samples. Above ground plant parts and debris will be excluded from the sample.

If confirmation soil samples are collected from the excavations at SWMU 19, they will be analyzed for the following suite of analytes:

- VOCs (U.S. Environmental Protection Agency [EPA] Method 8260B);
- Semivolatile organic compounds (SVOCs) (EPA Method SW8270C);
- Metals (EPA Methods SW6010B/7000A); and
- Mercury (EPA Method SW7471A).

If confirmation soil samples are collected from the excavations at AOC 19, they will be analyzed for the following suite of analytes:

- VOCs (EPA Method 8260B)

Confirmation soil samples collected from the excavations at SWMU 64 will be analyzed for the following suite of analytes:

- VOCs (EPA Method 8260B);
- SVOCs (EPA Method SW8270C); and
- Select metals (lead, arsenic, cadmium, and manganese) (EPA Methods SW6010B/7000A).

The selection of the above analytical methods is based on chemical data generated by the Phase I investigations of SWMU 19 and AOC 19, and historical groundwater data at SWMU 64. Additional analyses could be added if wastes are uncovered that indicate the potential for contaminants not included in the above analytical lists.

Characterization samples from the stockpiled soils and water removed during excavation activities at SWMU 19 and AOC 19 will be analyzed for the following suite of analytes:

For soils:

- Reactivity (EPA Method SW-846, Chapter 7);
- Ignitability (EPA Method SW1020A);
- Corrosivity (EPA Method SW1110);
- Total petroleum hydrocarbons (TPH) (TNRCC Method TX1005);
- VOCs (EPA Method SW8260B); and
- Metals (EPA Methods SW6010B/7000A)

For water:

- TPH (TNRCC Method TX1005);
- VOCs (EPA Method SW8260B); and
- Metals (EPA Methods SW6010B/7000A)

Characterization samples from stockpiled soils and water removed during excavation activities at SWMU 64 will be analyzed for the following suite of analytes:

For soils:

- TPH (TNRCC Method TX1005);
- Benzene, ethylbenzene, toluene, and xylene (EPA Method SW8260B); and
- Lead (EPA Method SW7471).

For water:

- TPH (TNRCC Method TX1005);
- VOCs (EPA Method SW8206B); and
- Metals (EPA Methods SW6010B/7000A)

Metal piping from the FUS will be disposed of as scrap metal.

In all cases, samples will be collected from the exposed soil surface using a stainless steel hand trowel for metals, TPH, or SVOCs. VOC samples will be collected using the EnCore™ soil core sampler.

The sampling crew will record any unusual surface conditions that may affect the chemical analyses such as (1) asphalt chunks that may have been shattered by mowers, thus spreading small fragments of asphalt over the sampling area, (2) distance to roadways, aircraft runways, or taxiways, (3) obvious, deposition of contaminated or clean soil at the site, (4) evidence of dumping or spillage of chemicals, (5) soil discoloration, and/or (6) unusual condition of growing plants, etc.

Soil samples collected for VOC analysis will comply with the EPA SW846 Update III Method 5035. A self-sealing, headspace-free coring device such as the EnCore™ sampler manufactured by EnNovative Technologies will be used whenever VOCs are part of the analysis program. Each EnCore™ sampler will be filled to capacity using the EnNovative Technology stainless-steel T-handle. The EnCore™ sampler will be driven directly into the soil to be sampled. Paper towels or dry wipes will be used to clean the outside contact surfaces of the sampler's core barrel of any residual soil to ensure a tight seal before the EnCore™ cap is applied. The position and seal of the cap will be checked as recommended in the manufacturer's instructions (provided with each sampler). The position of the sampler plunger's o-ring will be checked frequently during filling to verify that the sampler is completely filled with soil.

Three 5-gram cores will be collected within a 3-inch radius for each sample. Once each core is filled, the technician will check to ensure that no residual soil extends out from the open end of the sampler's core barrel and that no rocks or vegetative material has been included in the sampled volume. Any residual soil, rocks, or vegetation may be removed using a decontaminated sampling spoon or spatula.

Once the samplers are capped and sealed, each device will be individually sample numbered using the manufacturer's provided sample labels. Completed sampling devices will be sealed in a resealable bag (provided by EnNovative Technology) and the completed sample label will be affixed to the outside of this bag. For moisture protection during shipment, the foil bag will be sealed into an outer plastic resealable bag and placed into a cooler on ice and chilled to 4 degrees Celsius (°C) upon collection.

All EnCore™ samplers must be prepared for same-day laboratory shipment, as all VOC samples collected by Method 5035 must be extracted or frozen within 48-hours of collection. With this restriction, soil VOC samples cannot be collected on Saturday or Sunday, but the laboratory will accept and prepare VOC samples on Saturday for soils collected on Friday.

Samples collected for all other analysis will be gathered and deposited into 4-ounce pre-sterilized laboratory jars, wrapped with padding material, and sealed in a plastic bag. The samples will be placed into a cooler and chilled to 4 °C upon collection.

2.2.4 Task 4 - Transport and Disposal of Excavated Materials

The FUS and other environmentally undesirable objects removed during excavation activities will be transported to an approved off-site facility for disposal. The Subcontractor shall compact the debris at the site to the extent practical before loading to maximize the efficiency of transport. Transport vehicles, however, shall not be overloaded so as to pose a significant potential for spilling debris while in transit. If necessary to prevent spillage, the transport vehicles shall provide a cover over the debris.

Transportation shall be provided in accordance with Department of Transportation Hazardous Material Regulations and state and local requirements, including obtaining all necessary permits, licenses, and approvals. Evidence that a state licensed petroleum-substance waste transporter is being used shall be submitted to HydroGeoLogic. Transportation, treatment, disposal methods and dates, the quantities of waste, the names and addresses of each transporter and the disposal or reclamation facility, shall also be recorded and made available for inspection, as well as copies of manifests and certifications of final treatment/disposal signed by the responsible disposal facility official.

The wastes shall be taken to a treatment, storage, or disposal facility that has EPA or appropriate state permits and petroleum-substance waste identification numbers and complies with the provisions of all applicable federal, state and local regulations. The original return copy of the hazardous waste manifest, signed by the owner or operator of a facility legally permitted to treat or dispose of those materials shall be furnished to AFCEE not later than 60 working days following the delivery of those materials to the facility.

2.2.5 Task 5 - Temporary Storage and Disposal of Hazardous Debris

The State of Texas requires the generator to determine if the waste is hazardous within 90 days from the date it was produced. In AFCEE's agreement with the Navy, hazardous or non-hazardous waste will not be stored on base for more than 90 days. In the event that hazardous materials are discovered during this investigation, the Subcontractor will stop work and notify the HydroGeoLogic Field Supervisor for further direction. Potentially hazardous soils, liquids or similar materials that do not pose an immediate or short-term threat to human health or the environment will be removed from the excavation areas, containerized, and transported by the Subcontractor to the 90-day RCRA storage facility at the base in accordance with HydroGeoLogic's IDW Management Plan (HydroGeoLogic, 1999b). HydroGeoLogic will dispose of both non-hazardous and hazardous debris and materials.

Hazardous material shall be stored in 55-gallon drums or other sealed containers suitable for prevention of contaminant release. Storage shall comply with RCRA regulations and relevant TNRCC requirements for temporary storage of hazardous materials. Field personnel will use proper drum labeling techniques in order to identify the origin of the waste. All drums will be placed on wood pallets. Field personnel will complete the IDW Inventory Sheet to log all waste produced. At the completion of all excavation work at the three sites, composite samples of the

waste will be collected by the field sampling team and submitted to an approved laboratory for analysis. Analytical testing will be performed to characterize any potentially hazardous debris found during the excavation. Following receipt of analytical results, HydroGeoLogic will request approval for disposal of the waste from the receiving disposal facility.

Upon approval, solids will be disposed of at a permitted landfill. Depending on the analytical results for containerized water, the water may be discharged into the base sanitary sewer at the Civil Engineering Storage Yard via Manway #4, or shipped off-site for disposal. Depending on the volume of IDW produced, the drums containing solids are either emptied into a roll-off container by field sampling personnel or the drums themselves are removed by a licensed transporter to the landfill. Water that is transferred into the sanitary sewer system will be documented on the IDW Inventory Sheet by field personnel for submittal to the Navy. Waste that is transported off-base will be accompanied by a waste manifest that is completed by HydroGeoLogic and signed by an AFCEE representative.

Potentially hazardous soils, liquids or similar materials that do pose an immediate or short-term threat to human health or the environment will be handled by the Subcontractor as an emergency response.

For any spill of hazardous material that could threaten or harm human health or the environment, or that exceeds the reportable quantity limits under 40 CFR 302.4, HydroGeoLogic will immediately notify the following entities:

- Base fire department
- AFCEE
- TNRCC
- National Response Center at 1-800-424-8802

The spill will be immediately cleaned up and the material will be re-collected and stored for proper disposal. Written reports in accordance with relevant TNRCC guidance will be submitted within 15 calendar days.

2.2.6 Task 6 - Acquisition and Transport of Clean Fill

Depending on the results of stockpile characterization sampling, the excavated material may be used as backfill when the excavation has been completed. No borrow material from other unrelated sites on NAS Fort Worth JRB will be used for fill material. If needed, satisfactory off-site fill will be brought in, and will consist of clean, sound, durable particles and be free of hazardous materials, roots, grass, or other biodegradable materials. All backfill materials delivered into the base shall be transported in accordance with 49 CFR 172, 173, 178, and 179, and all other applicable local, state, and federal transportation regulations.

2.2.7 Task 7 - Backfilling and Site Restoration

Satisfactory excavated materials may be used as backfill. Non-hazardous excavated material shall be backfilled immediately after the required information has been recorded. The first soils that were excavated shall be the last replaced when filling each pit, so that native soils will be restored at the ground surface. No test pit shall be left open overnight unless adequate safety precautions are employed. No borrow material from other unrelated sites on NAS Fort Worth JRB will be used for fill material. Soils will be backfilled until compaction requirements are met and the original grade is restored.

At each excavation location, the Subcontractor must compact soils when backfilling, using 6-inch lifts, to obtain a 95% density for materials returned to excavation pits. At least three compaction density tests shall be performed, in accordance with ANSI/ASTM D1556, ANSI/ASTM D1557, or ANSI/ASTM D698. The degree of compaction required is expressed as a percentage of the maximum density obtained by the compaction test procedure using a Nuclear Density Test Gauge (NDTG). Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

The fill material shall be mixed and blended to the proper moisture content before beginning compaction. The mixed material shall be placed on the prepared subgrade in layers of uniform thickness. The surface shall be finished to a smooth and compact surface in accordance with the lines, grades, and cross sections of existing surfaces at each site. The lines and grades including cross and crown slope indicated for the select fill shall be maintained by means of line and grade stakes.

Segregated soil stockpiles that appear or are suspected to be contaminated with petroleum substances are to be containerized and disposed of in accordance with provisions outlined in Section 2.2.5. Stockpiled soils subjected to chemical characterization may be used as backfill if they are found to conform to the requirements of clean fill per TNRCC regulation, 30 TAC 334.503 (c)(3)(E), or as otherwise approved by the TNRCC field inspector. Clean replacement fill that is brought from offsite must also conform to the above regulatory requirement, and must be similar in composition to native soils at the site.

At SWMU 64, along portions of the FUS where the gravel pack material around the sanitary sewer is disturbed or removed while extracting the underdrain pipeline, additional backfill material to be re-packed around the sewer line shall be #57 crushed stone, ASTM C-33. It will not be necessary to replace gravel pack along areas where the FUS did not run adjacent to the sewer line.

Each excavation location shall be returned as closely as possible to its original condition when work is complete. Following the completion of backfilling at each of the three sites, all drums, trash, and other waste shall be removed. Each site will then be graded, contoured, and leveled to its original elevation. Parcels that were excavated in vegetated areas will be reseeded with native grasses, and those that were excavated in paved areas such as SWMU 64, shall be repaired with asphalt to a condition equal to or exceeding that found before the excavation work.

2.2.8 Task 8 - Equipment Decontamination

All equipment that may directly or indirectly contact samples or contaminated materials shall be decontaminated in a designated decontamination area. This includes excavators, loaders, dozers, sampling devices, and miscellaneous small tools and other implements. In addition, the contractor shall take care to prevent post-excavation samples from coming into contact with potentially contaminating substances, such as oil, engine exhaust, corroded surfaces, and dirt.

The following procedure shall be used to decontaminate large pieces of equipment, such as excavators and loaders: the external surfaces of equipment shall be washed with high-pressure hot water and Alconox™, or equivalent laboratory-grade detergent, and if necessary, scrubbed until all visible dirt, grime, grease, oil, loose paint, rust flakes, etc., have been removed. The equipment shall then be rinsed with potable water. The inside surfaces of equipment buckets and blades shall also be washed as described.

The following procedure shall be used to decontaminate sampling devices that are used in conjunction with heavy equipment for collection of samples along pit sidewalls:

- Scrub the equipment with a solution of potable water and Alconox, or equivalent laboratory-grade detergent
- Rinse the equipment with copious quantities of potable water followed by ASTM Type II Reagent Water (high-performance liquid chromatography-grade water and distilled water purchased in stores are not acceptable substitutes for ASTM Type II Reagent-Grade Water)
- Air dry the equipment on a clean surface or rack, such as Teflon®, stainless steel, or oil-free aluminum elevated at least 2 feet above ground
- If the sampling device shall not be used immediately after being decontaminated, it shall be wrapped in oil-free aluminum foil, or placed it in a closed stainless steel, glass, or Teflon® container.

ASTM Reagent-Grade Type II Water, methanol, and hexane shall be purchased, stored, and dispensed only in glass, stainless steel, or Teflon® containers. These containers shall have Teflon® caps or cap liners. HydroGeoLogic will ensure these materials remain free of contaminants. If any question of purity exists, new materials shall be used.

2.2.9 Task 9 - Reporting

Following the completion of all tasks, HydroGeoLogic, in coordination with the Subcontractor, will prepare a set of drawn “as-built” field diagrams that illustrate the exact location and dimensions of each excavation pit. The limits of the excavation work will then be recorded by a professional surveyor at each site. All surveying locations of field activities shall be measured by a certified land surveyor as the distance in feet from a reference location that is tied to the state plane system (mention the state plane system that we will use). The surveys shall be third order

(cf. Urquhart, L.C., 1962 *Civil Engineering Handbook*, 4th Edition, pp. 96 and 97). An XY-coordinate system shall be used to identify locations. The X-coordinate shall be the East-West axis; the Y-coordinate shall be the North-South axis. The reference location is the origin. All surveyed locations shall be reported using the state plane coordinate system. The surveyed control information for all data collection points shall be recorded and displayed in a table. The table shall give the X and Y coordinates in state plane coordinate values, the ground elevation, and the measuring point elevation of any specific features at each site.

The above information, along with, but not limited to, the results from confirmation and characterization sampling, data validation and evaluation, construction photos, and copies of completed manifests will be provided in a RFI report for each of the respective sites.

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TAB

SECTION 3.0

3.0 REFERENCES

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APPENDIX A

APPENDIX A
DISPOSAL REGULATIONS

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Texas Administrative Code

TITLE 30

ENVIRONMENTAL QUALITY

PART 1

**TEXAS NATURAL RESOURCE CONSERVATION
COMMISSION**

CHAPTER 334

UNDERGROUND AND ABOVEGROUND STORAGE TANKS

SUBCHAPTER K

**STORAGE, TREATMENT, AND REUSE PROCEDURES FOR
PETROLEUM-SUBSTANCE CONTAMINATED SOIL**

RULE §334.503

Reuse of Petroleum-Substance Waste

(a) Wastes that are intended for reuse are subject to all the applicable provisions of this subchapter, including, but not limited to, the following requirements. Sections 334.482, 334.496 - 334.500, and 334.502 of this title (relating to General Prohibitions; Shipping Procedures Applicable to Generators of Petroleum-Substance Waste; Recordkeeping and Reporting Procedures Applicable to Generators; Shipping Requirements Applicable to Transporters of Petroleum-Substance Waste; Shipping Requirements Applicable to Owners or Operators of Storage, Treatment, or Disposal Facilities; Recordkeeping Requirements Applicable to Owners or Operators of Storage, Treatment, or Disposal Facilities; and Design and Operating Requirements of Stockpiles and Land Surface Treatment Units).

(b) Petroleum-substance waste may be reused in accordance with §350.36 of this title (relating to the Relocation of Soils Containing COCs for Reuse Purposes). Recordkeeping and reporting requirements for any person who intends to reuse petroleum-substance wastes shall be in accordance with §350.36 of this title except under the conditions of subsection (c)(3)(A) - (C) of this section as the requirements of §350.36(b)(4) and (c)(4) of this title will not apply. Under the conditions of subsection (c)(3)(A) - (C) of this section, the person must maintain records and provide to the agency when requested such information deemed necessary by the agency to ensure compliance with the requirements of this subsection.

(1) For releases reported to the agency on or after September 1, 2003, the information that must be maintained under subsection (c)(3)(A) - (C) of this section includes, but is not limited to:

(A) identification, address, and name of the authorized representative of the generating facility;

(B) identification, address, and name of the authorized representative for the receiving facility or location;

(C) identification of the landowner of the receiving location or facility;

(D) the quantity, type, and contaminant levels of the reused wastes;

(E) documentation of the reuse methods and dates of reuse;

(F) documentation that asphalt mix or road base mix meets the specifications required by the final user; and

(G) documentation that the landowner of the receiving location has approved the use of the reused wastes on his property.

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(2) For releases reported to the agency on or before August 31, 2003, the recordkeeping and reporting requirement for any person who intends to reuse petroleum-substance wastes must require that person to maintain records and provide to the agency when requested such information deemed necessary by the agency to ensure compliance with the requirements of this subsection. This information shall include, but is not limited to:

- (A) identification, address, and name of the designated representative of the generating facility;
- (B) identification, address, and name of the designated representative for the receiving facility or location;
- (C) identification of the landowner of the receiving location or facility;
- (D) the quantity, type, and contaminant levels of the reused wastes;
- (E) documentation of the reuse methods and dates of reuse;
- (F) documentation that asphalt mix or road base mix meets the specifications required by the final user; and
- (G) documentation that the landowner of the receiving location has approved the use of the reused wastes on his property.

(c) Reuse requirements are as follows.

(1) For releases reported to the agency on or before August 31, 2003, any person who intends to utilize petroleum-substance wastes for reuse must obtain written approval from the landowner of the land on which the wastes will be placed and from the agency as specified by this subsection. The landowner's approval shall be submitted to the agency upon request.

(2) Petroleum-substance wastes shall be reused only in manners which are in accordance with §334.482 of this title and at contaminant levels specified by the agency.

(3) Petroleum-substance wastes may be reused under the following conditions.

(A) Petroleum-substance wastes may be utilized in cold-mix-emulsion bituminous paving at a cold-mix asphalt-producing facility registered under the terms of this subchapter. The petroleum-substance waste shall be mixed with aggregate or other suitable materials at a rate which will result in a mixture meeting or exceeding the specifications required by the final user.

(i) For releases reported to the agency on or before August 31, 2003, the petroleum-substance waste will contain less than 0.5 mg/kg for each component of benzene, toluene, ethyl benzene, and total xylenes prior to mixing. Authorization for the facility must also be obtained from all other appropriate federal, state, or local governing agencies. Authorization from the owner of the road or other area where the asphalt is to be utilized must be obtained prior to laying the asphalt.

(ii) For releases reported to the agency on or after September 1, 2003, the concentration of benzene, toluene, ethylbenzene, and total xylenes, or any other relevant chemicals of concern derived from the petroleum substance waste must not exceed levels which are protective of human health and the environment as generally determined in accordance with Chapter 350 of this title (relating to Texas

Risk Reduction Program), and must not be at concentrations which compromise the integrity of the cold-mix asphalt product. Authorization for the facility must also be obtained from all other appropriate federal, state, or local governing agencies. Authorization from the owner of the road or other area where the asphalt is to be utilized must be obtained prior to laying the asphalt.

(B) Petroleum-substance wastes may be utilized in asphalt mix at hot-mix asphalt-producing facilities registered under this subchapter.

(i) For releases reported to the agency on or before August 31, 2003, the petroleum-substance waste will contain less than 0.5 mg/kg for each component of benzene, toluene, ethyl benzene, and total xylenes prior to mixing. The petroleum-substance waste must be mixed with aggregate at a rate which will result in a mixture meeting or exceeding the specifications required by the final user. Authorization for the facility must also be obtained from all other appropriate federal, state, or local governing agencies. Authorization from the owner of the road or other area where the asphalt is to be utilized must be obtained prior to laying the asphalt.

(ii) For releases reported to the agency on or after September 1, 2003, the concentration of benzene, toluene, ethylbenzene, and total xylenes, or any other relevant chemicals of concern derived from the petroleum substance waste must not exceed levels which are protective of human health and the environment as generally determined in accordance with Chapter 350 of this title, and must not be at such concentrations which compromise the integrity of the hot-mix asphalt product. The petroleum-substance waste must be mixed with aggregate at a rate which will result in a mixture meeting or exceeding the specifications required by the final user. Authorization for the facility must also be obtained from all other appropriate federal, state, or local governing agencies. Authorization from the owner of the road or other area where the asphalt is to be utilized shall be obtained prior to laying the asphalt.

(C) Petroleum-substance wastes may be utilized in road base or parking lot stabilized base when the base will be covered with concrete or asphalt.

(i) For releases reported to the agency on or before August 31, 2003, the contaminant levels of the soil prior to mixing into the stabilized base are less than 0.5 mg/kg for each component of benzene, toluene, ethyl benzene, and total xylenes, and less than 500.0 mg/kg total petroleum hydrocarbons or at contaminant levels otherwise specified by the agency. The base must be mixed according to the specifications required by the final user. Soil which is not mixed into stabilized road base must meet the criteria for clean soil as specified by the agency to be spread on a road or parking lot. The generator must obtain prior written consent for the placement of the soil from the owner of the road (if different from the landowner).

(ii) For releases reported to the agency on or after September 1, 2003, the concentration of benzene, toluene, ethylbenzene, and total xylenes, or any other relevant chemicals of concern derived from the petroleum substance waste shall not exceed levels which are protective of human health and the environment as generally determined in accordance with Chapter 350 of this title, and must not be at such concentrations which compromise the integrity of the stabilized base. The base must be mixed according to the specifications required by the final user. Soil which is not mixed into stabilized road base must meet the criteria for clean soil as specified by the agency to be spread on a road or parking lot. The generator must obtain prior written consent for the placement of the soil from the owner of the road (if different from the landowner).

(D) For releases reported to the agency on or before August 31, 2003, petroleum-substance wastes may

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be utilized, if appropriate, in road base or parking lot stabilized base when the base will not be covered with asphalt or concrete. To determine if the soil to be reused is appropriate for the application, analysis for contamination must be conducted as specified by this agency. The agency will give written approval for the particular reuse after ensuring that the implementation will, in the opinion of agency staff, adequately protect human health, safety, and the environment. The base must be mixed according to the specifications required by the final user. The base must be professionally mixed by a facility registered under the terms of this subchapter. Soil which is not mixed into stabilized road base must meet the criteria for clean soil to be spread on a road or parking lot. The generator must obtain prior written consent for the placement of the soil from the owner of the road (if different from the landowner).

(E) For releases reported to the agency on or before August 31, 2003, petroleum-substance wastes may, if appropriate, be used as fill. To determine if the soil to be reused is appropriate for the application, analysis for contamination must be conducted as specified by this agency. The agency will give written approval for the particular reuse after ensuring that the implementation will, in the opinion of agency staff, adequately protect human health, safety, and the environment. The landowner at the receiving site (if different from the original owner of the petroleum substance contaminated soil) must give written consent for this activity. Fill for tank hold bedding and backfill for tank systems must meet the requirements of §334.46(a)(5) of this title (relating to Installation Standards for New Underground Storage Tank Systems).

Source Note: The provisions of this §334.503 adopted to be effective December 27, 1996, 21 TexReg 12177; amended to be effective September 23, 1999, 24 TexReg 7422; amended to be effective November 23, 2000, 25 TexReg 11442; amended to be effective July 12, 2001, 26 TexReg 5031

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Texas Administrative Code

TITLE 30

ENVIRONMENTAL QUALITY

PART 1

TEXAS NATURAL RESOURCE CONSERVATION
COMMISSION

CHAPTER 350

TEXAS RISK REDUCTION PROGRAM

SUBCHAPTER A

GENERAL INFORMATION

RULE §350.2

Applicability

(a) General applicability. On May 1, 2000, persons shall comply with the requirements of this chapter to the extent not modified by the provisions of this section. Before May 1, 2000, the person may use this chapter upon the effective date of the chapter. The rules in this chapter specify objectives for response actions for affected properties and further specify the mechanism to evaluate such response actions once an obligation is established to take a response action via other applicable rules, orders, permits or statutes. All actions undertaken and demonstrations required by this chapter must be performed and documented to the reasonable satisfaction of the executive director. Additionally, no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. This chapter does not establish requirements for reporting releases to program areas. The regulations in this chapter address releases of chemicals of concern (COCs) as defined by various programs subject to this chapter as specified in subsections (b)-(m) of this section. However, the regulations in this chapter do not eliminate the need for the person to meet any more stringent or additional requirements found in the particular rules for the covered program areas or applicable federal requirements.

(b) Property where a release of COCs occurs that is regulated under Chapter 327 of this title (relating to Spill Prevention and Control), as amended. The person shall first complete notification for releases under §327.3 of this title (relating to Notification Requirements), as amended, and then conduct response actions under §327.5 of this title (relating to Actions Required), as amended. The person shall utilize this chapter to conduct response actions when either the conditions of paragraphs (1) or (2) of this subsection apply.

(1) The person chooses to respond under this chapter to a release of COCs within the first six months after the release is reported to the executive director.

(2) The person determines that the response action to the release of COCs cannot be completed to the satisfaction of the executive director within the first six months following notification to the executive director.

(c) Property regulated under Chapter 330 of this title (relating to Municipal Solid Waste). Persons shall comply with the requirements of this chapter for those municipal solid waste properties except when subject to the requirements of 40 Code of Federal Regulations Parts 257 and/or 258, as amended. However, for those municipal solid waste properties subject to the requirements of 40 Code of Federal Regulations Parts 257 and/or 258, as amended, the executive director may establish an alternative health-based groundwater protection standard for a COC in accordance with §330.235(i) of this title (relating to Assessment Monitoring Program), as amended. Determination of such an alternative

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standard shall be made using the procedures of Subchapter D of this chapter (relating to Development of Protective Concentration Levels).

(d) Property regulated under Chapter 331 of this title (relating to Underground Injection Control). The person shall address unauthorized releases of COCs from associated tankage and equipment utilizing the procedures of this chapter. Excursions of injected mining solutions at in-situ mining properties or injection of waste which is confined below all underground sources of drinking water as defined in §331.2 of this title (relating to Definitions), as amended, are not subject to the requirements of this chapter.

(e) Property regulated under Chapter 332 of this title (relating to Composting). The person shall comply with the requirements of this chapter to conduct assessments, response actions, and post-response action care for releases of COCs in environmental media at a compost facility, mulching facility or land application property authorized under Chapter 332 of this title, as amended.

(f) Property regulated under Chapter 333 of this title (relating to Brownfield Initiatives). The person entering the Voluntary Cleanup Program (VCP) shall comply with all requirements found in the Texas Health and Safety Code, Chapter 361, Subchapter S, as amended, concerning the Voluntary Cleanup Program; Subchapter A of Chapter 333 of this title (relating to Voluntary Cleanup Program Section), as amended; and the requirements of this chapter. Where there is a conflict between the requirements of this chapter and the requirements in the Texas Health and Safety Code Chapter 361, Subchapter S, as amended, and Chapter 333, Subchapter A of this title, as amended, the requirements of the Texas Health and Safety Code Chapter 361, Subchapter S, as amended, and Chapter 333, Subchapter A of this title, as amended, shall apply.

(g) Property regulated under Chapter 334 of this title (relating to Underground and Aboveground Storage Tanks). The person shall comply with the requirements of this chapter for the assessment, response actions, and post-response action care for releases of regulated substances from underground storage tanks as specified in Chapter 334, Subchapter A of this title (relating to General Provisions), as amended, and for releases of petroleum products from aboveground storage tanks as specified in Chapter 334, Subchapter F of this title (relating to Aboveground Storage Tanks), as amended, which are reported to the executive director in accordance with Chapter 334, Subchapter D of this title (relating to Release Reporting and Corrective Action), as amended, on or after September 1, 2003. Additional corrective action requirements for these facilities are found in Chapter 334, Subchapters D, J, and K of this title (relating to Release Reporting and Corrective Action; Registration of Corrective Action Specialists and Project Managers for Product Storage Tank Remediation Projects; and Storage, Treatment and Reuse Procedures for Petroleum-Substance Contaminated Soil, respectively), as amended. For releases discovered and reported to the executive director before September 1, 2003, the person shall continue to comply with Chapter 334 Subchapters D, G, H, J, K, and M of this title (relating to Release Reporting and Corrective Action; Target Concentration Criteria; Interim Reimbursement Program; Registration of Corrective Action Specialists and Project Managers for Product Storage Tank Remediation Projects; Storage, Treatment and Reuse Procedures for Petroleum-Substance Contaminated Soil; and Reimbursable Cost Guidelines for the Petroleum Storage Tank Reimbursement Program, respectively), as amended, which were in effect prior to the effective date of this chapter, not to preclude compliance with a subsequent amendment of 30 TAC 334 of this title (Underground and Aboveground Storage Tanks).

(h) Property regulated under Chapter 335 of this title (relating to Industrial Solid Waste and Municipal Hazardous Waste). The person shall comply with the requirements of this chapter when undertaking the remediation of affected property at facilities used for the storage, processing or disposal of industrial

solid waste or municipal hazardous waste, or for the remediation of environmental media containing COCs resulting from releases from waste management facility components (e.g., tank, container storage area, surface impoundment, etc.), either as part of closure or at any time before or after closure. The person shall close a waste management facility component in a manner that minimizes or eliminates the need for further maintenance and controls. The manner of closure shall also minimize or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of waste, contaminants, leachate, run-off, or decomposition products to the surrounding environmental media. Waste management facility components undergoing closure for which the person can demonstrate that no release of COCs to surrounding environmental media has occurred are subject to this chapter only with regard to this closure performance standard and the removal, decontamination or control requirements for waste as specified in Subchapter B of this chapter (relating to Remedy Standards). In the event a release of COCs to surrounding environmental media has occurred, then the person shall comply with this chapter for response to the release. The person shall comply with §335.118(b) of this title (relating to Closure Plan; Submission and Approval of Plan), as amended, or applicable permit provisions regarding requirements for public participation in the corrective action process for permitted hazardous waste facilities. The person shall also comply with the requirements of paragraphs (1)-(3) of this subsection, as applicable.

(1) Any person who stores, processes, or disposes of industrial solid waste or municipal hazardous waste at a facility permitted under §335.2(a) of this title (relating to Permit Required), as amended, shall, unless specifically modified by other order of the commission, close the facility in accordance with the closing provisions of the permit.

(2) Any person who stores, processes, or disposes of hazardous waste is also subject to the applicable provisions relating to closure and post-closure in Chapter 335, Subchapters E and F of this title (relating to Interim Standards for owners and operators of Hazardous Waste Storage, Processing, or Disposal Facilities; and Permitting Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities, respectively), as amended.

(3) The person may utilize this chapter to determine if COCs, specifically listed hazardous waste or hazardous constituents, exceed concentrations protective of human health and the environment when making "contained-in" determinations for environmental media being managed as wastes (e.g., excavated soils, investigation derived wastes such as monitor well purge water, etc.) for purposes of treatment or disposal in a different location. In such cases, the person must still perform a waste classification in response to Chapter 335, Subchapters A and R of this title (relating to Industrial Solid Waste and Municipal Hazardous Waste Management in General; and Waste Classification, respectively), as amended.

(4) The person may propose a facility operations area (FOA) to address multiple sources of COCs within an active facility that is required to perform corrective action for releases pursuant to a permit or commission corrective action order. The requirements for establishing a FOA are specified in Subchapter G of this chapter (relating to Establishing a Facility Operations Area).

(i) Affected property regulated under Chapter 335, Subchapter K of this title (relating to Hazardous Substance Facilities Assessment and Remediation). The person shall comply with all requirements found in the Texas Health and Safety Code, Chapter 361, Subchapter F, as amended; Chapter 335, Subchapter K of this title (relating to Hazardous Substance Facilities Assessment and Remediation), as amended; and the requirements of this chapter for any release or threatened release of hazardous substances into the environment that may constitute an imminent and substantial endangerment to public health and safety or the environment. Where there is a conflict between the requirements in this

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chapter and the requirements of Chapter 361, Subchapter F, as amended, and Chapter 335, Subchapter K of this title, as amended, the requirements of Chapter 361, Subchapter F and Chapter 335, Subchapter K of this title shall apply.

(j) Property regulated under Chapter 336 of this title (relating to Radioactive Substance Rules). The person shall comply with the requirements of Chapter 336 of this title, as amended, regarding contamination limits for radioactive material in environmental media. In instances involving remediation of releases in media containing both radioactive material and other COCs, the person shall use the contamination limits determined in accordance with Chapter 336 of this title, as amended, for radioactive material and PCLs determined by the procedures of this chapter for other COCs.

(k) Property regulated under Chapter 312 of this title (relating to Sludge Use, Disposal and Transportation). The executive director may reference this chapter in permits subject to Chapter 312 of this title, as amended, when specifying closure provisions to address releases of COCs from facility components at municipal wastewater treatment plants.

(l) Other releases. The executive director may require the use of this chapter to address other releases of COCs subject to Texas Water Code, Chapter 26, as amended.

(m) Use of this chapter on or after May 1, 2000. The person who started a response action under Chapter 335, Subchapters A and S of this title (relating to Industrial Solid Wastes and Municipal Hazardous Wastes in General; Risk Reduction Standards, respectively), as amended, may qualify to continue under those previous commission rules subject to the limitations specified in paragraphs (1)-(4) of this subsection. Also, the person shall respond as described in §350.35 of this title (relating to Substantial Change in Circumstances) in the event a substantial change in circumstance occurs which results in an unacceptable threat to human health or the environment.

(1) The person who has submitted an initial notification of intent to conduct a Risk Reduction Standard 1 or 2 response action (i.e., §335.8(c)(1) and (2) of this title (relating to Closures and Remediation), as amended) prior to May 1, 2000, and has submitted a final report within five years after that date may request that the response action be reviewed according to the regulations in effect at the time of initial notification. Persons will automatically qualify for this grandfathering provision if they have previously received a letter from the agency acknowledging receipt of the initial notification, or submit other forms of documentation by May 1, 2001 that proper and timely notification had been made. Any person desiring to remain under Chapter 335 of this title may not use any of the provisions of this chapter.

(2) The person who has submitted a remedial investigation report that fully complies with §335.553(b)(1) of this title (relating to Risk Reduction Standard No. 3), as amended, prior to May 1, 2001 may elect to either continue under those rules or to proceed under this chapter. Any person desiring to remain under Chapter 335 of this title may not use any of the provisions of this chapter. If a person elects to proceed under this chapter, then they shall not be allowed to return to Chapter 335 of this title.

(3) Any closure plans approved as part of a permit issued prior to May 1, 2000, but not implemented at the time of permit renewal are subject to review for compliance with this chapter as part of the permit renewal process.

(4) The person may resubmit plans or reports that the person has revised voluntarily to conform with the requirements of this chapter, unless such resubmittal would result in noncompliance with a previously approved or imposed schedule of compliance.

Source Note: The provisions of this §350.2 adopted to be effective September 23, 1999, 24 TexReg 7436

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TITLE 30

ENVIRONMENTAL QUALITY

PART 1

TEXAS NATURAL RESOURCE CONSERVATION
COMMISSION

CHAPTER 350

TEXAS RISK REDUCTION PROGRAM

SUBCHAPTER B

REMEDY STANDARDS

RULE §350.36

Relocation of Soils Containing Chemicals of Concern for Reuse Purposes

(a) A person must comply with this section when relocating soils for reuse purposes from an affected property (on-site or off-site) which is undergoing or has completed a response action under Remedy Standard A or B and the soils contain COCs in excess of naturally occurring background concentrations. Relocation of soils which contain COCs may be subject to additional requirements or limitations (e.g., land disposal restrictions) within each program area identified in §350.2 of this title (relating to Applicability). The person must treat excavated soils containing non-aqueous phase liquids to applicable levels prior to relocation or else manage the soils as wastes. The excavation of soils containing COCs during construction activities (e.g., installation, repair, removal of telephone lines or other utilities, but not closures, remediations, or PST tank removal actions, for example) and the subsequent replacement of those soils into that same excavation shall not be considered to constitute relocation or reuse and shall not be subject to the provisions of this section.

(b) The person may relocate soils for reuse in response to Remedy Standard A when COCs meet the critical soil PCLs and the following requirements for the new location.

(1) Soils to be reused must meet the residential or commercial/industrial critical surface or subsurface soil PCLs as applicable for the new location, depending upon depth of placement, established in accordance with Subchapter D of this chapter (relating to Development of Protective Concentration Levels).

(2) The soil reuse shall be protective of ecological receptors at the new location.

(3) The soil reuse activity must allow the requirements for Remedy Standard A response actions set forth in §350.32(a) of this title (relating to Remedy Standard A) to be met at the new location.

(4) The person shall comply with the institutional control requirement for commercial/industrial land use as specified in §350.31(g) of this title (relating to General Requirements for Remedy Standards). Proof of compliance with the institutional control requirement shall be submitted within 90 days of completing the relocation action.

(5) The reuse of soils with concentrations of COCs which do not exceed the critical soil PCLs for the new location does not require the prior approval of the executive director, when that new location is within the boundary of on-site or off-site property which contains the affected property (i.e., not just within the affected property limits).

(c) The person must meet the following requirements in response to Remedy Standard B when soils that are to be relocated for reuse purposes contain concentrations of COCs that exceed the critical soil PCLs for the new location.

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(1) The person shall determine the critical surface and, if applicable, subsurface soil PCLs in accordance with Subchapter D of this chapter (relating to Development of Protective Concentration Levels) for the new location.

(2) The soil reuse must be protective of ecological receptors at the new location.

(3) The person shall demonstrate that the soil reuse activity will allow the requirements for Remedy Standard B response actions set forth in §350.33(a) of this title (relating to Remedy Standard B) to be met for the new location.

(4) The person shall comply with the institutional control requirements specified in §350.31(g) of this title (relating to General Requirements for Remedy Standards). Proof of compliance with the institutional control shall be submitted within 90 days of completing the relocation action.

(5) The reuse of soil under Remedy Standard B requires prior executive director approval.

(6) The executive director may require the person to conduct post-response action care and submit PRACRs.

(7) The executive director may require the person to provide financial assurance for post-response action care in response to §350.33(e)(2)(C) of this title (relating to Remedy Standard B).

(d) If soils which contain concentrations of COCs above naturally-occurring levels resulting from a release are to be relocated for reuse on property not owned by the person, then the person shall obtain the written consent of the landowner prior to relocation of the soils.

(e) Within 90 days of completing a soil relocation action under this section, the person shall complete the applicable portions of a RACR as described in §350.95 of this title (relating to Response Action Completion Report) and make it available for inspection or submittal upon request of the executive director.

Source Note: The provisions of this §350.36 adopted to be effective September 23, 1999, 24 TexReg 7436

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CODE OF THE CITY OF FORT WORTH, TEXAS
CHAPTER 12.5 ENVIRONMENTAL PROTECTION AND COMPLIANCE
ARTICLE 1, ADMINISTRATION AND ENFORCEMENT
DIVISION 4, ENVIRONMENTAL USE AGREEMENTS

Subdivision I. General Provisions

Section 12.5-136. Definitions.

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this Division, shall have the meanings hereinafter designated.

Property owner means the owner of property upon which or from which there has been a release or suspected release.

Section 12.5-137. Purpose.

- (a) The purpose of this Division is to establish guidelines and rules whereby, pursuant to Chapter XXVII, Section 13, of the Charter of the City of Fort Worth, the City Manager may execute use agreements with property owners to allow sub-surface environmental sampling and the placement of monitoring wells in City right-of-way, other City property, and in City easements, without the prior approval of the City Council. These guidelines and rules shall not be interpreted as creating any rights in any property owners to do such sub-surface environmental monitoring or placement of monitoring wells.
- (b) It is further the purpose of this Division to protect the lives and safety of the traveling public, to protect the health, safety and welfare of the residents of the City of Fort Worth, and to protect City property.

Section 12.5-138. Authority of City Manager.

- (a) The City Manager or the City Manager's designee may enter into use agreements with property owners to allow such owners to perform sub-surface environmental monitoring and place monitoring wells in City right-of-way, other City property, and in City easements, if such sampling or wells are required by the Commission or the EPA, or requested by the property owner, and no reasonable alternative site exists.

- (b) The City Manager may establish rules and procedures for the administration of this Division that are not inconsistent with the provisions of this Division, and which are necessary to protect City property interests and the public health, safety or welfare.
- (c) For the purpose of making sub-surface environmental sampling or installing monitoring wells on City easements, rights-of-way, or other property, the provisions of this Division supersede any similar provisions in the "Buildings" Chapter of the City Code or other similar provisions in the City Code.

Section 12.5-139. Minimum Requirements for Use Agreements.

Any use agreement approved by the City Manager as allowed by this Division shall at a minimum provide for:

- (a) An insurance policy or policies naming the City as an additional insured, with policy types and limits determined by the City's Risk Manager. When factors so warrant, and the Risk Manager believes the City will be properly protected, the Risk Manager may approve self-insurance;
- (b) The indemnification of the City by the property owner for all claims and damages arising from use agreement activities;
- (c) The relocation of monitoring wells if required for street and utility repair and maintenance;
- (d) Minimal disturbance of traffic;
- (e) Minimal disturbance of the peace of nearby residential neighborhoods;
- (f) The protection of the City's municipal separate storm sewer system and the City's sanitary sewer from use agreement activities;
- (g) The proposed drilling depth for soil borings and monitoring wells, locking caps on wells, and restoration of City property following completion or abandonment of contract activities;
- (h) Barricading during sampling and drilling of monitoring wells;
- (i) Inspection of operations by the Environmental Manager and City Traffic Engineer, and authority of same to halt use agreement activities when necessary to protect the environment or traveling public;

- (j) Drilling to be performed by a contractor licensed and bonded to work in the public right-of-way, and licensed under Chapter 32 of the Texas Water Code;
- (k) Certification of utility clearance prior to drilling; and
- (l) Fees to offset the City's cost of regulating and monitoring use agreement activities as determined by a schedule set by the City Council.

Section 12.5-140. Priority of Placement.

It is the City's position that the placement of sub-surface environmental sampling sites and monitoring wells shall follow the order of priority set forth below, and that sampling sites and monitoring wells be permitted on City roadways or in stormwater drainage channels only as a last resort. In declining order of priority, sampling sites and monitoring wells shall be placed:

- (a) On the property owner's property, not within a public easement;
- (b) On adjacent private property, not within a public easement;
- (c) On the property owner's property, within a public easement;
- (d) On adjacent private property, within a public easement;
- (e) On City-owned property, excluding rights-of-way;
- (f) Within City right-of-way, excluding roadways, sidewalks, and stormwater drainage channels;
- (g) Within City right-of-way, including roadways and sidewalks, but excluding stormwater drainage channels;
- (h) Within City right-of-way, including stormwater drainage channels.

[Sections 12.5-141 through 12.5-144 reserved]

Subdivision II. Sub-surface Environmental Sampling

Section 12.5-145. Informal Request for Sub-Surface Environmental Sampling.

- (a) A property owner seeking permission to conduct sub-surface environmental sampling on City right-of-way, property, or easements shall submit an informal written request to the Environmental Manager.
- (b) The informal request shall include:
 - (1) A complete history of the release prompting the request;
 - (2) A scale drawing detailing: all adjacent property and improvements within one hundred feet (100') of the proposed sampling site(s); and the location of other soil borings made and monitoring wells placed in response to the release;
 - (3) The preliminary location, scope, and details of all proposed sampling operations; and
 - (4) Documentation which shows the Commission's or EPA's directive necessitating the request, if applicable.
- (c) After receiving the request, the Environmental Manager shall review it and either:
 - (1) Approve it for further processing and notify the requestor;
 - (2) Return it to the requestor for more information; or
 - (3) Deny the request.

Section 12.5-146. Formal Request for Sub-Surface Environmental Sampling.

- (a) If a preliminary request is approved for further processing, the requestor shall submit a formal written request plus seven (7) copies of same to the Environmental Manager.
- (b) The formal request shall:
 - (1) Document contacts with the following persons regarding the release:

- A. T.U. Electric Company;
 - B. Lone Star Gas Company;
 - C. Southwestern Bell Telephone Company;
 - D. Sammons Cable;
 - E. Any other utility company with a City franchise or license;
 - F. Texas Department of Transportation (if applicable);
 - G. Tarrant County Water Control and Improvement District (if applicable);
 - H. Tarrant County Department of Transportation and Public Works (if applicable);
 - I. Trinity River Authority (if applicable); and
 - J. The adjacent private property owner (if applicable); and
- (2) Contain detailed information regarding the proposed sampling, including:
- A. The exact location of all sampling sites, the type and depth of the samples, the hours of operation, and barricading;
 - B. The equipment to be used in the sampling;
 - C. The names and qualifications of the businesses involved in the sampling, and the name, title and phone number of the project manager who will oversee the sampling; and
 - D. The timetable for all sampling operations.
- (c) After receiving the formal request, the Environmental Manager shall send copies of the request to the following City officials / departments:
- (1) City Attorney;
 - (2) Department of Risk Management;
 - (3) City Fire Chief;
 - (4) City Traffic Engineer;

- (5) Department of Water, Engineering Services Division;
 - (6) Department of Engineering;
 - (7) Department of Development; and
 - (8) Department of Parks and Recreation (if the request will involve use of City parks land).
- (d) The officials/departments listed in (c) above may provide the Environmental Manager with requirements to be imposed on the requestor, and other recommendations including alternate sites. The Environmental Manager shall review such requirements and recommendations and shall incorporate them into the use agreement to the degree practicable, but shall have the approval authority of the formal request. However, any sampling which will be done in City right-of-way shall also require the approval of the City Traffic Engineer on matters of traffic safety.

Section 12.5-147. Use Agreement for Sub-Surface Environmental Sampling.

- (a) If the Environmental Manager and City Traffic Engineer (if applicable) approve the formal request, the Environmental Manager shall prepare a written use agreement setting forth the City's requirements, and shall deliver it to the requestor.
- (b) After the requestor returns the signed use agreement to the Environmental Manager, along with the required fee and appropriate proof of insurance or self-insurance and certification of utility clearance for all city-franchised utility companies, and when applicable, of the other persons listed in Section 12.5-146(b)(1), the Commission, and the EPA, the Environmental Manager shall present it to the City Manager for final review. The City Manager may then approve or reject the use agreement.
- (c) The use agreement shall take the place of any permits required by the City elsewhere in this Code, to do the work allowed by the agreement.

[Sections 12.5-148 through 12.5-154 reserved]

Subdivision III. Monitoring Wells

Section 12.5-155. Necessity of Monitoring Wells.

If sub-surface environmental sampling or other tests indicate the possibility of soil or groundwater contamination within City rights-of-way, property, or easements, and either the City, the Commission, or the EPA requires the installation of monitoring wells, the City Manager may enter into a use agreement with a property owner for the placement of monitoring wells and additional sub-surface environmental sampling.

Section 12.5-156. Informal Request for Monitoring Wells.

- (a) A property owner seeking to place monitoring wells on City right-of-way, property, or easements shall submit an informal written request to the Environmental Manager.
- (b) The informal request shall:
 - (1) provide documentation of the need for the well(s);
 - (2) provide documentation of the requestor's efforts to locate the well(s) on property other than City right-of-way, property and easements; and
 - (3) include a preliminary plan for the location of the well(s).
- (c) If the Environmental Manager determines that the request should be approved for further processing, the requestor shall be so notified. If the Environmental Manager determines that the request should be denied, the requestor shall be so notified. The requestor shall have ten days from the date of the notice of denial to appeal the decision to the City Manager.

Section 12.5-157. Formal Request for Monitoring Wells.

- (a) If the preliminary request is approved, the requestor shall submit a formal request and seven (7) copies to the Environmental Manager.
- (b) The formal request shall include:
 - (1) Documentation of coordination with:
 - A. T.U. Electric Company;

- B. Lone Star Gas Company;
 - C. Southwestern Bell Telephone Company;
 - D. Sammons Cable;
 - E. Other holders of City utility franchises or licenses;
 - F. Texas Department of Transportation (if applicable);
 - G. Tarrant County Water Control and Improvement District (if applicable);
 - H. Tarrant County Department of Public Works and Transportation (if applicable);
 - I. Trinity River Authority (if applicable); and
 - J. The adjacent private property owner (if applicable);
- (2) A detailed scale drawing showing all property and improvements located within one hundred feet (100') of the proposed well installation;
 - (3) The scope and details of all well improvements, including but not limited to location and depth of the well(s), the size of the well(s), the hours of operation, and the construction details of the well(s);
 - (4) All equipment to be used in the construction, operation and maintenance of the wells;
 - (5) The names, addresses, phone numbers, and qualifications of all businesses involved in the construction, operation, and maintenance of the well(s) and;
 - (6) The length of time the well(s) will be in service;
 - (7) The procedure to remove the well(s) after they are no longer needed, including restoring the property to its original condition; and
 - (8) The monitoring procedures to be used, including frequency and time of monitoring.
- (c) After receiving the formal request, the Environmental Manager shall forward copies to the following City officials/departments for review:

- (1) City Attorney;
 - (2) Department of Risk Management;
 - (3) City Fire Chief;
 - (4) City Traffic Engineer;
 - (5) Department of Water, Engineering Services Division;
 - (6) Department of Engineering;
 - (7) Department of Development; and
 - (8) Department of Parks and Recreation (if the request will involve use of the City parks land).
- (d) The officials/departments listed in subsection (c) may provide the Environmental Manager with requirements to be imposed on the requestor, and other recommendations including alternate sites. The Environmental Manager shall review such requirements and recommendations and shall incorporate them into the use agreement to the degree practicable, but will have approval authority over the formal request. However, any wells which will be placed in City rights-of-way shall also require the approval of the City Traffic Engineer on matters of traffic safety.

Section 12.5-158. Use Agreements for Monitoring Wells.

- (a) If the formal request is approved, the Environmental Manager shall prepare a written use agreement setting forth the City's requirements, and shall deliver it to the requestor.
- (b) After the requestor returns the signed use agreement to the Environmental Manager, along with the required fee and certification of utility clearance for all city-franchised utility companies, and when applicable, the other persons named in Section 12.5-157(b)(1), the Commission, and the EPA, the Environmental Manager shall present it to the City Manager for final review. The City Manager may then approve or reject the use agreement.
- (c) The use agreement shall take the place of any permits required by the City elsewhere in this Code, to do the work allowed by the agreement.

[Sections 12.5-159 through 12.5-164 reserved]

Subdivision IV. Mitigation of Contaminated Soil

Section 12.5-165. Confirmation of Contaminated Soil.

- (a) If sub-surface environmental sampling and/or monitoring wells confirm contamination of soil within City right-of-way, property, or easements, the property owner shall notify the Environmental Manager in writing within ten (10) days after learning of the confirmation of contamination.
- (b) The property owner shall cooperate with the City in mitigating the contamination as necessary.

[Sections 12.5-166 through 12.5-199 reserved]

SUBCHAPTER A: GENERAL PROVISIONS

§§334.1 - 334.10, 334.12 - 334.18

Effective November 23, 2000

§334.1. Purpose and Applicability.

(a) Purpose. The purposes of this chapter are to:

(1) provide a comprehensive regulatory program for hazardous substance and petroleum substance underground storage tank (UST) systems, and a limited regulatory program for petroleum product aboveground storage tanks (ASTs), as prescribed by the Texas Water Code, Chapter 26, Subchapter I and Subchapter K;

(2) establish minimum standards and procedures to reasonably protect and maintain the quality of the state's groundwater and surface water resources from environmental contamination that could result from any releases of harmful substances stored in such tanks;

(3) provide for the use of risk-based corrective action; and

(4) generally provide for the protection of human health and safety, as well as the protection of the overall environment of the state.

(b) Applicability to USTs

(1) An UST system is subject to all or part of the applicable regulations in this chapter only when such system:

(A) meets the definition of UST system under §334.2 of this title (relating to Definitions);

(B) contains, has contained, or will contain a regulated substance as defined under §334.2 of this title;

(C) is not completely exempted from regulation under §334.3(a) of this title (relating to Exemptions for Underground Storage Tanks (USTs) and UST Systems); and

(D) is not completely excluded from regulation under §334.4(a) of this title (relating to Exclusions for Underground Storage Tanks (USTs) and UST Systems).

(2) The requirements and provisions in this chapter are applicable to regulated UST systems (as described in paragraph (1) of this subsection), and to the registration, self-certification, design, construction, installation, operation, testing, maintenance, upgrading, recordkeeping, reporting, removal from service, release monitoring, release reporting and corrective action (including risk-based corrective action), fee assessment, financial assurance in accordance with Chapter 37, Subchapter I of this title

(relating to Financial Assurance for Petroleum Underground Storage Tank Systems), and other applicable requirements associated with such systems, as more fully described in this chapter.

(3) The requirements and provisions in this chapter apply equally to all owners and operators of regulated UST systems (as described in paragraph (1) of this subsection), including individuals, trusts, firms, joint-stock companies, corporations, governmental corporations, partnerships, associations (including non-profit and charity organizations), states, municipalities, commissions, political subdivisions of a state, interstate bodies, consortiums, joint ventures, commercial and noncommercial entities, and the United States Government (including all of its departments), except as otherwise provided in this chapter.

(4) The following types of underground tank systems are subject to all or parts of the applicable regulations in this chapter if they meet the general qualifications for an UST system in paragraph (1) of this subsection:

(A) compartmental tanks, when at least one of the compartments is used to store regulated substances; and

(B) dual-use or multiple-use tanks which alternately store two or more substances, when at least one of the stored substances is a regulated substance.

(c) Applicability to ASTs.

(1) An AST is subject to the applicable regulations in this chapter only when such tank;

(A) meets the definition of "aboveground storage tank" in §334.2 of this title;

(B) contains, has contained, or will contain a "petroleum product" as defined in §334.2 of this title;

(C) is not exempted from regulation under §334.123 of this title (relating to Exemptions for Aboveground Storage Tanks (ASTs)); and

(D) is not excluded from regulation under §334.124 of this title (relating to Exclusions for Aboveground Storage Tanks (ASTs)).

(2) The requirements and provisions in this chapter apply to regulated ASTs, and to the registration, installation notification, reporting, recordkeeping, release reporting and corrective action (including risk-based corrective action), fee assessment, and other applicable requirements associated with such tanks, as more fully described in this chapter.

(3) The applicable requirements and provisions in this chapter shall apply equally to all owners and operators of regulated ASTs, including individuals, trusts, firms, joint-stock companies, corporations, governmental corporations, partnerships, associations (including nonprofit and charity organizations), states, municipalities, commissions, political subdivisions of a state, interstate bodies,

consortiums, joint ventures, commercial and noncommercial entities, and the United States government (including all of its departments), except as otherwise provided in this chapter.

(4) The following types of ASTs are subject to the applicable regulations in this chapter if they meet the general qualifications for an AST in paragraph (1) of this subsection:

(A) compartmental tanks, when at least one of the compartments is used to store petroleum products; and

(B) dual-use or multiple-use tanks which alternately store two or more substances when at least one of the stored substances is a petroleum product;

(5) If a storage tank containing a petroleum product technically meets the definitions of both an AST and an UST under this chapter, then the tank will be considered an UST, and must conform with all applicable requirements for USTs in this chapter.

(6) Consistent with the exemption for heating oil tanks in §334.123(a)(2) of this title, an AST storing a petroleum product (such as kerosene or diesel) which is primarily used as a heating oil substitute for heating purposes on the premises where stored, and which is secondarily used as a motor fuel for the operation of internal combustion engines, is exempt from the regulations of this chapter.

(d) Applicability of specific sections to USTs and ASTs.

(1) USTs are subject to all the applicable provisions of this chapter, except Subchapter F of this chapter (relating to Aboveground Storage Tanks). Underground petroleum storage tanks are also subject to all applicable provisions of Chapter 37, Subchapter I of this title.

(2) ASTs are subject to all the applicable provisions of this chapter, except:

(A) §334.3 of this title (relating to Exemptions for Underground Storage Tanks (USTs) and UST Systems), §334.4 of this title (relating to Exclusions for Underground Storage Tanks (USTs) and UST Systems), §334.5 of this title (relating to General Prohibitions for Underground Storage Tanks (USTs) and UST Systems), §334.6 of this title (relating to Construction Notification for Underground Storage Tanks (USTs) and UST Systems), §334.7 of this title (relating to Registration for Underground Storage Tanks (USTs) and UST Systems), §334.8 of this title (relating to Certification for Underground Storage Tanks (USTs) and UST Systems), and §334.9 of this title (relating to Seller's Disclosure), and §334.10 of this title (relating to Reporting and Recordkeeping);

(B) Subchapter B of this chapter (relating to Underground Storage Tank Fees);

(C) Subchapter C of this chapter (relating to UST Technical Standards); and

(D) Subchapter I of this chapter (relating to Underground Storage Tank Contractor Registration and Installer Licensing).

Adopted November 1, 2000

Effective November 23, 2000

§334.2. Definitions.

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise.

(1) **Abandonment in-place** - A method of permanent removal of an underground storage tank (UST) from service where the tank is left in the ground after appropriate preparation and filling with an acceptable solid inert material in accordance with the requirements of §334.55 of this title (relating to Permanent Removal From Service).

(2) **Abatement** - The process of reducing in sufficient degree or intensity the source of the release or impacted area, and potential fire, explosion, or vapor hazards, such that immediate threats to human health no longer exist. This includes the removal, as necessary, of all regulated substances from any confirmed or suspected release source (including associated aboveground or underground tanks, individual tank compartments, or associated piping) and the removal of phase-separated regulated substances from the impacted area.

(3) **Aboveground release** - Any release to the surface of the land or to surface water, including, but not limited to, releases from the aboveground portion of an UST system and releases associated with overfills and transfer operations during the dispensing, delivering, or removal of regulated substances into or out of an UST system.

(4) **Aboveground storage tank (AST)** - A non-vehicular device, (including any associated piping), that is made of non-earthen materials; located on or above the surface of the ground, or on or above the surface of the floor of a structure below ground, such as mineworking, basement, or vault; and designed to contain an accumulation of petroleum products.

(5) **ACT** - A trademark of the former Association for Composite Tanks, now a licensed trademark of the Steel Tank Institute.

(6) **Allowable cost** - As defined by Subchapter H, §334.308 of this title (relating to Allowable Costs and Restrictions on Allowable Costs).

(7) **Ancillary equipment** - Any devices that are used to distribute, meter, or control the flow of petroleum substances or hazardous substances into or out of an UST, including, but not limited to, piping, fittings, flanges, valves, and pumps.

(8) **ANSI** - American National Standards Institute, a nationally recognized organization which provides certifications and standards for consumer products and services.

(9) **API** - American Petroleum Institute, a nationally recognized organization which provides certifications and standards for petroleum equipment and services.

(10) **Appropriate regional office** - The agency's regional field office which has jurisdiction for conducting authorized agency regulatory activities in the area where a particular UST system or AST system is located.

(11) **ASTM** - American Society of Testing and Materials, a nationally recognized organization which provides certifications and standards for products and services.

(12) **Backfill** - The volume of materials or soils surrounding the UST bounded by the ground surface, walls, and floor of the tank pit.

(13) **Below-ground release** - Any release to the subsurface of the land or to groundwater, including, but not limited to, releases from the below-ground portions of an UST system and releases associated with overfills and transfer operations during the dispensing, delivering, or removal of regulated substances into or out of an UST system.

(14) **Beneath the surface of the ground** - Beneath the ground surface or otherwise covered with materials so that visual inspection is precluded.

(15) **Cathodic protection** - A technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell, normally by means of either the attachment of galvanic anodes or the application of impressed current.

(16) **CERCLA** - The federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.

(17) **Change-in-service** - A method of permanent removal from service involving the permanent conversion of a regulated UST to a tank which is not regulated under this chapter, where all regulated substances are properly removed by emptying and cleaning, and the tank is left in the ground for the storage of materials other than regulated substances.

(18) **Closure letter** - A letter issued by the agency which states that, based on the information available, the agency agrees that corrective action has been completed for the referenced release in accordance with agency requirements.

(19) **Commingled** - A combination or mixture of a petroleum product and a substance other than a petroleum product (excluding soil and/or water).

(20) **Common carrier** - With respect to delivery prohibitions, a person (as defined in this section) who physically delivers a regulated substance into an UST directly from a cargo tank which is affixed or mounted to a self-propelled, towable, or pushable vehicle (e.g., wagon, truck, trailer, railcar, aircraft, boat, or barge).

(21) **Composite tank** - A single-wall or double-wall steel tank, to which a fiberglass-reinforced plastic laminate or cladding has been factory-applied to the external surface of the outer tank wall.

(22) **Consumptive use** - (With respect to heating oil) the utilization and consumption of heating oil on the premises where stored.

(23) **Corporate Fiduciary** - An entity chartered by the Banking Department of Texas, the Savings and Loan Department of Texas, the United States comptroller of the currency, or the director of the United States Office of Thrift Supervision that acts as a receiver, conservator, guardian, executor, administrator, trustee, or fiduciary of real or personal property.

(24) **Corrective action** - Any assessment, monitoring, and remedial activities undertaken to investigate the extent of, and to remediate, contamination.

(25) **Corrective action plan (or remedial action plan)** - A detailed plan developed to address site remediation of soil, groundwater, or surface water contamination that provides for required protection of human health, safety, and the environment. The selection of the most effective and efficient remedial method will be dictated by the nature and location of the release, the site soils, hydrogeological conditions, and the required degree of remediation. The remedial method selection should take into consideration such factors as cost, time, and state compliance requirements with each method. The title of any report which contains a corrective action plan must include the designation "remedial action plan."

(26) **Corrosion specialist** - A person who, by reason of a thorough knowledge of the physical sciences and the principals of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks, and who is either:

(A) certified as a corrosion specialist or a cathodic protection specialist by NACE International; or

(B) licensed as a professional engineer by the Texas Board of Professional Engineers in a branch of engineering that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks.

(27) **Corrosion technician** - A person who can demonstrate an understanding of the principals of soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements as relate to corrosion protection and control on buried or submerged metal tanks and metal piping systems; who is qualified by appropriate training and experience to engage in the practice of inspection and testing for corrosion protection and control on such systems, including the inspection and testing of all common types of cathodic protection systems; and who either:

(A) has been certified by NACE International as a corrosion technician, corrosion technologist, or senior corrosion technologist;

(B) is employed under the direct supervision of a corrosion specialist (as defined in this section), where the corrosion specialist maintains responsible control and oversight over all corrosion testing and inspection activities; or

(C) has been officially qualified as a cathodic protection testor, in strict accordance with the assessment and examination procedures prescribed by NACE International.

(28) **Date installation is complete** - The date any regulated substance is initially placed in an UST or the date any petroleum product is initially placed in an AST.

(29) **Dielectric material** - A material that does not conduct direct electrical current, as related to coatings, bushings, and other equipment and materials used with UST systems.

(30) **Electrical equipment** - Underground equipment which contains dielectric fluid which is necessary for the operation of equipment such as transformers and buried electrical cable.

(31) **Emergency generator** - A standby electrical generating system powered by an internal combustion engine (including a turbine), where such system is designed to supply temporary electrical service only when service from the normal or primary electrical source is disrupted. Such systems include, but are not necessarily limited to, those providing emergency electrical service for hospitals, life support systems, and other medical service facilities; telephone and electrical utilities; heating, lighting, ventilation, security, elevator, fire control, and other essential building operations systems; uninterruptible power systems; essential air conditioning and refrigeration; and motors, machinery, and controls used for other essential or critical purposes.

(32) **Excavation zone** The space containing the UST system and backfill material, which is bounded by the ground surface and the walls and floor of the pit and trenches into which the UST system is placed at the time of installation.

(33) **Existing UST system** - An UST system which is used or designed to contain an accumulation of regulated substances for which installation either had commenced prior to December 22, 1988, or had been completed on or prior to December 22, 1988. Installation will be considered to have commenced if the owner or operator had obtained all federal, state, and local approvals or permits necessary to begin physical construction at the site or installation of the tank system, and if either a continuous on-site physical construction or installation program had begun or the owner or operator had entered into contractual obligations (which could not be canceled or modified without substantial loss) which required that the physical construction at the site or installation of the tank system was to be completed within a reasonable time.

(34) **External release detection** - A method of release detection which includes equipment or procedures designed to effectively monitor or measure for the presence of regulated substances in the excavation zone, soil, or other media outside of a single-wall or double-wall UST system.

(35) **Facility** - The site, tract, or other defined area where one or more UST systems or one or more AST systems are located.

(36) **Farm** - A tract or tracts of land (including all associated structures and improvements) which are principally devoted to the raising of agricultural or other types of crops, domestic or other types of animals, or fish for the production of food, fiber, or other products or for other useful purposes, including fish hatcheries, rangeland, and plant nurseries with growing operations, but not including timber-growing land and operations dedicated primarily to recreational, aesthetic, or other non-agricultural activities (e.g., golf courses and parks).

(37) **Farm tank** - A tank located on a farm where the stored regulated substance is or will be utilized directly in the farm activities.

(38) **Field-constructed tank** - A tank which is not factory-assembled, and which is principally constructed, fabricated, or assembled at the same facility where the tank is subsequently placed into service.

(39) **Flow-through process tank** - A tank through which regulated substances flow in a steady, variable, recurring, or intermittent manner during, and as an integral part of, a production process (such as petroleum refining, chemical production, and industrial manufacturing), but specifically excluding any tank used for the static storage of regulated substances prior to their introduction into the production process and any tank used for the static storage of regulated substances which are products or by-products of the production process.

(40) **Free-product (or non-aqueous phase liquid)** - A regulated substance in its free-flowing non-aqueous liquid phase at standard conditions of temperature and pressure (e.g., liquid not dissolved in water).

(41) **Gathering lines** - Any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production or gathering operations.

(42) **Hazardous substance** - Any substance defined or listed in the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), §101(14), (42 United States Code §9601, et seq.), and which is not regulated as a hazardous waste under the federal Solid Waste Disposal Act, Subtitle C, (42 United States Code §6921, et seq.).

(43) **Hazardous substance UST system** - An UST system that contains an accumulation of either a hazardous substance, a mixture of two or more hazardous substances, or a mixture of one or more petroleum substances with one or more hazardous substances, and which does not meet the definition of a petroleum UST system in this section.

(44) **Heating oil** - A petroleum substance which is typically used in the operation of heating, boiler, or furnace equipment and which either is one of the following seven technical grades of fuel oil: Number 1, Number 2, Number 4-light, Number 4-heavy, Number 5-light, Number 5-heavy, and Number 6; is a residual fuel oil derivative of the refining process (such as Navy Special and Bunker C residual fuel oils); or is another fuel (such as kerosene or diesel) used for heating purposes as a substitute for one of the above fuel oils or residual fuel oil derivatives.

(45) **Hydraulic fluid** - Any regulated substance that is normally used in a hydraulic lift system.

(46) **Hydraulic lift tank** - A tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air and hydraulic fluid to operate lifts, elevators, or other similar devices.

(47) **Impressed current system** - A method of cathodic protection where a rectifier is used to convert alternating current to direct current, where the current then flows in a controlled electrically connected circuit to non-sacrificial anodes, then through the surrounding soil or backfill to the protected metallic structure or component, and back to the rectifier.

(48) **In operation** - The description of an in-service UST which is currently being used on a regular basis for its intended purpose.

(49) **In service** - The status of an UST beginning at the time that regulated substances are first placed into the tank and continuing until the tank is permanently removed from service by means of either removal from the ground, abandonment in-place, or change-in-service. An in-service UST may or may not contain regulated substances, and may be either in operation or out of operation at any specific time.

(50) **Installer** - A person who participates in or supervises the installation, repair, or removal of USTs.

(51) **Inventory control** - Techniques used to identify a loss of product that are based on volumetric measurements in the tank and reconciliation of those measurements with product delivery and withdrawal records.

(52) **Jacketed tank** - A factory-constructed tank consisting of a single-wall or double-wall steel internal (or primary) tank that is completely enclosed in an external secondary-containment jacket made of noncorrodible material, and which is designed so that releases of stored substances from the internal tank can be contained and monitored within a liquid-tight interstitial space between the internal tank and the external jacket.

(53) **Lender** - A state or national bank; a state or federal savings bank; a credit union; a state or federal savings and loan association; a state or federal government agency that customarily provides financing; or an entity that is registered with the Office of Consumer Credit Commissioner pursuant to Chapter 7, Title 79, Revised Statutes (Texas Civil Statutes, Article. 5069-7.01, et seq.) if the entity is regularly engaged in the business of extending credit and if extending credit represents the majority of the entity's total business activity.

(54) **Liquid trap** - A collection device (such as a sump, well cellar, and other trap) which is used in association with oil and gas production, gathering, and extraction operations (including gas production plants) for the purpose of collecting oil, water, and other liquids, and which either may

temporarily collect liquids for subsequent disposition or reinjection into a production or pipeline stream, or may collect and separate liquids from a gas stream.

(55) **Leaking petroleum storage tank (LPST) site** - A site at which a confirmed release of a petroleum substance from an UST or AST has occurred. Petroleum substance contamination which results from multiple sources may be deemed as one LPST site by the agency.

(56) **Maintenance** - The normal and routine operational upkeep of UST systems necessary for the prevention of releases of stored regulated substances.

(57) **Monitoring well** - An artificial excavation constructed to measure or monitor the quantity or movement of substances, elements, chemicals, or fluids below the surface of the ground. The term does not include any monitoring well which is used in conjunction with the production of oil, gas, or any other minerals.

(58) **Motor fuel** - A petroleum substance which is typically used for the operation of internal combustion engines (including stationary engines and engines used in motor vehicles, aircraft, and marine vessels), and which is one of the following types of fuels: motor gasoline, aviation gasoline, Number 1 diesel fuel, Number 2 diesel fuel, or gasohol.

(59) **NACE** - NACE International (formerly National Association of Corrosion Engineers), a nationally recognized organization which provides certifications and standards for corrosion protection services.

(60) **New UST system** - An UST system which is used or designed to contain an accumulation of regulated substances for which installation commenced after December 22, 1988; or an underground storage system which is converted from the storage of materials other than regulated substances to the storage of regulated substances after December 22, 1988.

(61) **NFPA** - National Fire Protection Association, a nationally recognized organization which provides certifications and standards for fire protection equipment and services.

(62) **Non-aqueous phase liquid (NAPL)** - See "Free product (or non-aqueous phase liquid)" as defined in this section.

(63) **Non-commercial purposes** - (With respect to motor fuel) all purposes except resale.

(64) **Noncorrodible material** - A material used in the construction, maintenance, or upgrading of any component of an UST system which is designed to retain its physical and chemical properties without significant deterioration or failure for the operational life of the UST system when placed in contact with (and subjected to the resulting electrical and chemical forces associated with) any surrounding soil, backfill, or groundwater, any connected components constructed of dissimilar material, or the stored regulated substance.

(65) **Observation well** - A monitoring well or other vertical tubular structure which is constructed, installed, or placed within any portion of a UST excavation zone (including the tank hole and piping trench), and which is designed or used for the observation or monitoring of groundwater, or for the observation, monitoring, recovery, or withdrawal of either released regulated substances (in liquid or vapor phase) or groundwater contaminated by such released regulated substances.

(66) **Occurrence** - An incident, including continuous or repeated exposure to conditions, which results in a release from an UST or AST or tank system.

(67) **On the premises where stored** - (With respect to heating oil) refers to the consumptive use of heating oil on the same property or site where the heating oil is stored.

(68) **Operational life** - The actual or anticipated service life of an UST system, which begins when regulated substances are first placed into the tank system and which continues until the tank system is permanently removed from service by means of either removal from the ground, abandonment in-place, or change-in-service.

(69) **Operator** - Any person in day-to-day control of, and having responsibility for the daily operation of the UST system or the AST system, as applicable.

(70) **Out of operation** - The description of an in-service UST which is not currently being used on a regular basis for its intended purpose.

(71) **Overfill** - A release that occurs when an UST system is filled beyond its capacity, thereby resulting in a discharge of a regulated substance to the surface or subsurface environment.

(72) **Owner** - Any person who currently holds legal possession or ownership of a total or partial interest in an UST system or an AST. For the purposes of this chapter, where the actual ownership of an UST system or an AST is either uncertain, unknown, or in dispute, the fee simple owner of the surface estate where the UST system or the AST is located shall be considered the UST system or AST owner, unless the owner of the surface estate can demonstrate by appropriate documentation (deed reservation, invoice, bill of sale, etc.) or by other legally-acceptable means that the UST system or AST is owned by others. Except as otherwise provided by the Texas Water Code, §§26.3514 - 26.3516, owner does not include a person who holds an interest in an UST system or AST solely for financial security purposes unless, through foreclosure or other related actions, the holder of such security interest has taken legal possession of the UST system or AST.

(73) **PEI** - Petroleum Equipment Institute, a nationally recognized organization which provides certifications and standards for petroleum equipment and services.

(74) **Permanent removal from service** - The termination of the use and the operational life of an UST by means of either removal from the ground, abandonment in-place, or change-in-service.

(75) **Person** - An individual, trust, firm, joint-stock company, corporation, government corporation, partnership, association, state, municipality, commission, political subdivision of a state, an interstate body, a consortium, joint venture, commercial entity, or the United States government.

(76) **Petroleum marketing facilities** - All facilities at which a petroleum substance is produced or refined and all facilities from which a petroleum substance is sold or transferred to other petroleum substance marketers or to the public.

(77) **Petroleum marketing firms** - All firms owning petroleum marketing facilities. Firms owning other types of facilities with USTs as well as petroleum marketing facilities are considered to be petroleum marketing firms.

(78) **Petroleum product** - A petroleum substance obtained from distilling and processing crude oil that is liquid at standard conditions of temperature and pressure, and that is capable of being used as a fuel for the propulsion of a motor vehicle or aircraft, including but not limited to motor gasoline, gasohol, other alcohol blended fuels, aviation gasoline, kerosene, distillate fuel oil, and Number 1 and Number 2 diesel. The term does not include naphtha-type jet fuel, kerosene-type jet fuel, or a petroleum product destined for use in chemical manufacturing or feedstock of that manufacturing.

(79) **Petroleum substance** - A crude oil or any refined or unrefined fraction or derivative of crude oil which is liquid at standard conditions of temperature and pressure (except for any substance regulated as a hazardous waste under the federal Solid Waste Disposal Act, Subtitle C, (42 United States Code §6921, et seq.)). For the purposes of this chapter, a petroleum substance is limited to one or a combination of the substances or mixtures in the following list:

- (A) basic petroleum substances - crude oils, crude oil fractions, petroleum feedstocks, and petroleum fractions;
- (B) motor fuels - (see definition for "motor fuel" in this section);
- (C) aviation gasolines - Grade 80, Grade 100, and Grade 100-LL;
- (D) aviation jet fuels - Jet A, Jet A-1, Jet B, JP-4, JP-5, and JP-8;
- (E) distillate fuel oils - Number 1-D, Number 1, Number 2-D, and Number 2;
- (F) residual fuel oils - Number 4-D, Number 4-light, Number 4, Number 5-light, Number 5-heavy, and Number 6;
- (G) gas-turbine fuel oils - Grade O-GT, Grade 1-GT, Grade 2-GT, Grade 3-GT, and Grade 4-GT;
- (H) illuminating oils - kerosene, mineral seal oil, long-time burning oils, 300 oil, and mineral colza oil;

(I) solvents - Stoddard solvent, petroleum spirits, mineral spirits, petroleum ether, varnish makers' and painters' naphthas, petroleum extender oils, and commercial hexane;

(J) lubricants - automotive and industrial lubricants;

(K) building materials - liquid asphalt and dust-laying oils;

(L) insulating and waterproofing materials - transformer oils and cable oils; or

(M) used oils - (see definition for "used oil" in this section).

(80) **Petroleum UST system** - An UST system that contains, has contained, or will contain a petroleum substance (as defined in this section), a mixture of two or more petroleum substances, or a mixture of one or more petroleum substances with very small amounts of one or more hazardous substances. In order for an UST system containing a mixture of petroleum substances with small amounts of hazardous substances to be classified as a petroleum UST system, the hazardous substance must be at such a dilute concentration that the overall release detectability, effectiveness of corrective action, and toxicity of the basic petroleum substance is not altered to any significant degree.

(81) **Pipeline facilities (including gathering lines)** - New and existing pipeline rights-of-way, including any equipment, facilities, or buildings therein which are used in the transportation or associated treatment (during transportation) of gas or hazardous liquids (which include petroleum and other liquids as designated by the Secretary of the United States Department of Transportation), and which are regulated under the federal Natural Gas Pipeline Safety Act of 1968 (49 United States Code App. 1671, et seq.); the federal Hazardous Liquid Pipeline Safety Act of 1979 (49 United States Code App. 2001, et seq.); or (for intrastate pipeline facilities) the Texas Natural Resources Code, Chapters 111 or 117, or Texas Civil Statutes, Articles 6053-1 and 6053-2.

(82) **Piping** - All underground pipes in an UST system, including valves, elbows, joints, flanges, flexible connectors, and other fittings attached to a tank system through which regulated substances flow or in which regulated substances are contained or stored.

(83) **Piping trench** - The portion of the excavation zone at an UST facility which contains the piping system and associated backfill materials.

(84) **Pressurized piping** - Product or delivery piping in an UST system which typically operates at greater than atmospheric pressure.

(85) **Professional engineer** - A person who is currently duly licensed by the Texas Board of Professional Engineers to engage in the practice of engineering in the State of Texas.

(86) **Qualified personnel** - Persons who possess the appropriate competence, skills, and ability (as demonstrated by sufficient education, training, experience, and/or, when applicable, any required certification or licensing) to perform a specific activity in a timely and complete manner consistent with the applicable regulatory requirements and generally accepted industry standards for such activity.

(87) **Radioactive materials** - Radioactive substances or radioactive waste materials (e.g., high-level radioactive wastes and low-level radioactive cooling waters) which are classified as hazardous substances under the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), §101(14), 42 United States Code §9601, et seq., except for radioactive materials regulated as a hazardous waste under the federal Solid Waste Disposal Act, Subtitle C, 42 United States Code §6921, et seq.

(88) **Regulated substance** - An element, compound, mixture, solution, or substance that, when released into the environment, may present substantial danger to the public health, welfare, or the environment. For the purposes of this chapter, a regulated substance is limited to any hazardous substance (as defined in this section), any petroleum substance (as defined in this section), any mixture of two or more hazardous substances and/or petroleum substances, and any other substance designated by the commission to be regulated under the provisions of this chapter.

(89) **Release** - Any spilling including overfills, leaking, emitting, discharging, escaping, leaching, or disposing from an UST or AST into groundwater, surface water, or subsurface soils.

(90) **Release detection** - The process of determining whether a release of a regulated substance is occurring or has occurred from an UST system.

(91) **Repair** - The restoration, renovation, or mending of a damaged or malfunctioning tank or UST system component.

(92) **Residential tank** - A tank located on property used primarily for dwelling purposes.

(93) **Retail service station** - A facility where flammable liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles and where such dispensing is an act of retail sale.

(94) **Risk-based corrective action** - Site assessment or site remediation, the timing, type, and degree of which is determined according to case-by-case consideration of actual or potential risk to public health from environmental exposure to a regulated substance released from a leaking UST or AST.

(95) **Secondary containment** - A containment method by which a secondary wall, jacket, or barrier is installed around the primary storage vessel (e.g., tank or piping) in a manner designed to prevent a release from migrating beyond the secondary wall or barrier before the release can be detected. Secondary containment systems include, but are not limited to: double-wall tank and/or piping systems, and impervious liners, jackets, containment boots, sumps, or vaults surrounding a primary (single-wall) tank and/or piping system.

(96) **Septic tank** - A water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer.

(97) **Spill** - A release of a regulated substance which results during the filling, placement, or transfer of regulated substances into an UST or during the transfer or removal of regulated substances from an UST system.

(98) **Standard conditions of temperature and pressure** - A temperature of 60 degrees Fahrenheit and an atmospheric pressure of 14.7 pounds per square inch absolute.

(99) **STI** - Steel Tank Institute, a nationally recognized organization which provides certifications and standards for steel tanks.

(100) **Stormwater collection system** - The piping, pumps, conduits, and any other equipment necessary to collect and transport surface water runoff resulting from precipitation to and from retention areas and into natural or man-made drainage channels.

(101) **Suction piping** - Product or delivery piping in an UST system which typically operates below atmospheric pressure.

(102) **Sump** - Any man-made pit or reservoir that meets the definition of a tank (including any connected troughs or trenches) that serves to collect and temporarily store regulated substances.

(103) **Surface impoundment** - A natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (but possibly lined with man-made materials) that is designed to hold an accumulation of regulated substances.

(104) **Tank** - A stationary device (generally exclusive of any associated ancillary equipment) designed or used to contain an accumulation of regulated substances which is constructed of a non-earthen material (e.g., concrete, steel, or plastic) that provides structural support.

(105) **Tank hole** - The portion of the excavation zone at an UST facility which contains the tanks and associated backfill materials.

(106) **Tank system** - An UST system.

(107) **Temporary removal from service** - The procedure by which an UST system may be temporarily taken out of operation without being permanently removed from service.

(108) **Tightness test (or tightness testing)** - A procedure for testing and analyzing a tank or piping system to determine whether the system(s) is capable of preventing the inadvertent release of a stored substance into the environment.

(109) **UL** - Underwriters Laboratories, Inc., a nationally recognized organization which provides certifications and standards for consumer products and services.

(110) **Underground area** - An underground room, basement, cellar, shaft, or vault, which provides enough space for physical inspection of the exterior of a tank or tank system situated on or above the surface of the floor.

(111) **Underground storage tank** - Any one or combination of underground tanks and any connecting underground pipes used to contain an accumulation of regulated substances, the volume of which, including the volume of the connecting underground pipes, is 10% or more beneath the surface of the ground.

(112) **Underground storage tank system** - An UST, all associated underground piping and underground ancillary equipment, spill and overfill prevention equipment, release detection equipment, corrosion protection system, secondary containment equipment (as applicable), and all other related systems and equipment.

(113) **Unsaturated zone** - The subsurface zone containing water under pressure less than that of the atmosphere (including water held by capillary forces within the soil) and containing air or gases generally under atmospheric pressure. This zone is bounded at the top by the ground surface and at the bottom by the upper surface of the zone of saturation (i.e., the water table).

(114) **Upgrading** - The addition, improvement, retrofitting, or renovation of an existing UST system with equipment or components as required to meet the corrosion protection, spill and overfill prevention, and release detection requirements of this chapter.

(115) **Used oil** - Any oil or similar petroleum substance that has been refined from crude oil, used for its designed or intended purposes, and contaminated as a result of such use by physical or chemical impurities; and including spent motor vehicle and aircraft lubricating oils (e.g., car and truck engine oil, transmission fluid, and brake fluid), spent industrial oils (e.g., compressor, turbine, bearing, hydraulic, metalworking, gear, electrical, and refrigerator oils), and spent industrial process oils.

(116) **UST** - An underground storage tank (as defined in this section).

(117) **UST system** - An underground storage tank system (as defined in this section).

(118) **Vent lines** - All pipes including valves, elbows, joints, flanges, flexible connectors, and other fittings attached to a tank system, which are intended to convey the vapors emitted from a regulated substance stored in an UST to the atmosphere.

(119) **Wastewater collection system** - The piping, pumps, conduits, and any other equipment necessary to collect and transport domestic, commercial, or industrial wastewater to and from any facilities or areas where treatment of such wastewater is designated to occur.

(120) **Wastewater treatment tank** - A tank that is designed to receive and treat an influent wastewater through physical, chemical, or biological methods.

Adopted November 1, 2000

Effective November 23, 2000

§334.3. Exemptions for Underground Storage Tanks (USTs) and UST Systems.

(a) Complete exemption. The following underground tanks and containment devices (including any connected piping) are completely exempt from regulation under this chapter:

- (1) farm or residential tank with a capacity of 1,100 gallons or less used for storing motor fuel for noncommercial purposes;
- (2) tanks used for storing heating oil for consumptive use on the premises where stored;
- (3) septic tank;
- (4) surface impoundments, pits, ponds, or lagoons;
- (5) stormwater or wastewater collection systems;
- (6) flow-through process tanks;
- (7) tanks, liquid traps, gathering lines, or other facilities used in connection with an activity associated with the exploration, development, or production of oil, gas, or geothermal resources, or any other activity regulated by the Railroad Commission of Texas pursuant to the Natural Resources Code, §91.101;
- (8) transformers or other electrical equipment that contains a regulated substance and that is used in the transmission of electricity, to the extent that such a transformer or equipment is exempted by the United States Environmental Protection Agency under Title 40 Code of Federal Regulations, Part 280;
- (9) storage tanks located in an underground area, including a basement, cellar, mineworking, drift, shaft, or tunnel, if the storage tank is located on or above the surface of the floor;
- (10) pipeline facilities, including gathering lines, if such facilities are regulated under:
 - (A) the Natural Gas Pipeling Safety Act of 1968 (49 United States Code, §1671, et seq.); or
 - (B) the Hazardous Liquid Pipeline Safety Act of 1979 (49 United States Code, §2001, et seq.);
- (11) interstate pipeline facilities if such facilities are regulated under of the following state laws:
 - (A) the Natural Resources Code, Chapter 111;

(B) the Natural Resources Code, Chapter 117; or

(C) Texas Civil Statutes, Articles 6053-1 and 6053-2.

(b) Partial exemption. As provided under the Texas Water Code (TWC), §26.344(e), in-ground hydraulic lifts that use a compressed air/hydraulic fluid system and which hold less than 100 gallons of hydraulic oil are exempt from regulation under this chapter, except that such lifts remain subject to the release reporting and corrective action requirements under the TWC, §26.351, and Subchapter D of this chapter (relating to Release Reporting and Corrective Action).

(c) Upon request by the agency, the owner and operator of a tank claimed to be exempted under this section must provide appropriate documentation or other information in a timely manner to support that claim.

Adopted November 1, 2000

Effective November 23, 2000

§334.4. Exclusions for Underground Storage Tanks (USTs) and UST Systems.

(a) Complete exclusions. In addition to the tanks exempted from regulation under §334.3 of this title (relating to Exemptions for Underground Storage Tanks (USTs) and UST Systems), the following USTs are completely excluded from regulation under this chapter:

(1) any UST system containing a hazardous listed waste or identified under the federal Solid Waste Disposal Act, Subtitle C, (42 United States Code §6921, et seq.), or containing a mixture of such hazardous waste and other regulated substances, where such system is already subject to regulation under the federal Solid Waste Disposal Act, Subtitle C;

(2) any wastewater treatment tank (including an oil-water separator and any pretreatment facility), which is an integral part of a wastewater treatment facility which is either:

(A) permitted under the federal Clean Water Act, either §402 or §307(b), (33 United States Code §1251, et seq.); or

(B) permitted pursuant to the Texas Water Code, Chapter 26;

(3) sumps which have a capacity of less than 110 gallons;

(4) emergency spill protection or emergency overflow containment tanks, including certain sumps and secondary containment systems, which are used solely for the temporary storage or containment of regulated substances resulting from a leak, spill, overflow, or other unplanned release, and where the regulated substances are routinely removed within 48 hours of the discovery of the release; provided that such tanks must be inspected for a release no less than once every month;

(5) UST systems which during their entire operational life have exclusively contained only regulated substances at such dilute concentrations that any release would not pose any significant threat to human health and safety or the environment.

(b) Partial exclusions. The following USTs are subject to all provisions of this chapter, except for Subchapter C of this chapter (relating to Technical Standards), Chapter 37, Subchapter I of this title (relating to Financial Assurance for Petroleum Underground Storage Tank Systems), and the certification requirements of §334.8 of this title (relating to Certification for Underground Storage Tanks (USTs) and UST Systems).

(1) any wastewater treatment tank (including oil-water separators), where such tank is not an integral part of a wastewater treatment facility which is either:

(A) permitted under the federal Clean Water Act, either §402 or §307(b), (33 United States Code §1151, et seq.); or

(B) permitted pursuant to the Texas Water Code, Chapter 26;

(2) any UST system that contains radioactive substances, where such system is regulated by the federal Nuclear Regulatory Commission (or its successor) under the provisions of the Atomic Energy Act of 1954 (42 United States Code §2011, et seq.);

(3) any UST system that contains fuel used solely to power an emergency electrical generator system at a nuclear power generation system facility regulated by the federal Nuclear Regulation Commission (or its successor) under the provisions of the Title 10 Code of Federal Regulations, Part 50, Appendix A.

(c) Other exclusion. In addition to the partial exemption for hydraulic lifts covered under §334.3(b) of this title, all other in-ground hydraulic lifts that use a compressed air/hydraulic fluid system and which hold 100 gallons or more of hydraulic oil are similarly excluded from regulation under this chapter, except that such lifts remain subject to the release reporting and corrective action requirements under Subchapter D of this chapter (relating to Release Reporting and Corrective Action).

(d) Upon request by the agency, the owner and operator of a tank claimed to be excluded under this section must provide appropriate documentation or other information in a timely manner to support that claim.

Adopted November 1, 2000

Effective November 23, 2000

§334.5. General Prohibitions for Underground Storage Tanks (USTs) and UST Systems.

(a) Design prohibitions. On or after September 1, 1987, no person may install or have installed an underground storage tank (UST) system for the purpose of storing or otherwise containing regulated substances unless such UST system, whether of single-wall or double-wall construction, meets the following standards.

(1) The UST system must prevent releases due to corrosion or structural failure for the operational life of the UST system

(2) All components of the UST system must be either cathodically protected against corrosion, constructed of noncorrodible material, constructed of a steel material which has been clad with a noncorrodible material, or must be otherwise designed and constructed in a manner that prevents the release of any stored substances.

(3) The UST system must be constructed of or lined with a material that is compatible with the stored substance.

(b) Delivery prohibitions.

(1) Concerning UST systems which the tank owner or operator must self-certify under §334.8(c) of this title (relating to Certification for Underground Storage Tanks (USTs) and UST Systems):

(A) Except as provided under subparagraphs (B) and (C) of this paragraph, no common carrier (as defined in §334.2 of this title (relating to Definitions)) shall deposit any regulated substance into a UST system regulated under this chapter unless he observes that the owner or operator has a valid, current delivery certificate issued by the agency covering that UST system.

(B) For new or replacement UST systems, only during the initial period ending 90 days after the date that a regulated substance is first deposited into the new or replacement system(s), a common carrier may accept, as adequate to meet the requirements of subsection (a) of this section, documentation that the owner or operator has a "temporary delivery authorization," as defined in §334.8(c)(5)(D) of this title, issued by the agency for the facility at which the new or replacement UST system(s) exist.

(C) The requirement to observe a delivery certificate before delivering to an UST system regulated under §334.8(c)(2) of this title will phase-in according to the same schedule found in that section.

(D) If in the exercise of good faith, a common carrier who deposits a regulated substance into an UST system is first presented with an apparently valid, current TNRCC delivery certificate (or temporary delivery authorization, if applicable) represented by the UST system owner or operator to meet the requirements of subsection (a) of this section, this will be considered prima facie evidence of compliance by that common carrier with this subparagraph.

(2) Concerning UST systems which are not required to be self-certified compliant at a given time under §334.8(c) of this title, but which are required to be registered under §334.7 of this title (e.g. tanks which have not yet "phased-in" to the compliance self-certification program under the schedule in §334.8(c)(2) of this title):

(A) Except as provided under subparagraph (B) of this paragraph, no person (as defined in §334.2 of this title) shall deposit any regulated substance into a UST system regulated under this

chapter unless he observes that the owner or operator has a valid, current registration certificate issued by the agency covering that UST system.

(B) The prohibition referenced in subparagraph (A) of this paragraph is not applicable to deliveries into a new or replacement UST system occurring within 30 days of the first deposit of regulated substances.

(3) Concerning both types of delivery prohibition referenced in this subsection, the following documentation can be accepted as adequate:

(A) the original valid, current document issued by the agency; or

(B) a legible copy of the valid, current document issued by the agency.

Adopted November 1, 2000

Effective November 23, 2000

§334.6. Construction Notification for Underground Storage Tanks (USTs) and UST Systems.

(a) General requirements.

(1) Beginning September 1, 1987, any person who intends either to install a new or replacement underground storage tank (UST), to remove an UST from the ground, or to conduct a permanent abandonment in-place of an UST must comply with the notification requirements of this section prior to initiating such activity.

(2) On or after September 29, 1989, any person who intends to perform any construction activity listed in subsection (b)(1) of this section must comply with the notification requirements of this section prior to initiating such activity.

(3) In addition to the construction notification requirements of this section, the owner or operator of an existing or proposed UST system that is located or will be located in the designated recharge zone or transition zone of the Edwards Aquifer must also secure the requisite approval from the agency prior to conducting certain regulated UST activities, as prescribed under Chapter 213 of this title (relating to Edwards Aquifer).

(4) Any UST construction activity performed or completed pursuant to a notification submitted under the provisions of this section must meet the applicable technical standards and procedural requirements under Subchapter C of this chapter (relating to Technical Standards).

(5) In situations where a proposed UST construction activity is necessitated by a suspected or confirmed release of regulated substances, or where the activity contributes to or causes such a release, the owner or operator must comply with the release reporting, investigation, and corrective action requirements of Subchapter D of this chapter (relating to Release Reporting and Corrective Action).

(6) Construction notifications required under this section may be provided to the agency's central office in Austin or to the agency's appropriate regional office in the area of the activity, unless otherwise specified in this section. The official date of notification must be the date on which the notification is first received in an agency office.

(7) Construction notification required under this section must be provided by the owner or operator, or an authorized agent or representative of the owner or operator (e.g., a contractor or consultant who has contracted for such construction activity). Construction notifications filed by unauthorized persons are null and void.

(b) Notification for major construction activities.

(1) Applicable activities.

(A) For the purposes of this section, a major UST construction activity includes any of the following:

(i) installation of new or previously used tank systems at a new facility, and the addition or replacement of tanks at an existing facility;

(ii) removal of existing tank systems from the ground (either temporarily or permanently);

(iii) permanent abandonment in-place or change-in-service of existing tank systems;

(iv) tank repairs, including interior and exterior relining or recoating;

(v) installation of new or replacement piping for existing tanks;

(vi) addition of secondary containment equipment for new or existing tank or piping systems;

(vii) any tank integrity assessment or other activities requiring the entrance of any persons into a tank; and

(viii) addition or replacement of any of the following items at existing facilities, when such addition or replacement is necessary for compliance with the minimum upgrading requirements in §334.47(b) of this title (relating to Technical Standards for Existing UST Systems):

(I) cathodic protection systems;

(II) release detection systems;

(III) spill and overflow prevention equipment; or

(IV) monitoring well.

(B) The requirements of this section are not applicable to routine and minor maintenance activities related to the tank and piping systems, such as tightening loose fittings and joints, adjusting and calibrating equipment, conducting routine inspections and tests, and the substitution or in-kind replacement of any obsolete or malfunctioning UST system component for any purpose other than required upgrading.

(2) Filing requirements. Except as provided under subsection (c) of this section, any owner or operator who intends to perform a major UST construction activity as described in paragraph (1) of this subsection must file a written notification with the agency at least 30 days prior to initiating the activity.

(A) Such notification should be submitted on the agency's authorized form, as described in paragraph (6) of this subsection.

(B) When requested by the agency, any person who intends to perform a major UST construction activity must also submit additional supporting information to assure that the construction activity is in compliance with the requirements of this chapter. Supporting information which may be requested by the agency includes, but is not limited to, the following items:

- (i) detailed design plans and specifications (drawn to scale);
- (ii) installation standards and operating instructions for major system components;
- (iii) quality assurance plans;
- (iv) compatibility data related to the stored substances and the materials of construction;
- (v) specific geological, hydrological, and environmental site information;
- (vi) qualifications and experience records of consultants, equipment installers, and contractors;
- (vii) formal plan or procedures for tank removals, changes-in-service, and abandonments in-place;
- (viii) disposal procedures for removed tanks;
- (ix) general contingency plan for release abatement and the clean-up and disposal of any residual regulated substances, contaminated soils, or contaminated water (including wash water, groundwater, or surface water); and

(x) basis and description for any proposed change-in-service.

(C) Between 24 and 72 hours prior to the scheduled time of initiation of the proposed activity, the owner or operator must contact the agency's appropriate regional office in the area of the activity to confirm the time of the initiation of the proposed activity. Any revisions to the proposed construction start date must be in accordance with paragraph (3) of this subsection.

(3) Rescheduling. If after the submittal of the initial construction notification, the owner or operator determines that a revision to the previously reported scope or start date for the construction is necessary, the owner or operator must immediately report the revised construction information to the commission's appropriate regional office in the area of the activity.

(A) If an earlier start date is proposed, and if this date is less than 30 days from the original notification date, then the owner or operator must comply with the requirements of paragraph (4) of this subsection.

(B) An owner or operator may revise the proposed construction start to a later date as necessary, provided that the agency's appropriate regional office is notified, and provided that original written notifications are properly renewed upon expiration in accordance with paragraph (5) of this subsection.

(4) Waiver requests. Normally a notification period of at least 30 days is required prior to the initiation of any major UST construction activity. However, if after the submittal of the construction notification, the owner or operator has good cause for an accelerated construction schedule, then the owner or operator may request approval of an earlier construction start date. Such request must be made directly to the agency's appropriate regional office in the area of the activity. The regional director (or the director's designated representative) has the authority to approve or deny such requests, and such decision will be based on the following criteria:

(A) good cause shown by the owner or operator for an earlier construction start date; and

(B) the ability of agency personnel to arrange and schedule an adequate inspection of the activity.

(5) Expiration. A written construction notification for a major UST construction activity is valid for only 180 days after the original notification date or 150 days after the originally anticipated construction start date, whichever is earlier. If the proposed construction has not commenced within this period, the original notification will expire. If the owner or operator still plans to perform the construction after the expiration of this period, a new and updated construction notification form must be filed.

(6) Notification form.

(A) Any person who intends to perform a major UST construction activity (as described in paragraph (1) of this subsection) must provide all the applicable construction notification information indicated on the agency's authorized construction notification form.

(B) The construction notification form must be filled out completely and accurately. Upon completion, the form must be dated and signed by the owner, the operator, or the authorized representative of the owner or operator, and must be timely filed in accordance with subsection (a)(5) of this section.

(c) Alternative notification procedures.

(1) Only for UST construction activities involving situations described under paragraph (2) of this subsection, the owner or operator may comply with the following alternative notification and reporting procedures in lieu of the normal notification requirements of subsection (b) of this section.

(A) The owner or operator must provide verbal or written notification to the agency as soon as possible prior to initiating the construction activity. Such notification must be submitted directly to the agency's appropriate regional office in the area of the activity.

(B) After providing the construction notification prescribed under subparagraph (A) of this paragraph, the owner or operator may proceed with the construction activity, as directed by the regional director (or the regional director's designated representative). The owner or operator must maintain detailed records of the construction. No later than 30 days after completion of the construction, the owner or operator must submit to the agency a detailed report describing the activity. If the agency determines that the information in such report is insufficient to assure compliance with the applicable requirements of this chapter, then the owner or operator may be required to submit additional information to demonstrate such compliance.

(2) The alternative notification procedures of paragraph (1) of this subsection may be used only when the following situations occur:

(A) when an owner or operator of an UST can demonstrate that a release or suspected release of a regulated substance has occurred or is likely to occur as a result of the operation of the UST, when such release is considered an immediate threat to human health or safety or the environment, and when the owner or operator can demonstrate that the expeditious initiation and completion of the proposed construction activity is necessary to prevent or abate such release;

(B) when an out-of-operation UST system is discovered during unrelated construction activities (e.g., the construction of building excavations, streets, highways, utilities, etc.), when the property owner can reasonably demonstrate no prior knowledge of the existence of the tank, when the expeditious removal or abandonment in-place of the tank is considered necessary or advisable for the completion of the unrelated construction activity, and where any delays in completion of the tank removal or abandonment in-place would cause unreasonable financial hardship due to contract schedules and completion times;

(C) when any duly authorized public official (e.g., any federal, state, or local fire or safety officer, health or environmental official, law officer, etc.) orders the immediate removal or repair of all or portions of an UST system which poses an immediate threat to human health, safety, or the environment;

(D) when the activity is necessary to maintain the operational readiness of an emergency generator, as defined by §334.2 of this title (relating to Definitions);

(E) in any other case where the agency determines that compliance with the notification provisions of subsection (b) of this section would be unreasonable or impractical, or could increase the threat to human health or safety or the environment.

Adopted November 1, 2000

Effective November 23, 2000

§334.7. Registration for Underground Storage Tanks (USTs) and UST Systems.

(a) General provisions.

(1) All underground storage tanks (USTs) in existence on or after September 1, 1987, must be registered with the agency on authorized agency forms in accordance with subsection (e) of this section, except for those tanks which:

(A) are completely exempted or partially exempted from regulation under §334.3(a) or (b) of this title (relating to Exemptions for Underground Storage Tanks (USTs) and UST Systems);

(B) are completely excluded or partially excluded from regulation under §334.4(a) or (c) of this title (relating to Exclusions for Underground Storage Tanks (USTs) and UST Systems);

(C) were properly registered with the agency prior to the effective date of this subchapter under the provisions of the federal Solid Waste Disposal Act, §9002 (42 United States Code §6921, et seq.), provided that the owner or operator must submit notice of all changes and additional information in accordance with the provisions of subsection (d) of this section;

(D) have been permanently removed from usage by either:

(i) were permanently removed from the ground before May 8, 1986; or

(ii) remain in the ground, but were emptied, cleaned, and filled with solid inert materials on or before January 1, 1974, in accordance with accepted industry practices in effect at the time the UST was taken out of operation;

(E) were out of operation and empty of regulated substances at the time of their discovery, provided that:

(i) the facility owner and operator can reasonably demonstrate no prior knowledge of the existence of the USTs; and

(ii) the USTs are permanently removed from service in accordance with §334.55 of this title (relating to Permanent Removal from Service) no later than September 29, 1990, or within 60 days of their discovery, whichever is later.

(2) The owner and operator of an UST are responsible for compliance with the tank registration requirements of this section. An owner or operator may designate an authorized representative to complete and submit the required registration information. However, the owner and operator remain responsible for compliance with the provisions of this section by such representatives.

(3) All USTs subject to the registration requirements of this section are also subject to the fee provisions of Subchapter B of this chapter (relating to Underground Storage Tank Fees), except where specifically exempted in this chapter. The failure by a tank owner or operator to properly or timely register any tanks does not exempt the owner from such fee assessment and payment provisions.

(4) Proper completion of the tank registration portions of the UST registration and self-certification form will result in the agency's issuance of a UST registration certificate for the tanks at the facility covered by that registration. This certificate is tied to the delivery prohibitions detailed at §334.5(b)(2) of this title (relating to Certification for Underground Storage Tanks (USTs) and UST Systems.

(b) Existing tanks. Any person who owns an UST that was in existence on September 1, 1987, must register such tank with the agency not later than September 1, 1987, on an authorized agency form, except for those tanks exempted and excluded under subsection (a)(1)(A) - (D) of this section. Upon the effective date of this subsection, the obligation becomes joint and several with the tank operator as well.

(c) New or replacement tanks. Any person who owns a new or replacement UST that is placed into service on or after September 1, 1987, must register the tank with the agency on an authorized agency form within 30 days after the date any regulated substance is placed into the tank, except for those tanks exempted or excluded under subsection (a)(1)(A) - (D) of this section. Upon the effective date of this subsection, the obligation becomes joint and several with the tank operator as well.

(d) Changes or additional information.

(1) The owner or operator of an UST system must provide written notice to the agency of any changes or additional information concerning such system. Types of changes or additional information subject to this requirement must include, but are not limited to, the following:

(A) change in owner or operator, or change in owner or operator information (e.g., authorized representative, mailing address, and/or telephone number), provided that:

(B) change in the operational status of any tank system (e.g., in service, temporarily out of service, removed from the ground, permanently abandoned in-place, change-in-service to

provide for the storage of a substance other than a regulated substance, or change to exempt or excluded status);

- (C) change in the type of stored regulated substance;
- (D) installation of additional tanks and/or ancillary equipment at an existing facility;
- (E) change in the type of piping for an existing tank;
- (F) the addition of, or a change in the type of, internal or external corrosion protection for the tanks, piping, and/or ancillary equipment;
- (G) the addition of, or a change in the type of, spill and overfill prevention equipment for the tanks;
- (H) the addition of, or a change in the type of, release detection equipment or methods for the tanks and/or piping;
- (I) change in the location of documents and records for the facility; and
- (J) change in financial assurance information related to the facility as specified in Chapter 37, Subchapter I of this title (relating to Financial Assurance for Petroleum Underground Storage Tank Systems).

(2) Notice of any change or additional information must be submitted on an authorized agency form which has been completed in accordance with subsection (e) of this section. The agency's UST facility number for the facility must be included in the appropriate space on the form.

(3) Notice of any change or additional information must be filed with the agency within 30 days from the date of the occurrence of the change or addition, or within 30 days from the date on which the owner or operator first became aware of the change or addition, as applicable.

(4) However, for the initial filing of the UST registration and self-certification form (which is described in §334.8(c)(4) of this title (relating to Certification for Underground Storage Tanks (USTs) and UST Systems)) for all regulated UST systems at a facility, all UST owners and operators must complete the "Tank Identification/Description" section of the UST registration portion of the form by the same deadline given in §334.8(c)(4)(A)(vi) of this title. This requirement does not relieve an owner or operator from any other registration requirements under this section.

(e) Required form for providing UST registration information.

(1) Any UST owner or operator required to submit UST registration information under subsections (a) - (d) of this section must provide all the information indicated on the agency's authorized

form for each regulated UST. The UST registration information must be provided on the appropriate agency form, as specified in paragraph (6) of this subsection.

(2) The UST registration portion of the form must be filled out completely and accurately. Upon completion, the form must be dated and signed by the owner, or the operator, or an authorized representative of the owner or operator, and must be filed with the agency within the specified time frames.

(3) All UST owners or operators required to submit UST registration information under subsections (a) - (d) of this section must provide the registration information for all USTs located at a particular facility on the same form.

(4) UST owners or operators who own or operate USTs located at more than one facility must complete and file a separate form for each facility where regulated USTs are located.

(5) If additional information, drawings, or other documents are submitted with new or revised registration data, specific facility identification information (including the facility identification number, if known) must be conspicuously indicated on each document and all such documents must be attached to and filed with the form.

(6) For any UST registration information filed with the agency on or after the effective date of this paragraph, UST owners and operators must provide the required information on an authorized agency UST registration and self-certification form, as prescribed by §334.8(c)(3) of this title.

(7) Owners and operators of petroleum UST systems should also see the financial assurance requirements in Chapter 37, Subchapter I, §37.870(b) of this title.

(f) Inadequate information. When any of the required UST registration information submitted to the agency is determined to be inaccurate, unclear, illegible, incomplete, or otherwise inadequate, the agency may require the owner and/or operator to submit additional information. An owner or operator must submit any such required additional information within 30 days of receipt of such request.

Adopted November 1, 2000

Effective November 23, 2000

§334.8. Certification for Underground Storage Tanks (USTs) and UST Systems.

(a) Underground storage tank (UST) construction activity certifications. The following UST construction activity certifications are required.

(1) Certification by installer or on-site supervisor. After September 29, 1989, any installer who is employed or otherwise engaged by an UST owner or operator to install or replace an UST system must also certify by signature that the installation methods are in compliance with §334.46 of this title (related to Installation Standards for New UST Systems).

(2) Filing requirements. The installation or construction certification information required under paragraph (1) of this subsection must be included in the appropriate sections of the agency's authorized UST registration form or UST registration and self-certification form, as applicable, in accordance with §334.7(e) of this title (relating to Registration for Underground Storage Tanks (USTs) and UST Systems), and must be filed with the agency in accordance with the applicable tank registration time limits prescribed under §334.7 of this title.

(b) Financial assurance certification for USTs storing a petroleum substance. Owners and operators of UST systems regulated under this section must comply with the requirements of subsection (c) of this section.

(c) UST compliance self-certification requirements.

(1) Applicability. Except as provided in this paragraph, the requirements of this subsection are applicable to the owners and operators of USTs regulated under this chapter.

(A) The requirements of this subsection are not applicable to the following USTs:

(i) USTs which are completely exempt or partially exempt from regulation under §334.3 of this title (relating to Exemptions for Underground Storage Tanks (USTs) and UST Systems); and

(ii) USTs which are completely excluded or partially excluded from regulation under §334.4 of this title (relating to Exclusions for Underground Storage Tanks (USTs) and UST Systems);

(iii) USTs into which deliveries or deposits of regulated substances are exclusively made by persons other than a common carrier, as defined in §334.2 of this title (relating to Definitions).

(B) The agency will not provide an UST delivery certificate for USTs covered by the exceptions in subparagraph (A) of this paragraph.

(2) Phase-in schedule for all regulated substance UST systems except motor fuel (as defined in §334.2 of this title) UST systems.

(A) For these UST systems, the self-certification requirements of this subsection will become effective two years after the effective date of this subsection.

(B) Nothing in this subsection affects the requirements under §334.7(d)(4) of this title.

(3) Conditions and limitations.

(A) Filing of the UST registration and self-certification form does not relieve an owner or operator from the responsibility for timely compliance with other applicable filing requirements under this chapter.

(B) Completion of the UST registration and self-certification form in a manner that indicates compliance with applicable UST regulations (as specified in subparagraph (D) of this paragraph) will result in the agency's issuance of an UST delivery certificate for the tanks at the facility for which compliance is self-certified.

(C) The agency's issuance of a delivery certificate for an UST(s) does not constitute agency certification or affirmation of the compliance status of the tank(s) in question with agency UST technical and/or administrative requirements, and this issuance does not preclude the agency from investigating these tanks and pursuing enforcement actions under the Texas Water Code when apparent violations are discovered.

(D) The administrative requirements and technical standards that are the subject of the compliance self-certification shall include:

(i) tank registration, as described in §334.7 of this title;

(ii) facility fees, as described in Subchapter B of this chapter (relating to Underground Storage Tank Fees);

(iii) financial assurance, as described in Chapter 37, Subchapter I of this title; and

(iv) technical standards, as described in §334.49 of this title (relating to Corrosion Protection), §334.50 of this title (relating to Release Detection), §334.51 of this title (relating to Spill and Overfill Prevention and Control), and §334.43 of this title (relating to Variances and Alternative Procedures) when a variance to all or part of one or more of the previous three sections has been granted by the agency in writing under the procedures described in §334.43 of this title (for the purposes of this clause only, certifying to the "technical standards" listed in this subparagraph includes a certification as to recordkeeping and reporting duties required under those regulations for only the 60 days prior to and including the date of certification).

(4) UST registration and self-certification form.

(A) Requirements for completion of the form.

(i) Each UST registration and self-certification form must be completed with all the applicable information requested on the agency's authorized form for all regulated UST systems at the specified facility.

(ii) Owners or operators who own or operate regulated USTs at more than one facility must complete and file a separate UST registration and self-certification form for each facility.

(iii) The agency will not issue a delivery certificate based upon an incomplete submittal.

(iv) Upon completion, the UST registration and self-certification form must be dated and signed by either the UST owner (or the owner's legally authorized representative) or by the UST operator (or the operator's legally authorized representative).

(v) If additional information, drawings, or other documents are submitted with the UST registration and self-certification form, specific facility identification information (including the facility identification number) must be conspicuously indicated on each document and all these documents must be securely attached to and filed with the UST registration and self-certification form.

(vi) To ensure timely initial issuance by the agency of the UST delivery certificate, an owner or operator must submit the required UST registration and self-certification form (including any additional or supplemental information required under clause (v) of this subparagraph) to the agency no later than the following dates:

(I) For UST systems where the first storage of regulated substances was initiated before the effective date of this clause, the deadline for submission is 60 days after the effective date of this section.

(II) For UST systems where the date of the first storage of regulated substances was on or after the effective date of this section, the deadline for submission is no later than 30 days after the date of initial storage of regulated substances.

(vii) To ensure timely renewal of a previously issued UST delivery certificate, the deadline for submission is 30 days before the annual renewal date for the UST delivery certificate for that specific facility, as indicated in paragraph (5)(B)(iii) of this subsection.

(B) The facility owner and operator are both responsible for ensuring that the UST registration and self-certification form is fully and accurately completed, and that it is submitted to the agency in a timely manner. To minimize processing delays, the form should be mailed directly to the specific agency office, department, and mail code shown on the form.

(C) When tank ownership at a facility changes, a new certification under this subsection must be made within 30 days of the ownership change.

(5) UST delivery certificate.

(A) Certificate availability.

(i) The owner and operator of USTs regulated under this section must make available to a common carrier a valid, current Texas Natural Resource Conservation Commission (TNRCC) delivery certificate (or TNRCC temporary delivery authorization under subparagraph (D) of this paragraph, as applicable) before delivery of a regulated substance into the UST(s) can be accepted. The delivery certificate must cover each UST at the facility accepting a delivery. The bill of lading for the first delivery of regulated substance into any new or replacement UST at the facility must be attached to the temporary delivery authorization for that facility.

(ii) The owner and operator of USTs regulated under this section must make immediately available, upon request by agency staff, a valid, current TNRCC delivery certificate (or TNRCC temporary delivery authorization under subparagraph (D) of this paragraph, as applicable) for the USTs at a facility.

(iii) The owner and operator of USTs regulated under this section must ensure that a valid, current TNRCC delivery certificate (or TNRCC temporary delivery authorization under subparagraph (D) of this paragraph, as applicable) is posted at a facility. The posting must be in a location where the document is clearly visible at all times.

(B) Annual delivery certificate renewal.

(i) The initial delivery certificate issued for a tank(s) will be valid until the expiration date indicated on that certificate. The expiration will be based on the last digit of the official TNRCC owner identification number for the registered owner of the tank(s) in question, as described in clause (ii) of this subparagraph. It is the responsibility of the tank owner and operator to ensure that an application for renewal of that certificate is properly and timely filed.

(ii) A delivery certificate is renewed by timely and proper submission of a new UST registration and self-certification form to the agency. For each facility, to allow time for processing of the renewal request, the agency must have received the properly completed form at least 30 days before the expiration date of the delivery certificate in question. The agency will not issue a renewed delivery certificate based on improper submission of renewal documents.

(iii) Annual expiration and renewal dates for delivery certificates are determined by the last digit of the official TNRCC owner identification number for the registered owner of the tank(s) in question, and the first renewal for all owners and operators is due in calendar year 2002, and for each year thereafter on the dates indicated below:

- (I) If owner number ends in "1" delivery certificate expires on January 31, and renewal is due February 1;
- (II) If owner number ends in "2" delivery certificate expires on the last day of February, and renewal is due March 1;
- (III) If owner number ends in "3" delivery certificate expires on March 31, and renewal is due April 1;
- (IV) If owner number ends in "4" delivery certificate expires April 30, and renewal is due May 1;
- (V) If owner number ends in "5" delivery certificate expires on May 31, and renewal is due June 1;
- (VI) If owner number ends in "6" delivery certificate expires on June 30, and renewal is due July 1;
- (VII) If owner number ends in "7" delivery certificate expires July 31, and renewal is due August 1;
- (VIII) If owner number ends in "8" delivery certificate expires August 31, and renewal is due September 1;
- (IX) If owner number ends in "9" delivery certificate expires September 30, and renewal is due October 1; and
- (X) If owner number ends in "0" delivery certificate expires October 31, and renewal is due November 1.

(C) Identifying tanks. Within 30 days of the effective date of this section, the owner and operator of USTs regulated under this section are responsible for ensuring that a legible tag, label, or marking is permanently applied upon or affixed to either the top of the fill tube or to a nonremovable point in the immediate area of the fill tube for each regulated UST at the facility. That tag, label, or marking must clearly and legibly show the designated UST identification number of that UST at that facility and that identification number must be identical to the UST identification number listed on the UST registration and self-certification form filed with the agency under this subsection. All UST identification numbers at a given facility must be numeric, must begin with the number one (1) and must proceed sequentially without skipping numbers (i.e.: 1, 2, 3...). In addition, for each compartmented UST where a single UST has a separate fill tube for each internal compartment; the numeric UST identification number must be the same for each fill tube serving that single UST, however, to allow differentiation between compartments on the UST registration and self-certification form and at the facility, that common UST identification number must also be followed by a single additional alphabetic identifier for each compartment, beginning with the letter "A" and proceeding sequentially without skipping letters (i.e.: 1A, 1B, 1C...).

(D) Temporary delivery authorization.

(i) Upon receipt of a TNRCC construction notification form indicating the pending installation of a new or replacement UST system(s), the agency will issue a temporary delivery authorization for those tank systems.

(ii) The temporary delivery authorization is valid for no more than 90 days after the first delivery of regulated substance into the new or replacement UST system.

(iii) The UST owner and operator are responsible for maintaining complete and accurate records of the date of the first deposit of regulated substances into a new or replacement UST(s), as well as the date that the initial 90 day period expires. The bill of lading for the first delivery of regulated substance into any new or replacement UST at the facility must be attached to the temporary delivery authorization for that facility.

(6) Revocation of Delivery Certificate.

(A) Grounds for revocation of delivery certificate. The commission may revoke a delivery certificate for reasons including, but not limited to:

(i) when the executive director determines that any of the information contained or referenced in the compliance self-certification portions of the UST registration and self-certification form was inaccurate at the time the self-certification was made;

(ii) when the tank owner and/or operator submits compliance self-certification information to the executive director which he knows or reasonably should have known to be false or deceptive; and

(iii) for any other reason which the commission finds to constitute good cause for revocation.

(B) Procedures for revocation of delivery certificate.

(i) A proceeding to revoke a delivery certificate must be commenced by:

(I) the executive director through the filing of a petition; or

(II) the commission on its own motion.

(ii) If the executive director determines good cause exists to revoke a delivery certificate, the executive director shall file a petition with the chief clerk and provide notice to the owner and operator of the tank(s) in question. To the extent possible, the procedures required to assess administrative penalties under Chapter 70 of this title (relating to Enforcement) shall be followed to revoke a delivery certificate under this subchapter.

(iii) In response to a petition, or on its own motion to revoke a delivery certificate, the commission may:

- (I) revoke a certificate; and
- (II) issue any other orders permitted by law.

(iv) Revocation of a delivery certificate is cumulative of any other remedies available to the agency by law.

Adopted November 1, 2000

Effective November 23, 2000

§334.9. Seller's Disclosure.

Effective on and after the effective date of this subchapter, any person who sells or otherwise legally conveys a tank (or tank system) which is designed or intended to be installed as an underground storage tank (UST) must provide the purchaser (or grantee) with written notification of a tank owner's obligations relative to the agency's tank registration, compliance self-certification, and construction notification provisions under §334.7 of this title (relating to Registration for Underground Storage Tanks (USTs) and UST Systems); §334.8 of this title (relating to Certification for Underground Storage Tanks (USTs) and UST Systems); and §334.6 of this title (relating to Construction Notification for Underground Storage Tanks (USTs) and UST Systems).

(1) The written notification must include the names and addresses of the seller (or grantor) and the purchaser (or grantee), the number of tanks involved, a description of each tank (capacity, tank material, and product stored, if applicable), and the agency's designated facility identification number (if the entire facility is being conveyed).

(2) This notification requirement applies to any transfers or conveyances of a new or used tank from one person to another person, and also applies to the sales of real property where USTs are located.

(3) The written notification must be provided by the seller (or grantor) to the purchaser (or grantee) prior to the conveyance of the tanks, or prior to the time of the real property closing, as applicable.

(4) For the purpose of fulfilling the disclosure requirements of this section, the following language (together with the information in paragraph (1) of this section) is deemed sufficient: "The underground storage tank(s) which are included in this conveyance are presumed to be regulated by the Texas Natural Resource Conservation Commission and may be subject to certain registration, compliance self-certification, and construction notification requirements found in Title 30 Texas Administrative Code, Chapter 334."

Adopted November 1, 2000

Effective November 23, 2000

§334.10. Reporting and Recordkeeping.

(a) Reporting. Owners and operators of underground storage tank (UST) systems must assure that all reporting and filing requirements in this chapter are met, including the following (as applicable):

- (1) construction notification, in accordance with §334.6 of this title (relating to Construction Notification for Underground Storage Tanks (USTs) and UST Systems);
- (2) application for approval of any proposed UST system in the Edwards Aquifer recharge or transition zones, in accordance with §334.6(a)(2) of this title and Chapter 213 of this title (relating to Edwards Aquifer);
- (3) registration of UST systems and changes in information, in accordance with §334.7 of this title (relating to Registration for Underground Storage Tanks (USTs) and UST Systems);
- (4) certification of construction activities, financial assurance, and compliance self-certification in accordance with §334.8 of this title (relating to Certification for Underground Storage Tanks (USTs) and UST Systems);
- (5) request for approval of any variance or alternative procedure, in accordance with §334.43 of this title (relating to Variances and Alternative Procedures);
- (6) request for extension of time for an UST system that is temporarily out of service, in accordance with §334.54 of this title (relating to Temporary Removal from Service);
- (7) documentation of release determination or site assessment conducted when a UST system is permanently removed from service, in accordance with §334.55(a)(6) of this title (relating to Permanent Removal from Service);
- (8) payment of underground storage tank fees, in accordance with Subchapter B of this chapter (relating to Underground Storage Tank Fees);
- (9) reports, plans, and certifications related to suspected and confirmed releases of regulated substances, including:
 - (A) release reports and notifications, in accordance with §334.72 of this title (relating to Reporting of Suspected Releases), §334.75 of this title (relating to Reporting and Cleanup of Surface Spills and Overfills), and §334.76 of this title (relating to Initial Response to Releases);
 - (B) report and certification of site check methods, in accordance with §334.74(c) of this title (relating to Release Investigation and Confirmation Steps);
 - (C) initial abatement report, in accordance with §334.77(b) of this title (relating to Initial Abatement Measures and Site Check);

(D) initial site assessment report, in accordance with §334.78(b) of this title (relating to Site Assessment);

(E) non-aqueous phase liquid removal report, in accordance with §334.79(d) of this title (relating to Removal of Non-Aqueous Phase Liquids);

(F) soil and groundwater contamination information, in accordance with §334.80(b) of this title (relating to Investigation for Soil and Groundwater Cleanup);

(G) corrective action plan, in accordance with §334.81 of this title (relating to Corrective Action Plan);

(H) notification of cleanup initiation, in accordance with §334.81(e) of this title;

(I) certification of compliance with corrective action plan, in accordance with §334.81(g) of this title; and

(J) public notices related to corrective action plans, in accordance with §334.82(b) of this title (relating to Public Participation);

(10) notifications and reports relating to financial assurance requirements, in accordance with Chapter 37, Subchapter I of this title (relating to Financial Assurance for Petroleum Underground Storage Tank Systems; and

(11) any other reports, filings, notifications, or other submittals required by this chapter, or otherwise required by the agency to demonstrate compliance with the provisions of this chapter.

(b) Recordkeeping.

(1) General recordkeeping requirements.

(A) Owners and operators of UST systems are responsible for developing and maintaining all records required by the provisions of this chapter.

(B) Except as provided in subparagraphs (C) and (D) of this paragraph, legible copies of all required records pertaining to an UST system must be maintained in a secure location on the premises of the UST facility, must be immediately accessible for reference and use by the UST system operator, and must be immediately available for inspection upon request by agency personnel.

(C) Except as provided in clause (v) of this subparagraph, in the event that copies of the required records cannot reasonably be maintained on the premises of the UST facility, then such records may be maintained at a readily accessible alternate site, provided that the following conditions are met.

(i) If the UST system is in operation, the records must be readily accessible for reference and use by the UST system operator.

(ii) The records must be readily accessible and available for inspection upon request by agency personnel.

(iii) The owner or operator must provide the following information (in writing) to the agency's central office and to the agency's appropriate regional office:

(I) the specific location where the required records are maintained; and

(II) the name, address, and telephone number of the authorized custodian of such records.

(iv) The filing of the written information required in clause (iii) of this subparagraph must be accomplished no later than October 29, 1989, 30 days after an UST installation or replacement has been completed, or 30 days after the UST records are moved to an alternate site, whichever is later or applicable, as provided in §334.7(d) of this title.

(v) The conditional authorization otherwise allowed under this subparagraph for records maintenance at an alternative, off-premises location is not applicable to the UST delivery certificate (or temporary delivery authorization, if applicable) issued by the agency under §334.8(c) of this title. This UST delivery certificate must be maintained on the premises of all facilities with regulated USTs, must be posted by the UST system operator and visible to the person(s) performing deliveries to the UST system.

(D) For UST systems which have been permanently removed from service in accordance with the applicable provisions of §334.55 of this title (relating to Permanent Removal from Service), the facility owner may submit the appropriate records required by this chapter to the agency in lieu of maintaining the records on the premises or at an alternative site, provided that the following conditions are met:

(i) the facility is no longer operated in a manner that requires the underground storage of regulated substances, and all UST systems at the facility have been permanently removed from service;

(ii) the facility owner must provide written justification adequate to explain why such records cannot be maintained on the premises of the UST facility or at a readily accessible alternative site; and

(iii) the records must be submitted at one time in one package for each UST facility, and the records must be appropriately labeled with the UST facility location information and the UST facility identification number.

(2) Required records and documents. Owners and operators of UST systems must assure that all recordkeeping requirements in this chapter are met, including the following records and documentation (as applicable).

(A) Legible copies of the following general records must be maintained for the operational life of the UST system:

- (i) original and amended registration documents, in accordance with §334.7 of this title;
- (ii) original and amended certifications for UST installations and financial assurance, in accordance with §334.8 of this title;
- (iii) notification to UST purchaser, in accordance with §334.9 of this title (relating to Seller's Disclosure).

(B) Legible copies of applicable records and documents related to technical standards for UST systems must be maintained in accordance with the following provisions:

- (i) application documents and the agency's approval letter for any variances or alternative procedures, in accordance with §334.43 of this title;
- (ii) records demonstrating compliance with technical standards and installation standards for new UST systems, in accordance with §334.45(f) of this title (relating to Technical Standards for New UST Systems) and §334.46(i) of this title (relating to Installation Standards for New UST Systems);
- (iii) records demonstrating compliance with the minimum upgrading requirements for existing UST systems, in accordance with §334.47(d) of this title (relating to Technical Standards for Existing UST Systems);
- (iv) operation and maintenance records, in accordance with §334.48(g) of this title (relating to General Operating and Management Requirements);

(v) corrosion protection records, in accordance with §334.49(e) of this title (relating to Corrosion Protection);

(vi) release detection records, in accordance with §334.50(e) of this title (relating to Release Detection);

(vii) spill and overflow control records, in accordance with §334.51(c) of this title (relating to Spill and Overflow Prevention and Control);

(viii) records for repairs and relining of a UST system, in accordance with §334.52(d) of this title (relating to UST System Repairs and Relining);

(ix) records for reuse of used tanks, in accordance with §334.53(c) of this title (relating to Reuse of Used Tanks);

(x) records for temporary removal of UST systems from service, in accordance with §334.54(f)(4) of this title;

(xi) records for permanent removal of UST systems from service, in accordance with §334.55(f) of this title.

(C) Legible copies of all required financial assurance records must be maintained in accordance with the applicable provisions of Chapter 37, Subchapter I of this title.

(D) Legible copies of previous and current registration and self-certification forms required to be filed annually with the agency under §334.8(c) of this title, as well as UST delivery certificates, must be maintained for at least five years from the original date of submittal.

Adopted November 1, 2000

Effective November 23, 2000

§334.12. Other General Provisions.

(a) Other regulations.

(1) Except as provided in paragraph (2) of this subsection, compliance with the provisions of this chapter by an owner or operator of an underground storage tank (UST) system or aboveground storage tank (AST) system does not relieve such owner or operator from the responsibility of compliance with any other regulations directly and/or indirectly affecting such tanks and the stored regulated substances, including, but not necessarily limited to, all applicable regulations legally promulgated by the United States Environmental Protection Agency, United States Occupational Safety and Health Administration, United States Department of Transportation, United States Nuclear Regulatory Commission, United States Department of Energy, Texas Department of Health, State Board of Insurance, Texas Commission on Fire Protection, Railroad Commission of Texas, Texas

Department of Agriculture, State Comptroller, Texas Department of Public Safety, Texas Natural Resource Conservation Commission, and any other federal, state, and local governmental agencies or entities having appropriate jurisdiction.

(2) As provided in the Texas Water Code (TWC), §26.359, this chapter establishes a unified statewide program for underground and surface water protection, and any local regulation or ordinance is effective only to the extent the regulation or ordinance does not conflict with the standards adopted for the design, construction, installation, or operation of USTs under this chapter.

(b) Owner and operator responsibility.

(1) Owners and operators are responsible for any violations or noncompliant activities resulting from the actions or inactions by any installer, contractor, operator, or other person who is employed or otherwise engaged by an owner or operator of an UST or AST.

(2) The commission shall consider the person who is in day-to-day control of a petroleum storage tank system at a site that is in violation of applicable statute or agency regulations to be the:

(A) person primarily responsible for taking corrective action, for corrective action costs, for receiving a notice of violation, or for paying a penalty assessed; and

(B) primary subject of an enforcement action or order.

(3) The liability of certain taxing units as owners or operators of USTs and ASTs is conditionally and specifically limited, in accordance with the provisions and conditions of TWC, §26.3516 (relating to *Limits on Liability of Taxing Units*).

(4) The liability of certain lenders as owners or operators of USTs and ASTs is conditionally and specifically limited, in accordance with the provisions and conditions of TWC, §26.3514 (relating to *Limits on Liability of Lender*).

(5) The liability of certain corporate fiduciaries as owners or operators of USTs and ASTs is conditionally and specifically limited, in accordance with the provisions and conditions of TWC, §26.3515 (related to *Limits on Liability of Corporate Fiduciary*).

(c) *Inspections, monitoring, and testing.*

(1) For the purposes of developing or assisting in the development of any regulation, conducting any study, or enforcing this chapter, an owner and/or operator of an UST or AST, on the request of the agency, must:

(A) furnish information relating to the tank, including tank equipment and contents; and

(B) permit a designated agent or employee of the agency at all reasonable times to have access to and to copy all records relating to the tanks.

(2) For the purposes of developing or assisting in the development of a regulation, conducting a study, or enforcing the provisions of this chapter, the agency's designated agent, or employee may:

(A) enter at reasonable times an establishment or place in which an UST or AST is located;

(B) inspect and obtain samples of a regulated substance contained in the tank from any person; and

(C) conduct monitoring or testing of the tanks, associated equipment, contents, or surrounding soils, air, surface water, or groundwater.

(3) The agency may order an owner or operator of an UST or AST to conduct monitoring and testing if the agency determines that there is reasonable cause to believe that a release has occurred in the area in which the UST or AST is located.

Adopted November 1, 2000

Effective November 23, 2000

§334.14. Memorandum of Understanding Between the Attorney General of Texas and the Texas Natural Resource Conservation Commission.

(a) Applicability. This MOU applies to civil enforcement proceedings and complaints filed on storage tanks subject to this chapter. Pursuant to the Texas Water Code, §5.104, the Texas Natural Resource Conservation Commission adopts a MOU between the Texas Natural Resource Conservation Commission (TNRCC) and the Attorney General of Texas. The MOU contains the TNRCC's and the Attorney General's interpretation concerning intervention in the civil enforcement process under the Texas Water Code. This section applies as follows.

(1) The Texas Water Commission (now the Texas Natural Resource Conservation Commission, TNRCC) was designated as the state agency for the regulation of underground storage tanks by enactment of Senate Bill 779 of the 70th Texas Legislature, 1987.

(2) The Texas Water Code authorizes the Texas Natural Resource Conservation Commission to have instituted civil suits for injunctive relief and the assessment and recovery of a civil penalty, whenever it appears that a person has violated, or is violating or threatening to violate, any provision of the Texas Water Code, or of any rule, permit, or other order of the Texas Natural Resource Conservation Commission.

(3) The Texas Water Code provides that at the request of the executive director of the Texas Natural Resource Conservation Commission, the Attorney General of Texas shall institute and conduct a suit in the name of the State of Texas for injunctive relief or to recover a civil penalty, or for both injunctive relief and penalty.

(4) Federal regulations promulgated by the United States Environmental Protection Agency pursuant to the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976, Subtitle I, require that any state agency administering the Underground Storage Tank Program authorized under that act provide for public participation in the state enforcement process.

(5) All citizen complaints filed, either orally or in writing, that relate to underground storage tanks will be investigated timely and thoroughly by the Texas Natural Resource Conservation Commission. Citizen complaint responses will be first initiated by attempting to establish telephone contact with the complainant within 48 hours of receipt of the complaint, and concurrently beginning whatever records review is necessary. Upon completion of the investigation, the complainant will be informed in writing of the results. In addition, the complainant will be apprised of the ultimate resolution of the problem. The executive director of the Texas Natural Resource Conservation Commission shall keep a complaint file in accordance with §337.4 of this title (relating to Enforcement).

(6) Notice of proposed settlements of civil enforcement actions that relate to underground storage tanks will be published by the attorney general of Texas in the Texas Register (except where immediate action is necessary to adequately protect human health and the environment) and that opportunity will be provided for the public to comment on such proposed settlements.

(7) Nothing in this agreement shall be construed to limit or impair the attorney general's right to control and direct litigation on behalf of the state.

(8) The attorney general will not oppose intervention where permissive intervention may be authorized by statute, rule, or regulation into any civil suit involving the State of Texas relating to violations of the Underground Storage Tank Program by any citizen having an interest which is or may be adversely affected.

(9) The attorney general, on behalf of the State of Texas, will consent to a proposed judgment in an action to enjoin violations of the Underground Storage Tank Program only after the publication of notice which provides at least 30 days for public comment on the proposed judgment prior to its entry by the court, provided that the attorney general may permit an exception to the 30-day comment period if a settlement or judgment is required to avoid delays that would adversely affect public health or the environment.

(b) Execution by all signatories. After execution by all signatories, this agreement shall remain in effect until rescinded by formal action of either agency.

(c) Effective date. The effective date of the memorandum of understanding is the effective date of this rule adoption.

§334.15. Limits on Liability of Lender.

(a) A lender, as defined in §334.2 of this title (relating to Definitions), is not liable as an owner or operator under this chapter solely because the lender holds indicia of ownership to protect a security or lienhold interest in property. A lender is not liable under this subsection if:

(1) such lender has a security interest in a personal property or in a fixture that is not attached to the real estate or a lienhold interest on the real estate or fixture that is attached to the real estate as security for a loan to finance the acquisition or development of property, to finance the removal, repair, replacement, or upgrading of a regulated tank, or to finance the performance of corrective action in response to a release of a regulated substance from a tank, and the security or lienhold interest is in:

(A) an underground storage tank (UST) or aboveground storage tank (AST);

(B) real property on which an UST or AST is located; or

(C) in any other personal property attached to or located on property on which an UST or AST is located; or

(2) the real or personal property described in paragraph (1)(A) - (C) of this subsection constitutes collateral for a commercial loan.

(b) A lender that exercises control over property described under subsection (a) of this section before foreclosure to preserve the collateral or to retain revenues from the property for the payment of debt, or that otherwise exercises the control of a mortgagee in possession, is not liable as an owner or operator under this chapter unless that control leads to action that the executive director finds is causing or exacerbating contamination associated with the release of a regulated substance from a tank located on the property.

(c) A lender that has a bona fide security or lienhold interest in any real or personal property as described under subsection (a) of this section and that forecloses on or receives an assignment or deed in lieu of foreclosure and becomes the owner of that real or personal property is not liable as an owner or operator under this chapter if the lender:

(1) permanently removes from service any USTs or ASTs on the property. A tank is permanently removed from service when the actions defined in §334.55(b) of this title (relating to Permanent Removal from Service) have been properly completed;

(2) undertakes, and with due diligence in a timely and persistent manner completes, corrective action in response to any release from those tanks. A lender acts with due diligence when the lender executes the corrective action in conformance with Subchapter D of this title (relating to Release Reporting and Corrective Action), or as otherwise directed by the executive director; and

(3) performs the removal and corrective action in accordance with all applicable commission rules.

(d) A lender acting under subsection (c) of this section must begin removal of the tank from service or corrective action within 90 days after the date on which the lender becomes the owner of the property.

(e) A lender described by subsection (a) of this section which forecloses on or receives an assignment or deed in lieu of foreclosure on real or personal property described in subsection (a) of this section is not liable as an owner or operator under this chapter because the lender sells, releases, liquidates, or winds up operations and takes measures to preserve, protect, or prepare a secured AST or UST before sale or other disposition of the storage tank or the property if the lender:

(1) did not participate in the management of an AST or UST or real or personal property described by subsection (a) of this section before foreclosure or its equivalent on the storage tank or the property; and

(2) establishes, as provided by subsection (f) of this section, that the ownership indicia maintained after foreclosure continue to be held primarily to protect a security interest.

(f) A lender may establish that the ownership indicia maintained after foreclosure continues to be held primarily to protect a security interest if, within 12 months after foreclosure, the lender:

(1) lists the AST or UST, or the facility or property on which the tank is located, with a broker, dealer, or agent who deals in that type of property; or

(2) advertises the AST or UST for sale or other disposition, at least monthly, in:

(A) a real estate publication;

(B) a trade or other publication appropriate for the AST or UST being advertised; or

(C) a newspaper of general circulation in the area in which the AST or UST is located.

(g) For purposes of subsections (f) and (h) of this section the 12-month period begins:

(1) when the lender acquires good and indefeasible title, if the lender, after the expiration of any redemption period or other waiting period required by law, was acting diligently to acquire such title; or

(2) on the date of foreclosure or its equivalent, if the lender does not act diligently to acquire good and indefeasible title.

(h) A lender that meets the conditions of subsection (f) nonetheless becomes liable as owner and/or operator at the end of the 12-month period, or when the lender no longer holds ownership indicia primarily to protect its security interest, whichever occurs first. If a lender outbids, rejects, or does not act on an offer of fair consideration for the AST or UST or the facility or property on which the storage tank is located, it is presumed that the lender is not holding the ownership indicia primarily to protect the security interest unless the lender is required, in order to avoid liability under federal or state law, to make the higher bid, obtain the higher offer, or seek or obtain an offer in a different manner.

Adopted November 1, 2000

Effective November 23, 2000

§334.16. Limits on Liability of Corporate Fiduciary.

(a) A corporate fiduciary or its agent(s) is not liable in an individual capacity as an owner or operator under this chapter solely because:

(1) the corporate fiduciary or its agent has legal title to real or personal property for purposes of administering a trust or estate of which the property is a part; or

(2) the corporate fiduciary or its agent does not have legal title to the real or personal property but operates or manages the property under the terms of an estate or trust of which the property is a part.

(b) Subsection (a) of this section does not relieve a trust, estate, or beneficiary of any liability the trust, estate, or beneficiary may have as an owner or operator under this chapter.

Adopted October 11, 1995

Effective November 8, 1995

§334.17. Privatization of Storage Tank Program.

The commission may retain agents for the performance of services related to the duties and administrative tasks of this chapter. The agent(s) will act under the direction of the executive director.

Adopted November 1, 2000

Effective November 23, 2000

§334.18. Limits on Liability of Taxing Unit.

(a) Authorization and applicability. The provisions of this section are authorized by Texas Water Code, §26.3516 (relating to Limits on Liability of Taxing Units), and apply only to taxing units as defined in the Property Tax Code, §1.04(12) that:

(1) This section applies to a taxing unit that has foreclosed an ad valorem tax lien on real property on which an underground storage tank (UST) or aboveground storage tank (AST) is located, or on any other personal property attached to or located on property on which a UST or AST is located, as security for payment of ad valorem taxes.

(2) A taxing unit is not liable as an owner or operator under this chapter solely because the taxing unit holds indicia of ownership because of a tax foreclosure sale under the Tax Code.

(b) Removal from service and corrective action requirements. If after foreclosure of an ad valorem tax lien on real property on which an AST or an UST is located, a taxing unit performs or causes to be performed any UST or AST removal from service or corrective action activities, then the taxing unit must perform corrective action in accordance with the standards and procedures outlined in Subchapter D of this chapter (relating to Release Reporting and Corrective Action).

(c) Limits on liability of a taxing unit.

(1) A taxing unit is not liable as an owner or operator under this chapter solely because the taxing unit sells, releases, liquidates, or winds up operations and takes measures to preserve, protect, or prepare the secured AST or the secured UST before the sale or other disposition of either the storage tank, the real property on which the storage tank is located, or any other personal property attached to or located on the real property on which the storage tank is located, provided that the taxing unit:

(A) did not participate in the management of either the AST or UST, the real property on which this storage tank is located, or any other personal property attached to or located on the real property on which the storage tank is located, before the foreclosure of, or an equivalent action on, either the storage tank or the real or personal property; and

(B) establishes, as provided by paragraph (2) of this subsection, that the ownership indicia maintained after foreclosure continue to be held primarily to protect a payment of ad valorem taxes.

(2) A taxing unit may establish that the ownership indicia maintained after foreclosure continue to be held primarily to protect the payment of ad valorem taxes if the taxing unit either:

(A) lists the AST, UST, or the facility or real property on which the storage tank is located, with broker, dealer, or agent who deals in that type of property; or

(B) advertises the AST or UST for sale or other disposition in either:

(i) a real estate publication;

(ii) a trade or other publication appropriate for the AST or UST being advertised;

or

(iii) a newspaper of general circulation in the area in which the AST or UST is located.

SUBCHAPTER B: HAZARDOUS WASTE MANAGEMENT
GENERAL PROVISIONS
§§335.41, 335.43 - 335.47
Effective April 12, 2001

§335.41. Purpose, Scope and Applicability.

(a) The purpose of this chapter is to implement a state hazardous waste program which controls from point of generation to ultimate disposal those wastes which have been identified by the administrator of the United States Environmental Protection Agency (EPA) in 40 Code of Federal Regulations (CFR) Part 261.

(b) Subchapter E of this chapter (relating to Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities) and Subchapter F of this chapter (relating to Permitting Standards for Owners and Operators of Hazardous Waste, Storage, Processing, or Disposal Facilities) and §335.12 of this title (relating to Shipping Requirements Applicable to Owners or Operators of Storage, Processing, or Disposal Facilities) and §335.15 of this title (relating to Recordkeeping and Reporting Requirements Applicable to Owners or Operators of Storage, Processing, or Disposal Facilities) do not apply to an owner or operator of a totally enclosed treatment facility, as defined in §335.1 of this title (relating to Definitions).

(c) Except as provided in §335.47 of this title (relating to Special Requirements for Persons Eligible for a Federal Permit by Rule), Subchapter E of this chapter (relating to Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing or Disposal Facilities) and Subchapter F of this chapter (relating to Permitting Standards for Owners and Operators of Hazardous Waste, Storage, Processing, or Disposal Facilities) do not apply to the owner or operator of a publicly-owned treatment works (POTW) which processes, stores, or disposes of hazardous waste.

(d) Subchapter E of this chapter (relating to Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities) and Subchapter F of this chapter (relating to Permitting Standards for Owners and Operators of Hazardous Waste, Storage, Processing, or Disposal Facilities) do not apply to:

(1) the owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in §335.1 of this title (relating to Definitions), provided that if the owner or operator is diluting hazardous ignitable (D001) wastes (other than the D001 High TOC Subcategory defined in 40 CFR §268.40, Table Treatment Standards for Hazardous Wastes), or reactive (D003) waste, to remove the characteristic before land disposal, the owner/operator must comply with the requirements set out in 40 CFR §264.17(b);

(2) persons engaged in processing or containment activities during immediate response to a discharge of a hazardous waste; an imminent and substantial threat of discharge of hazardous waste; a discharge of a material which, when discharged, becomes a hazardous waste; or an immediate threat to human health, public safety, property, or the environment, from the known or suspected presence of military munitions, other explosive material, or an explosive device, as determined by an explosive or munitions emergency response specialist as defined in §335.1 of this title, except that:

(A) an owner or operator of a facility otherwise regulated under Subchapter E of this chapter must comply with all applicable requirements of §335.112(a)(2) and (3) of this title (relating to Standards) and §335.113 of this title (relating to Reporting of Emergency Situations by Emergency Coordinator);

(B) an owner or operator of a facility otherwise regulated under Subchapter F of this chapter must comply with all applicable requirements of §335.152(a)(2) and (3) of this title (relating to Standards) and §335.153 of this title (relating to Reporting of Emergency Situations by Emergency Coordinator);

(C) any person who continues or initiates hazardous waste processing or containment activities after the immediate response is over is subject to all applicable requirements of Subchapter E of this chapter, Subchapter F of this chapter and Chapter 305 of this title (relating to Consolidated Permits); and

(D) in the case of an explosives or munitions emergency response, if a federal, state, tribal, or local official acting within the scope of his or her official responsibilities, or an explosives or emergency response specialist, determines that immediate removal of the material is necessary to protect human health or the environment, that official or specialist may authorize the removal of the material or waste by transporters who do not have EPA identification numbers and without the preparation of a manifest. In the case of emergencies involving military munitions, the responding military emergency response specialist's organizational unit must retain records for three years identifying the dates of the response, the responsible persons responding, the type and description of material addressed, and its disposition;

(3) persons adding absorbent material to waste in a container, as defined in §335.1 of this title and persons adding waste to absorbent material in a container, provided that these actions occur at the time that waste is first placed in the container, and that in the case of permitted facilities, 40 CFR §§264.17(b), 264.171, and 264.172 are complied with, and for all other facilities, 40 CFR §§265.17(b), 265.171, and 265.172 are complied with.

(4) A farmer disposing of waste pesticides from his own use in compliance with §335.77 of this title (relating to Farmers).

(e) Subchapter E of this chapter does not apply to:

(1) a person who stores, processes or disposes of hazardous waste on-site and meets the requirements of §335.78 of this title (relating to Special Requirements for Hazardous Waste Generated by Conditionally Exempt Small Quantity Generators); or

(2) the owner or operator of a solid waste facility who stores, processes or disposes of hazardous waste received from a conditionally exempt small quantity generator.

(f) The following requirements apply to residues of hazardous waste in containers:

(1) Subchapters B-F and O of this chapter (relating to Hazardous Waste Management General Provisions; Standards Applicable to Generators of Hazardous Waste; Standards Applicable to Transporters of Hazardous Waste; Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities; Permitting Standards for Owners and Operators of Hazardous Waste, Storage, Processing, or Disposal Facilities; and Land Disposal Restrictions) do not apply to any hazardous waste remaining in either an empty container or an inner liner removed from an empty container, as defined in paragraph (2) of this subsection. This exemption does not apply to any hazardous waste in either a container that is not empty or an inner liner removed from a container that is not empty.

(2) For purposes of determining whether a container is empty under this subsection, the following provisions apply:

(A) a container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste listed in 40 CFR §§261.31, 261.32 or 261.33(e) is empty if:

(i) all wastes have been removed that can be using the practices commonly employed to remove materials from that type of container, e.g. pouring, pumping, and aspirating; and

(ii) no more than 2.5 centimeters (one inch) of residue remains on the bottom of the container or inner liner; or

(iii) no more than 3.0% by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, or no more than 0.3% by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size.

(B) a container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmosphere;

(C) a container or an inner liner removed from a container that has held an acute hazardous waste listed in 40 CFR §§261.31, 261.32 or 261.33(e) is empty if:

(i) the container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

(ii) the container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

(iii) in the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

(g) Subchapters B-F and O of this chapter (relating to Hazardous Waste Management General Provisions; Standards Applicable to Generators of Hazardous Waste; Standards Applicable to Transporters of Hazardous Waste; Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities; Permitting Standards for Owners and Operators of Hazardous Waste Storage, Processing or Disposal Facilities; and Land Disposal Restrictions) do not apply to hazardous waste which is managed as a recyclable material described in §§335.24(b) and (c) of this title (relating to Requirements for Recyclable Materials and Nonhazardous Recyclable Materials), except to the extent that requirements of these subchapters are referred to in Subchapter H of this chapter (relating to Standards for the Management of Specific Wastes and Specific Types of Facilities) and Chapter 324 of this title (relating to Used Oil).

(h) Subchapter E of this chapter (relating to Interim Standards for Owners and Operators of Hazardous Waste, Storage, Processing, or Disposal Facilities) and Subchapter F of this chapter (relating to Permitting Standards for Owners and Operators of Hazardous Waste, Storage, Processing, or Disposal Facilities) apply to owners or operators of all facilities which treat, store, or dispose of hazardous waste referred to in Subchapter O (relating to Land Disposal Restrictions).

(i) Except as provided in §335.47 of this title (relating to Special Requirements for Persons Eligible for a Federal Permit by Rule), Subchapter F of this Chapter (relating to Permitting Standards for Owners and Operators of Hazardous waste Storage, Processing, or Disposal Facilities) does not apply to persons disposing of hazardous waste by means of underground injection. However, Subchapter F does apply to the aboveground storage or processing of hazardous waste before it is injected underground.

(j) Except as specified in Subchapter H, Division 5 of this chapter (relating to Universal Waste Rule), Subchapters B-F and O of this chapter and Chapter 305 of this title do not apply to universal wastes, universal waste handlers, or universal waste transporters as defined in §335.261 of this title (relating to Universal Waste Rule). Universal wastes are not fully regulated hazardous wastes, but are subject to regulation under Subchapter H, Division 5 of this chapter.

§335.43. Permit Required.

(a) Except as provided in subsection (b) of this section and §335.2 of this title (relating to Permit Required), no person shall store, process, or dispose of hazardous waste without first having obtained a permit from the Texas Water Commission.

(b) Any owner or operator of a solid waste management facility that is in existence on the effective date of a statutory or regulatory change that subjects the owner or operator to a requirement to obtain a hazardous waste permit who has filed a hazardous waste permit application with the commission in accordance with the rules and regulations of the commission, may continue the storage, processing, or disposal of hazardous waste until such time as the Texas Water Commission approves or denies the application, or, if the owner or operator becomes subject to a requirement to obtain a hazardous waste permit after November 8, 1984, except as provided by the United States Environmental Protection Agency or commission rules relative to termination of interim status. If a solid waste facility which has been receiving waste from off-site sources has become a commercial hazardous waste management facility as a result of the federal toxicity characteristic rule effective September 25, 1990, and is required to obtain a hazardous waste permit, such a facility that qualifies for interim status is limited to those activities that qualify it for interim status until the facility obtains the hazardous waste permit. Owners and operators of waste management facilities that are in existence on the effective date of statutory or regulatory amendments under the Solid Waste Disposal Act, Texas Civil Statutes, Article 4477-7, or the Resource Conservation and Recovery Act of 1976, as amended, 42 United States Code, §6901 et seq., that render the facility subject to the requirement to obtain a hazardous waste permit, may continue to operate if Part A of their permit application is submitted no later than:

(1) six months after the date of publication of regulations by the United States Environmental Protection Agency pursuant to the Resource Conservation and Recovery Act of 1976, as amended, which first require them to comply with the standards set forth in Subchapter E of this chapter (relating to Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing or Disposal Facilities), or Subchapter H of this chapter (relating to Standards for the Management of Specific Wastes and Specific Types of Facilities); or

(2) 30 days after the date they first become subject to the standards set forth in Subchapter E of this chapter (relating to Interim Standards for owners and Operators of Hazardous Waste Storage, Processing or Disposal Facilities), or Subchapter H of this chapter (relating to Standards for the Management of Specific Wastes and Specific Types of Facilities); whichever first occurs; or

(3) for generators who generate greater than 100 kilograms but less than 1,000 kilograms of hazardous waste in a calendar month and who process, store, or dispose of these wastes on-site, a Part A permit application shall be submitted to the Environmental Protection Agency by March 24, 1987, as required by 40 Code of Federal Regulations, §270.10(e)(1)(iii).

(c) The following words and terms, when used in subsection (b) of this section, shall have the following meanings unless the text clearly indicates otherwise.

(1) "On-Site Storage, Processing, or Disposal" - On-site storage, processing, or disposal occurs when industrial solid waste is:

(A) Collected, handled, stored, processed, or disposed of within the property boundaries of a tract of land owned or otherwise effectively controlled by the owners or operators of the particular industrial plant, manufacturing plant, mining operation, or agricultural operation from which the waste results or is produced, and which tract of land is within 50 miles from the plant or operation which is the source of the industrial waste; and

(B) The industrial solid waste is not collected, handled, stored, processed, or disposed of with solid waste from any other source or sources. An industrial plant, manufacturing plant, mining operation, or agricultural operation owned by one person shall not be considered an "other source" with respect to other plants and operations owned by the same person.

(2) "Commenced On-Site Storage, Processing, or Disposal of Hazardous Waste" - A person has commenced on-site storage, processing, or disposal of hazardous waste if the owner or operator has obtained all necessary federal, state, and local preconstruction approvals or permits as required by applicable federal, state, and local hazardous waste control statutes, regulations, or ordinances; and either:

(A) a continuous physical, on-site construction program has begun; or

(B) the owner or operator has entered into contractual obligations, which cannot be cancelled or modified without substantial loss, for construction of the facility to be completed within a reasonable time.

(d) Subsection (b) of this section shall not apply to a facility if it has been previously denied a hazardous waste permit or if authority to operate the facility has been previously terminated.

(e) Upon receipt of federal Hazardous and Solid Waste Act (HSWA) authorization for the Texas Water Commission's (commission) Hazardous Waste Program, the commission shall be authorized to enforce the HSWA provisions that the Environmental Protection Agency (EPA) imposed in hazardous waste permits that were issued before the HSWA authorization was granted.

§335.44. Application for Existing On-Site Facilities.

(a) In order to satisfy the application deadline specified in §335.43(b) of this title (relating to Permit Required), an application must be submitted prior to that date which contains information defining the following:

- (1) Owner(s) and operator(s) of the facility,
- (2) Description of the site,
- (3) Description of the facility and all facility components,
- (4) Identification of wastes generated, stored, processed, or disposed, together with quantities and sources, and
- (5) Methods and types of operations used in the storage, processing, or disposal of wastes.

(b) In addition to the information required in subsection (a) of this section, a complete application, required prior to action on an application by the commission, must include the following:

- (1) Engineering plans and specifications and other documentation necessary to demonstrate that all components of the facility design, construction, and operation conform to standards established by the commission, and
- (2) Information describing actions necessary to bring existing facilities into compliance with commission standards and a schedule for completion of such actions.

(c) An application form can be obtained from the executive director for each geographical location for which the storage, processing, or disposal of hazardous waste is proposed.

(d) The application shall be signed by the applicant or by a duly authorized agent, employee, officer, or representative of the applicant and shall be verified before a notary public.

§335.45. Effect on Existing Facilities.

(a) Effect on permitted off-site facilities. Subchapters B-E of this chapter (relating to Hazardous Waste Management General Provisions; Standards Applicable to Generators of Hazardous Waste; Standards Applicable to Transporters of Hazardous Waste; and Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities), provide minimum requirements applicable to all persons generating, transporting, storing, processing, and disposing of hazardous waste. All persons holding permits or any other authorizations from the commission, or its predecessor agencies, which relate to hazardous waste, shall meet the requirements of Subchapter E of this chapter (relating to Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities) until final administrative disposition of their permit application pursuant to standards prescribed by Subchapter F of this chapter (relating to Permitting Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities) is made. However, where the

permit or authorization specifies additional or more stringent requirements, the provisions of the permit or authorization shall be complied with.

(b) Effect on off-site facilities without a permit to re-use, recycle or reclaim hazardous waste, or to burn hazardous waste in boilers or industrial furnaces. Any person who has commenced the off-site storage, processing, or disposal of hazardous wastes, or activities that are listed, identified or described by the administrator of the United States Environmental Protection Agency in 40 Code of Federal Regulations Part 261, on or before the effective date of statutory or regulatory amendments under the Resource Conservation and Recovery Act of 1976, as amended, 42 United States Code §§6901 *et seq.*, relating to the re-use, recycling or reclamation of hazardous waste, or relating to the burning of hazardous waste in boilers or industrial furnaces, that render such wastes or activities subject to the requirements to have a hazardous waste permit, shall file an application with the commission on or before the effective date of such amendments, which includes the applicable information required by §335.44 of this title (relating to Application for Existing On-site Facilities). Any person who has commenced off-site storage, processing, or disposal of hazardous waste on or before the effective date of such amendments, who has filed a hazardous waste permit application with the commission on or before the effective date of such amendments in accordance with the rules and regulations of the commission, and who complies with requirements in this chapter applicable to such activities, may continue the off-site storage, processing, or disposal of the newly listed or identified wastes or waste activities until such time as the Texas Water Commission approves or denies the application. In cases where the aforementioned federal statutory or regulatory amendments become effective prior to the effective date of state statutory or regulatory amendments under the Texas Solid Waste Disposal Act, Chapter 361, Texas Health & Safety Code Annotated (Vernon Pamphlet 1992), submittal to the executive director of a copy of the properly filed U.S. E.P.A. permit application within 30 days of the effective date of the applicable state statutory or regulatory requirements shall constitute compliance with this subsection with regard to application filing requirements. Facilities that have received a permit for the reuse, recycling, or reclamation of hazardous waste in accordance with Subchapter F of this chapter (relating to Permitting Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities) are not required to comply with this subsection and may operate pursuant to their existing permit. Such permits, however, are subject to amendment under §305.62 of this title (relating to Amendment) to reflect new regulatory requirements.

§335.46. Sharing of Information.

Any information obtained or used by the commission in the administration of a hazardous waste program authorized under the Resource Conservation and Recovery Act of 1976, §3006 and 40 Code of Federal Regulations Part 271 shall be available to the Environmental Protection Agency upon request without restriction. If the information has been submitted to the commission under a claim of confidentiality, the commission shall submit that claim to the Environmental Protection Agency when providing information under this section. Any information obtained from the commission and subject to a claim of confidentiality will be treated by the Environmental Protection Agency in accordance with 40 Code of Federal Regulations Part 2. If the Environmental Protection Agency obtains information that is

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not claimed to be confidential, the Environmental Protection Agency may make that information available to the public without further notice.

§335.47. Special Requirements for Persons Eligible for a Federal Permit by Rule.

(a) The following persons are eligible for a permit by rule under 40 Code of Federal Regulations §270.60:

(1) the owner or operator of a barge or other vessel which accepts hazardous waste for ocean disposal;

(2) the owner or operator of a publicly-owned treatment works (POTW) which accepts hazardous waste for treatment; and

(3) the owner or operator of an injection well used to dispose of hazardous waste.

(b) To be eligible for a permit by rule, such person shall comply with the requirements of 40 Code of Federal Regulations §270.60 and the following rules:

(1) 40 Code of Federal Regulations §264.11 (EPA identification number);

(2) 40 Code of Federal Regulations §264.72 (manifest discrepancies);

(3) 40 Code of Federal Regulations §264.73(a) and (b)(1) (operating record);

(4) 40 Code of Federal Regulations §264.76 (unmanifested waste report);

(5) §335.12 of this title (relating to Shipping Requirements Applicable to Owners or Operators of Storage, Processing, or Disposal Facilities) and §335.15 of this title (relating to Recordkeeping and Reporting Requirements Applicable to Owners of Storage, Processing, or Disposal Facilities) (shipping and reporting procedures); and

(6) §335.15 of this title (relating to Recordkeeping and Reporting Requirements Applicable to Owners or Operators of Storage, Processing, or Disposal Facilities) and §335.154 of this title (relating to Reporting Requirements for Owners and Operators) (annual and monthly reports).

(c) In addition to the requirements stated in subsection (b) of this section, the owner or operator of an injection well used to dispose of hazardous waste shall:

(1) comply with the applicable personnel training requirements of 40 Code of Federal Regulations §264.16;

(2) when abandonment is completed, submit to the executive director certification by the owner or operator and certification by an independent registered professional engineer that the facility has

been closed in accordance with the specifications in §331.46 of this title (relating to Plugging and Abandonment Standards); and

(3) for underground injection control permits issued after November 8, 1984, comply with §335.167 of this title (relating to Corrective Action for Solid Waste Management Units). Where the underground injection well is the only unit at a facility which requires a permit, comply with 40 Code of Federal Regulations §270.14(d) (relating to information requirements for solid waste management units). Persons who dispose of hazardous waste by means of underground injection must obtain a permit under the Texas Water Code, Chapter 27.

(d) In addition to the requirements stated in subsection (b) of this section, the owner or operator of a publicly-owned treatment works (POTW) which accepts hazardous waste for treatment shall:

(1) meet all federal, state and local pretreatment requirements which would be applicable to the waste if it were being discharged into the POTW through a sewer, pipe or, similar conveyance; and

(2) for National Pollutant Discharge Elimination System (NPDES) permits issued after November 8, 1984, comply with §335.167 of this title (relating to Corrective Action for Solid Waste Management Units).

TAB

HEALTH AND SAFETY PLAN

**FINAL HEALTH AND SAFETY PLAN
EXCAVATION WORK AT SWMUS 19, 64, AND AOC 19
NAS FORT WORTH JRB, TEXAS**

Prepared for

U.S. Air Force Center for Environmental Excellence
Brooks AFB, Texas

Contract Number F41624-95-D-8005

Prepared by

HydroGeoLogic, Inc.
1155 Herndon Parkway, Suite 900
Herndon, VA 20170

August 2001

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LIST OF ACRONYMS AND ABBREVIATIONS

AFCEE	U.S. Air Force Center for Environmental Excellence
ANSI	American National Standards Institute
AOC	Area of Concern
°C	Celsius
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
COR	Contracting Officer's Representative
CPC	Chemical Protective Clothing
CPR	Cardiopulmonary Resuscitation
dba	decibel A-scale
DOT	Department of Transportation
EPA	U.S. Environmental Protection Agency
°F	Fahrenheit
FAR	Federal Acquisition Regulation
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCS	Hazard Communication Standard
HEPA	High Efficiency Particulate Air
HSO	Health and Safety Officer
HSP	Health and Safety Plan
IDLH	Immediately Dangerous to Life and Health
LEL	Lower Explosive Limit
mg/m ³	milligrams per cubic meter
MSDS	Material Safety Data Sheet
NAS	Naval Air Station
NIOSH	National Institute for Occupational Safety and Health
O ₂	Oxygen
OSHA	Occupational Safety and Health Administration
OVM	organic vapor monitor
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

POC	Point of Contact
PPE	Personal Protective Equipment
ppm	parts per million
PVC	Polyvinyl Chloride
RCO	Responsible Corporate Officer
SOW	Statement of Work
SSO	Site Safety Officer
SWMUs	Solid Waste Management Units
T	Ambient Air Temperature
T _a	Adjusted Air Temperature
TLV	Threshold Limit Value
UEL	Upper Explosive Limit
USCG	United States Coast Guard
WP	Work Plan

FINAL
HEALTH AND SAFETY PLAN
EXCAVATION WORK AT SWMUs 19 and 64, and AOC 19
NAS FORT WORTH JRB, TEXAS

1.0 INTRODUCTION

1.1 PURPOSE

This Health and Safety Plan (HSP) is designed to assign responsibilities, establish personnel protection standards, specify mandatory operating procedures, and provide for emergency contingencies with respect to health and safety issues that may arise while HydroGeoLogic, Inc. (HydroGeoLogic) personnel and subcontractor personnel are engaged in site investigation activities at three sites at Naval Air Station (NAS) Fort Worth JRB, Texas. The request for these activities was identified in the statement of work (SOW) dated March 25, 1997 under the authorization of the U.S. Air Force Center for Environmental Excellence (AFCEE) Contract Number F41624-95-D-8005, Delivery Order Numbers 0016 and 0026. This HSP conforms to the requirements of the Occupational Safety and Health Administration (OSHA) Standard 29 Code of Federal Regulations (CFR) 1910 and 1926. Detailed OSHA requirements for hazardous waste operations are contained in OSHA Standard 29 CFR 1910.120 and OSHA Standard 29 CFR 1926.65, "Hazardous Waste Operations and Emergency Response." Additional guidance for hazardous waste operations may be found in the U.S. Environmental Protection Agency (EPA) publication, "Standard Operating Safety Guides" (November 1987), the National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/EPA publication, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" (October 1985), and the Federal Acquisition Regulation (FAR) clause 52.236-13: "Accident Prevention."

This HSP is based on available background information regarding possible chemical, physical, and biological hazards that may exist at the site. If more information concerning the nature and/or concentrations of contaminants becomes available, this HSP will be amended accordingly.

1.2 APPLICABILITY

Compliance with the provisions of the HSP are mandatory for all official visitors, HydroGeoLogic employees, and subcontractors while investigations are being conducted at NAS Fort Worth JRB. This investigation will include excavation and removal of buried objects at two Solid Waste Management Units (SWMUs) and one Area of Concern (AOC) in accordance with Section 2.0 of the project Work Plan. Inadequate health and safety precautions on the part of visitors or subcontractors, or the belief that personnel on the site are or may be exposed to an immediate health hazard, can be cause for HydroGeoLogic to suspend on-site activities and require all personnel to evacuate the area of concern.

1.3 PROJECT ORGANIZATION, PERSONNEL, AND RESPONSIBILITIES

This section provides HydroGeoLogic's personnel organization for this project, and establishes the roles and responsibilities of various project personnel in regard to site health and safety. The authority and responsibilities of each HydroGeoLogic individual utilized for this project are presented in the following sections.

1.3.1 Health and Safety Officer (HSO)

The HSO for this project will be determined at a later date. This individual will be assisted by the Certified Industrial Hygienist (CIH). The HSO has the authority to:

- Suspend work or otherwise limit exposure to personnel if health and safety plans appear to be unsuitable or inadequate.
- Direct personnel to change work practices if existing practices are deemed to be hazardous to their health and safety.
- Remove personnel from projects if their actions or conditions endanger their health and safety or the health and safety of co-workers.
- Approve the qualifications of employees to work at hazardous waste sites.
- Approve health and safety plans.

The HSO responsibilities for this project will include:

- Interfacing with the Project Manager (PM) in matters of health and safety.
- Keeping the RCO and PM informed on the status of the site HSP.
- Developing or reviewing and approving project HSPs prior to submittal.
- Conducting staff training and orientation on health and safety related activities.
- Appointing or approving the Site Safety Officer (SSO).
- Monitoring compliance with HSPs and conducting site audits.
- Assisting in obtaining required health and safety equipment.
- Approving personnel to work on hazardous waste management projects with regard to medical examinations and health and safety training.

- Maintaining records pertaining to medical surveillance, training, fit testing, chemical exposure, and accidents/incidents.
- Provide industrial hygiene/chemical safety guidance.

1.3.2 Project Manager (PM)

The PM for this project will be Pete Dacyk. The PM has the authority to:

- Coordinate with the HSO on health and safety matters.
- Assign a HSO-approved SSO to the project and, if necessary, assign a suitably qualified replacement.
- Temporarily suspend field activities if health and safety of personnel are endangered, pending an evaluation by the HSO.
- Temporarily suspend an individual from field activities for infractions of the HSP, pending an evaluation by the HSO.

The PM responsibilities for this project will include:

- Assuring that the project is performed in a manner consistent with the health and safety program.
- Assuring that the project HSP is prepared, approved, and properly implemented.
- Providing the HSO with the information needed to develop HSPs.
- Assuring that adequate funds are allocated to fully implement project HSPs.

1.3.3 Site Safety Officer (SSO)

The SSO will direct all on-site health and safety training and daily safety inspections. A qualified HydroGeoLogic employee who has performed these functions before will be the designated SSO. The SSO has the authority to temporarily suspend field activities if health and safety of personnel are endangered, pending further consideration by the HSO, and to temporarily suspend an individual from field activities for infractions of the HSP, pending an evaluation by the HSO.

The SSO will report any problems or concerns to the HydroGeoLogic HSO. The HSO will also review accident reports and air monitoring data sheets; however, because these reviews are necessarily conducted after the fact, the SSO remains the principal person responsible for on-site safety. At the facilities, the SSO has primary responsibility for:

- Directing health and safety activities on a site.
- Assuring that appropriate personal protective equipment (PPE) is available and properly utilized by HydroGeoLogic personnel, visitors, and subcontractor personnel.
- Assuring that personnel are aware of the provisions of this plan, are instructed in the work practices necessary to ensure safety, and are aware of planned procedures for dealing with emergencies.
- Assuring that personnel are aware of the potential hazards associated with investigation activities.
- Monitoring the safety performance of all personnel to ensure that required work practices are followed.
- Monitoring the physical condition of site workers for heat and cold stress.
- Correcting any work practices or conditions that may result in injury or exposure to hazardous substances.
- Assuring the completion of the site-specific HSP forms presented in Section 14.1 and Appendix A (i.e., Compliance Agreement, Accident/Incident Reports, Site Safety Briefing Form, etc.).
- Assuring that a copy of the HSP is maintained on the site during all investigation activities.
- Assuring that all air monitoring and equipment calibrations required by the HSP are preformed and recorded, and that logs/forms that include these activities are maintained (Section 14.1).
- Assuring that the subcontractors medical monitoring program is adequate per OSHA Standard 29 CFR 1910.120 and this document.
- Verifying OSHA 40-hour health and safety training, 8-hr refresher training, and medical requirements before admitting official site visitors (e.g., Air Force and regulatory representatives) into the work zones.
- Maintaining and updating the site file of Material Safety Data Sheets (MSDSs).

1.3.4 Project Field Personnel

Personnel working on this project will be approved by the PM and the HSO and will meet the qualifications outlined in OSHA Standard 29 CFR 1910.120 and this HSP. The project personnel involved in on-site investigations and operations are responsible for:

- Taking all reasonable precautions to prevent injury to themselves and to their fellow employees.
- Implementing the HSP and reporting any deviations from the anticipated conditions described in the plans to the SSO.
- Performing only those tasks that they believe they can do safely, and immediately reporting any accidents and/or unsafe conditions to the SSO.
- Stopping work when conditions are unsafe, and assisting in correcting these conditions.

1.3.5 Subcontractor Responsibilities

It is the responsibility of each HydroGeoLogic subcontractor to ensure compliance with all applicable Federal, state, and OSHA regulations including OSHA Standard 29 CFR, Parts 1900 through 1910, and Part 1926. Specifically contained within these OSHA regulations is OSHA Standard 29 CFR 1910.120, which includes requirements for training and medical surveillance for employees engaged in certain hazardous waste operations. The subcontractor shall provide and work under their own Health and Safety Plan.

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2.0 SITE DESCRIPTION INFORMATION

A description of the NAS Fort Worth JRB sites under investigation is presented in Section 1.0 of the Work Plan. Please refer to this section for site description information.

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3.0 SITE INVESTIGATION ACTIVITIES

The site investigation activities to be conducted at NAS Fort Worth JRB are presented in Section 4.0 of the project Work Plan.

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4.0 HAZARD ASSESSMENT

This section identifies and evaluates potential site hazards that may be encountered during site investigation activities. Control measures, to protect site personnel from these potential hazards, are incorporated throughout this HSP, but are mainly contained in the following sections:

- Section 6.0, Air Monitoring
- Section 7.0, Personal Protective Equipment
- Section 11.0, Standard Work Practices

4.1 CHEMICAL HAZARDS

Based upon the information obtained from previous site investigations (groundwater and soil), the primary chemicals of concern at NAS Fort Worth JRB have been listed in Table 4.1.

The primary concerns from a chemical exposure standpoint are inhalation, ingestion, and absorption by direct skin contact with contaminants in locations expected to be source areas. The specific contaminants, their exposure limits, and recognition qualities are presented in Table 4.1. The acute and chronic symptoms of overexposure to these chemical contaminants and first aid procedures are presented in Table 4.2. If additional contaminants are identified as being present at NAS Fort Worth JRB, this HSP will be amended accordingly.

4.2 DECONTAMINATION SOLUTIONS AND PRESERVATIVES

Chemicals used to decontaminate sampling equipment and to preserve environmental samples also present hazards to the project personnel who use them. The chemicals likely to be brought to the site for use in this manner include:

- Nitric Acid
- Hydrochloric Acid
- Methanol
- Hexane

Although overexposure to these chemicals is unlikely, the acute and chronic symptoms and first aid procedures are presented in Table 4.2.

Table 4.1
Exposure Limits and Recognition Qualities

Compound	Permissible Exposure Limit (PEL) ^a	IDLH Level ^b	Recognition Qualities			Odor Threshold Concentration (ppm)	LEL ^c (%)	UEL ^d (%)	Ionization Potential (eV)
			Color	Odor	State				
Lead	0.050 mg/m ³	100 mg/m ³	gray	odorless	solid	NA	NA	NA	
Nitric Acid ¹	2 ppm	25 ppm	colorless, red or yellow	acidic, suffocating	liquid	NA	NA	11.95	
Hydrochloric acid ¹	5 ppm ^e	50 ppm	colorless to light yellow	irritating, pungent	gas	NA	NA	12.74	
Methanol ¹	200 ppm	6000 ppm	colorless	pungent	liquid	100	36.0	10.84	
Hexane ¹	500 ppm	1100 ppm	colorless	gasoline-like	liquid	NA	7.5	10.18	
Benzene	1.0 ppm	500 ppm ^f	colorless to light yellow	aromatic	liquid	1.5 - 5.0	1.2	9.24	
Tetrachloroethane	100 ppm ^f	150 ppm ^f	colorless	chloroform-like	liquid	27.0	NA	11.10	
Trichloroethene	100 ppm ^f	1,000 ppm ^f	colorless	chloroform-like	liquid	28.0	8.0	9.45	
Toluene	200 ppm	500 ppm	colorless	sweet, pungent, and benzene like	liquid	0.17 - 40	1.1	8.82	
Ethylbenzene	100 ppm	800 ppm	colorless	aromatic	liquid	4.7 - 5.0	0.8	8.76	
Total Xylene	100 ppm	900 ppm	colorless	aromatic	liquid	1.0 - 1.5	1.1	8.56	
Vinyl Chloride	1 ppm	ND ^g	colorless	pleasant	liquid/gas	3,000	3.6	9.99	
Naphthalene	10 ppm	250 ppm	colorless to brown	mothball-like	liquid/solid	0.003	0.9	8.12	
PAHs	0.2 mg/m ³	80 mg/m ³ ^h	black or dark brown amorphous residue	NA	liquid/solid	NA	NA	NA	

¹ Decontamination solutions and sample preservatives

^a OSHA permissible exposure limit or American Conference of Governmental Industrial Hygienists

Threshold Limit Value - Time Weighted Average

^b Immediately Dangerous to Life or Health

^c Lower explosive limit

^d Upper explosive limit

^e To be treated as a carcinogen

^f The value presented is the OSHA PEL, which is not necessarily the most conservative of the available exposure limits. The air monitoring screening levels in Table 6.1 are based upon the most conservative values.

^g Ceiling Value, a 15 minute Time Weighted Average that shall not be exceeded at any time during the work day

^h NA Not Applicable

Source: OSHA Pocket Guide to Chemical Hazards, June 1994.

Table 4.2
Acute And Chronic Effects
Symptoms of Overexposure And First Aid Treatment

Compound	Symptoms of Overexposure	First Aid Treatment
Lead	Weak, lassitude, insomnia; facial pallor; pal eye, anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia, gingival lead line, tremors; paralysis of wrist and ankles; encephalopathy; nephropathy; irritation to eyes; hypotension	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Respiratory support Ingestion: Medical attention immediately
Benzene	Irritation to eyes, nose, respiratory systems; giddiness; headache, nausea, staggered gait; fatigue, anorexia, lassitude; dermatitis; bone marrow depressant/depression; carcinogenic	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Artificial respiration Ingestion: Medical attention immediately; DO NOT INDUCE VOMITING
Toluene	Fatigue, weakness; confusion, euphoria, dizziness, headache; dilated pupils, lacrimation; nervousness, muscle fatigue, insomnia; paresis; dermatitis	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Medical attention immediately; DO NOT INDUCE VOMITING
Ethylbenzene	Irritation to eyes, mucous membranes; headache; dermatitis; narcosis; coma	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Artificial respiration Ingestion: Medical attention immediately
Tetrachloroethene	Irritation of the eyes, nose, throat; nausea; flush face, neck; vertigo, dizziness, in coordination; headache, somnolence; skin erythema; live damage; carcinogen	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Respiratory support Ingestion: Medical attention immediately
Trichloroethene	Headache, vertigo; visual disturbance, tremors, somnolence, nausea, vomiting; irritation of the eyes; dermatitis; cardia arrhythmias, paresthesia; carcinogen	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Respiratory support Ingestion: Medical attention immediately
Vinyl Chloride	Weakness; abdominal pain, gastrointestinal bleeding; hepatomegaly; pallor of cyan of extremities; carcinogen	Inhalation: Respiratory support
Xylene	Dizziness, excitement, drowsiness, incoordination, staggering gait; irritation of eyes, nose, throat; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Medical attention immediately; DO NOT INDUCE VOMITING

**Table 4.2 (continued)
Acute and Chronic Effects
Symptoms of Overexposure and First Aid Treatment**

Compound	Symptoms of Overexposure	First Aid Treatment
Naphthalene	Irritation to eyes, confusion, excitement, Malaise (vague feeling of discomfort), nausea, vomiting, abdominal pain, irritation of the bladder, profuse sweating, jaundice, hematuria (blood in the urine), hemoglobinuria, renal shutdown; optical neuritis, corneal damage	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Artificial respiration Ingestion: Medical attention immediately
PAHs	Dermatitis, bronchitis; carcinogen	Eye: Irrigate immediately Skin: Soap wash immediately Inhalation: Respiratory support Ingestion: Medical attention immediately
Nitric Acid ¹	Irritation of eyes, mucous membranes, and skin; delayed pulmonary edema, pneumitis, bronchitis; dental erosion	Eye: Irrigate immediately Skin: Water flush immediately Inhalation: Respiratory support Ingestion: Medical attention immediately
Hydrochloric Acid ¹	Inflammation of the nose, throat, laryngeal; cough, burns throat, choking; burns eyes, skin; dermatitis	Eye: Irrigate immediately Skin: Water flush immediately Inhalation: Respiratory support Ingestion: Medical attention immediately
Methanol ¹	Eye irritant, headache, drowsiness; lightheadedness, nausea, vomiting; visual disturbances, blindness	Eye: Irrigate immediately Skin: Water flush immediately Inhalation: Respiratory support Ingestion: Medical attention immediately
Hexane ¹	Light-headedness, nausea, headaches, numbness in extremities, weak muscles, eye irritation, nose irritation, dermatitis, chemical pneumonia, giddiness	Eye: Irrigate immediately Skin: Soap, wash immediately Inhalation: Respiratory support Ingestion: Medical attention immediately

¹ Decontamination solutions and sample preservatives
Source: NIOSH Pocket Guide to Chemical Hazards, June 1994.

4.3 PHYSICAL HAZARDS

The following section titles identify physical hazards that may be encountered. They include but are not limited to;

- Hot or Cold Work Environments (Stress)
- Noise Hazards
- Materials Handling
- Utility Hazards
- Fall, Trip, and Slip Hazards (Section 11.0)
- Flammable/Explosive Atmospheres (Section 6.0)
- Heavy Equipment/Vehicular Activity (Section 11.0)

Control measures to help protect site personnel from these potential hazards are incorporated in the following subsections and throughout this HSP, specifically Section 11.0, Standard Work Practices, for safety hazards associated with drilling rigs and support vehicles.

4.3.1 Heat Stress

Heat stress can be a problem especially if site activities are required to be performed while wearing PPE in warm, humid weather conditions. The four types of heat illness in increasing order of severity include: heat rash, heat cramps, heat exhaustion, and heat stroke.

- Heat rash may result from continuous exposure to heat or humid air.
- 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.
- 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, and moist skin; heavy sweating; dizziness, fainting, and nausea.
- Heat stroke is the most 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 or death occurs. When heat stroke is suspected, professional medical assistance must be obtained immediately. Signs and symptoms include: red, hot, and unusually dry skin; lack of or reduced perspiration; dizziness and confusion; strong, rapid pulse; and coma.

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important, because once someone suffers from heat stroke or heat exhaustion, that person may be predisposed to additional injuries. To avoid heat stress, the following steps should be taken:

- Work schedules should be adjusted. The following guidelines of rest and cooling of the body will be followed to minimize the effects of heat stress:

- If oral temperature exceeds 99.6 Fahrenheit (°F) (37.6 Celsius [°C]), shorten the next work cycle by one-third without changing the rest period.
- If oral temperature still exceeds 99.6°F (37.6 °C) at the beginning of the next rest period, shorten the following work cycle by one-third.
- Do not permit a worker to wear a semipermeable or impermeable garment when his/her oral temperature exceeds 100.6°F (38.1 °C).

Initially, the frequency of physiological monitoring depends on the air temperature adjusted for solar radiation and the level of physical work (Table 4.3). The length of the work cycle will be governed by the frequency of the required physiological monitoring.

Table 4.3
Suggested Frequency of Physiological Monitoring for
Fit and Acclimatized Workers

Adjusted Temperature ¹	Normal Work Ensemble ²	Impermeable Ensemble
90°F or above	After each 45 minutes of work	After each 15 minutes of work
87.5° - 90°F	After each 60 minutes of work	After each 30 minutes of work
82.5° - 87.5°F	After each 90 minutes of work	After each 60 minutes of work
77.5° - 82.5°F	After each 120 minutes of work	After each 90 minutes of work
72.5° - 77.5°F	After each 150 minutes of work	After each 120 minutes of work

- ¹ Calculate the adjusted air temperature (T_a) by using the equation: $T_a(^{\circ}\text{F}) = T(^{\circ}\text{F}) + (13 \times \% \text{ sunshine})$. Measure air temperature (T) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows)
- ² A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants

Source: NIOSH/OSHA/USCG/EPA, 1985

- Shelter (air-conditioners and other cooling devices, if possible) or shaded areas should be provided to protect personnel during rest periods.
- Worker's body fluids should be maintained at normal levels to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water in sweat, which will vary from day to day. The normal thirst mechanism is not sensitive enough to ensure that water intake is sufficient to replace lost sweat. When heavy sweating occurs, the worker should be encouraged to drink more. Have workers drink fluid (preferably water or diluted drinks) before beginning work. Urge workers to drink a cup or two at each scheduled break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but will depend on actual fluid replacement needs, which will vary depending on the sweat rate.

- The drinking water temperature should be maintained at 50 °F to 60 °F (10 °C to 15.6 °C).
- Disposable cups should be provided.
- Encourage workers to maintain an optimal level of physical fitness. Where indicated, acclimatize workers to site work conditions.
- Train workers to recognize, identify, and treat heat stress.

When heat stress is suspected, the following steps should be taken:

- Get the victim out of the heat
- Loosen tight clothing
- Remove perspiration-soaked clothing
- Apply cool, wet cloths to the skin
- Fan the victim
- If the victim is conscious, give cool water to drink. Do not give electrolyte solutions (i.e., those containing salt) to victims of heat stress because it can cause nausea and vomiting. Only small sips of cool water should be administered to heat stress victims.
- Call for an ambulance if the victim refuses water, vomits, or starts to lose consciousness.

4.3.2 Noise Hazards

The SSO or designee will monitor high noise levels when equipment or machinery (e.g. backhoe, drill rig, etc.) is being used on-site. Field personnel working in areas where noise levels can be expected to reach or exceed 85 decibels on the A-scale (dBA) will be issued hearing protection to reduce the level below the 85 dBA threshold. Compliance standards for occupational noise exposure are found in 29 CFR 1910.95.

4.3.3 Materials Handling

The most common type of materials handling accident is when fingers or toes of field personnel get caught between two objects. Special precautions must be implemented during the moving, shifting, or rolling of materials and should never be attempted by a single individual.

4.3.4 Utility Hazards

The locations of all underground utilities must be identified and marked prior to initiating any subsurface investigations. In addition, drilling within 20 feet in any direction of overhead powerlines will not be permitted.

4.4 BIOLOGICAL HAZARDS

The biological hazards that could be encountered by site personnel include, but are not limited to, the following:

- Poisonous snakes and spiders
- Stinging insects
- Ticks and chiggers
- Poisonous plants (e.g., poison sumac, poison ivy, poison oak)

Control measures to help protect site personnel from these biological hazards are incorporated in the following sections.

4.4.1 Poisonous Snakes and Spiders

Reactions from a snakebite are aggravated by acute fear and anxiety. Other factors that affect the severity of local and general reaction from a poisonous snakebite include: the amount of venom injected and the speed of absorption of venom into the victim's circulation; the size of the victim; protection from clothing, including shoes and gloves; quick anti-venom therapy; and location of the bite.

Spiders in the United States are generally harmless, with two notable exceptions: the Black Widow spider (*Latrodectus Mactans*) and the Brown Recluse or violin spider (*Lox Osceles Reclusa*). The Black Widow spider is commonly found in trash, near dwellings, under logs and stones, and in woods and fields. The female is approximately 2.5 centimeters long and shiny black typically with a reddish hourglass design on the underside of the abdomen. The male is similar in appearance, but much smaller and with four pair of reddish stripes on the sides of the abdomen. The Brown Recluse spider has a leg span of about 2.5 centimeters and a dark violin- or fiddle-shaped design on its back. It is often found under stones or in dark corners inside buildings.

The symptoms of a Black Widow spider bite are as follows: slight local reaction, severe pain produced by nerve toxin, profuse sweating, nausea, painful cramps in abdominal muscles, and difficulty in breathing and speaking. Victims recover in almost all cases, but an occasional death is reported. The symptoms of a Brown Recluse spider bite is the development of a skin ulcer that may be several inches in diameter surrounding the bite and may take several months to heal.

Field personnel should exercise caution when lifting logs, rocks, covers to manholes, sumps, etc.

4.4.1.1 First Aid Procedures (Snakebite)

The objective of first aid is to reduce the circulation of blood through the bite area, to delay absorption of venom, to prevent aggravation of the local wound, and to sustain respiration. Several steps are listed to properly care for a snakebite victim. The most important step is to get the snakebite victim to the hospital quickly. Meanwhile, take the following first aid measures:

- Keep the victim from moving around.
- Keep the victim as calm as possible and preferably in a lying position.
- Immobilize the bitten extremity and keep it at or below heart level. If the victim can reach a hospital within 4 to 5 hours and if no symptoms develop, no further first aid measures need to be applied.
- If mild-to-moderate symptoms develop, apply a constricting band 2 to 4 inches above the bite, but not around a joint (the elbow, knee, wrist, or ankle) and not around the head, neck, or trunk. The band should be $\frac{3}{4}$ to $1\frac{1}{2}$ inches wide, not thin like a rubber band. The band should be snug but loose enough for a finger to be slipped underneath. Watch for swelling and loosen the band if it becomes too tight, but do not remove it. Periodically check the pulse in the extremity beyond the bite to insure that the blood flow has not stopped.

Several other factors must be considered in cases of snakebite:

- Shock. Keep the victim lying down and comfortable, and maintain his or her body temperature.
- Breathing and heartbeat. If breathing stops, give mouth-to-mouth resuscitation. If breathing stops and there is no pulse, perform cardiopulmonary resuscitation (CPR) if you have been trained to do so.
- Identifying the snake. If you can kill the snake without risk or delay, bring it to the hospital for identification, but exercise extreme caution in handling the snake.
- Cleaning the bitten area. You may wash the bitten area with soap and water and blot it dry with sterile gauze. You may apply dressings and bandages, but only for a short period of time.
- Medicine to relieve pain. Do not give the victim alcohol, sedatives, aspirin, or any medicine containing aspirin. Consult a doctor or other medical personnel for specific medications that may be used.
- Snakebite kits. Keep a kit accessible for all outings in primitive areas or areas known or suspected to snake infested.

It is not recommended that cold compresses, ice, dry ice, chemical ice packs, spray refrigerants, or other methods of cold therapy be used in the first aid treatment of snakebite as it has no effect on venom and may damage the surrounding tissue.

4.4.1.2 General First Aid for Poisonous Insect Bites

For minor bites and stings use cold applications and soothing lotions, such as calamine. For more severe reactions, take the following first aid measures:

- Apply a constricting band above the injection site on the victim's arm or leg (between the site and the heart). Do not apply tightly. You should be able to slip your index finger under the band when it is in place. Give artificial respiration if necessary;
- Keep the affected part below the level of the victim's heart.
- If medical care is ready available, leave the band in place; otherwise, remove it after 30 minutes.
- Apply ice contained in a towel or plastic bag, or cold cloths, to the site of the sting or bite.
- Give home medicine, such as aspirin, for pain.
- If the victim has a history of allergic reactions to insect bites or is subject to attacks of hay fever or asthma, or if he or she is not promptly relieved of symptoms, call a physician or take the victim immediately to the nearest location where medical treatment is available. In a highly sensitive person, do not wait for symptoms to appear, since delay can be fatal.
- In case of a bee sting, remove and discard the stinging apparatus and venom sac.

Workers who have had severe allergic reactions to bee/wasp stings in the past will inform the SSO when they arrive at the site for the first time.

4.4.2 Ticks and Chiggers

Field personnel should be aware of the presence of ticks (i.e., deer tick) and chiggers at the site. Common carriers of ticks and chiggers are the white-footed mouse and white-tailed deer which are prevalent in the area. The deer tick is about the size of a sesame seed, as distinguished from the dog tick or wood tick, which is significantly larger. The deer tick is principally found along the Atlantic coast, living in grassy and wooded areas, and feeds on mammals such as mice, shrews, raccoons, opossums, deer, and humans. Common diseases caused by ticks are presented in the following subsections.

Removal of ticks is best accomplished using small tweezers. Do not squeeze the tick's body. Grasp it where the mouth parts enter the skin and tug gently, not firmly, until it releases its hold on the skin. Save the tick in a jar labeled with the date, body location of the bite, and the place

where it may have been acquired. Wipe the bite thoroughly with an antiseptic. Seek medical attention in the event tick-related symptoms appear.

When in an area suspected of harboring ticks (grassy, bushy, or woodland area) the following precautions can minimize the chances of being bitten by a tick:

- Wear long pants and long-sleeved shirts that fit tightly at the ankles and wrists.
- Wear light colored clothing so ticks can be easily spotted.
- Wearing tick repellents may be useful.
- Inspect clothing frequently while in tick habitat.
- Inspect your head and body thoroughly when you return from the field.
- Remove any attached ticks by tugging with tweezers where the tick's mouth parts enter the skin. Do not squeeze or crush it.

4.4.2.1 Lyme Disease

Lyme disease is an illness caused by a bacterium which may be transmitted by the bite of the tick (*Ixodes dammini*), commonly referred to as the "Deer Tick". Not all ticks are infected with the bacterium, however. When an infected tick bites, the bacterium is passed into the bloodstream of the host, where it multiplies. The various stages and symptoms of the disease are well recognized and, if detected early, can be treated with antibiotics.

The illness typically occurs in the summer and is characterized by a slowly expanding red rash, which develops a few days to a few weeks after the bite of an infected tick. This may be accompanied by flu-like symptoms along with headache, stiff neck, fever, muscle aches, and/or general malaise. At this stage treatment by a physician is usually effective; however, if left too long, these early symptoms may disappear and more serious problems may follow. The most common late symptom of the untreated disease is arthritis. Other problems which may occur include meningitis and neurological and cardiac abnormalities. It is important to note that some people do not get the characteristic rash but progress directly to the later manifestations. Treatment of later symptoms is more difficult than early symptoms and is not always successful.

4.4.2.2 Rocky Mountain Spotted Fever

In the eastern and southern United States this tickborne disease is transmitted by the infected Dog Tick (*Dermacentor Variabilis*). It is important to note that the Dog Tick is significantly larger than the Deer Tick. Nearly all cases of infection occur in the spring and summer, generally several days after exposure to infected ticks. The onset of illness is abrupt and often accompanied by high fever, headache, chills, and severe weakness. After the fourth day of fever, victims develop a spotted pink rash that usually starts on the hands and feet and gradually extends to most of the body. As with Lyme disease, early detection and treatment significantly reduces the severity of illness. The disease responds to antibiotic therapy with tetracycline or chloramphenicol.

4.4.3 Poisonous Plants

The majority of skin reactions following contact with offending plants are allergic in nature and are characterized by general symptoms of headache and fever, itching, redness, and a rash. Some of the most common and most severe allergic reactions result from contact with plants of the Poison Ivy group including Poison Ivy, Poison Oak and Poison Sumac. The most distinctive features of Poison Ivy and Poison Oak are their leaves, which are composed of three leaflets each. Both plants also have greenish-white flowers and berries that grow in clusters. Such plants produce a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim can also develop a high fever and become very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

4.4.3.1 First Aid Procedure

- Remove contaminated clothing.
- Wash all exposed areas thoroughly with soap and water, followed by rubbing alcohol.
- Apply calamine or other soothing skin lotion if the rash is mild.
- Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity.

5.0 HAZARD COMMUNICATION

The HydroGeoLogic Hazard Communication Program complies with the OSHA Hazard Communication Standard (HCS) found in OSHA Standard 29 CFR 1910.1200 and 1926.59, which applies to any chemical produced or used in the workplace in such a manner that employees may be exposed to under normal conditions of use in a foreseeable emergency. Although waste materials are excluded from the OSHA requirements, decontamination chemicals for sampling equipment or protective clothing and calibration standards require MSDSs.

The principle of communicating the hazards of materials used in the workplace by employees applies to company-wide activities, from informational programs on the conduct of hazardous waste activities to the company's insistence upon adequate health and safety training. It is also important for personnel to have an awareness of client concern for Hazard Communication due to Federal, state, and local regulations directly affecting certain client activities.

In order to comply with the HCS, HydroGeoLogic has determined that:

- All containers of hazardous chemicals must be appropriately labeled or tagged to identify the hazard and provide information on effects and appropriate protective measures.
- Labels, tags, or signs must be properly affixed to the container and visible at all times while the chemical is present and removed promptly when the chemical no longer exists.
- Written information (i.e., MSDSs) on hazardous chemicals in the workplace must be available to employees working with the substances.
- Appropriate MSDSs will be available to any contractor or subcontractor employee working on projects under HydroGeoLogic control.

In order to communicate the hazards of chemicals, MSDS for chemicals used will be maintained on site and presented as part of the site specific training (Section 10.2). MSDSs for site-related chemicals are presented in Appendix B.

When investigation results indicate potential imminent health risks to contracted or federal personnel, or the public at large, the contracting officer's representative (COR) and the base point of contact (POC) will be notified as soon as practicable. Written notification and supporting documentation will be provided within three days of finding potential imminent health risks during investigation activities.

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6.0 AIR MONITORING

This section presents requirements for the use of real-time air monitoring instruments during site activities involving potential for exposure to site contaminants. It establishes the types of instruments to be used, the frequency of which they are to be used, techniques for their use, action levels for upgrading/downgrading levels of protection, and methods for instrument maintenance and calibration.

6.1 INSTRUMENTS AND USE

A Photoionization Detector (PID) or organic vapor monitor (OVM) equipped with a 10.2 eV lamp will be utilized for detecting the presence of emissions from chemicals of concern in accordance with Table 6.1. A Draeger pump and colorimetric tubes will be used to confirm any detections observed with the PID/OVM in accordance with Table 6.1.

The PID/OVM will be used throughout the execution of the following activities:

- Soil excavation
- Extraction of unearthed objects
- Soil sampling during and after excavation activities
- Surface water sampling
- Sampling equipment decontamination/heavy equipment decontamination
- Waste characterization and disposal

6.2 AIR MONITORING REQUIREMENTS

6.2.1 PhotoIonization Detector (PID/OVM)

Air monitoring with the PID/OVM will be initiated at potential sources of vapor emissions (source monitoring) at specified frequencies. The following potential sources and monitoring frequencies are anticipated:

Excavation of soils	Every 5-foot depth
Extraction of unearthed objects	Upon initial opening
Environmental sampling	Every sample set
Surface/subsurface soil sampling	Every 5-foot depth
Investigative derived waste characterization	Every container to be sampled

If source monitoring indicates the presence of airborne emissions, air monitoring will then be initiated in the breathing zones of those workers who could be affected by the emissions. Air monitoring will also occur upon the request of site workers who notice unusual site odors or an increase in their intensity. If work is to be performed downwind of a site, air monitoring will be conducted to determine what type, if any, PPE is required to protect workers and to determine the potential for an imminent threat to public health.

The presence of elevated readings in the worker's breathing zone as identified in Table 6.1 require amendments to the HSP before workers are allowed to enter the exclusion zone. Depending on the air monitoring readings, air-purifying respirators may not be acceptable due to the fact that some contaminants of concern have poor warning properties and/or are unable to be filtered from inspired air with chemical cartridges (Table 6.1). Elevated readings will be based on confirmation sampling using a Draeger pump and colorimetric tubes in accordance with Table 6.1.

6.2.2 Draeger Pump and Tubes

A hand operated Draeger pump with colorimetric tubes will be used to confirm the results of PID/OVM testing. If the results of the PID/OVM tests show concentrations greater than 1.0 parts per million (ppm) above background concentrations in the breathing zone, then the colorimetric tubes will be used to identify the contaminants in the breathing zone. Colorimetric tubes to be utilized in the event of elevated PID/OVM readings will include benzene, vinyl chloride, and naphthalene in accordance with Table 6.1.

6.2.3 LEL/O₂

Air monitoring with the Lower Explosive Limit (LEL)/O₂ will be conducted during soil boring and drilling activities if flammable concentrations are known or suspected. If elevated (above background) LEL readings are observed, personnel must be advised of the potential explosive nature and must initiate the use of spark proof tools in accordance with Table 6.1. An LEL reading in excess of 10 percent above background requires cessation of the work zone until readings subside.

6.2.4 Visual Observations

If airborne particulates are observed and air monitoring results warrant, as indicated in Table 6.1, personnel must don air-purifying respirators equipped with organic vapor cartridges and high efficiency particulate air (HEPA) filters. If airborne particulates are observed due to intrusive activity at these sites, dust control measures will be implemented.

6.3 MODIFICATION OF AIR MONITORING REQUIREMENTS

The action levels and protection measures presented in Table 6.1 are based upon the assumption that the contaminants listed in Table 4.1 are the only contaminants which pose a potential health risk to site workers covered by this HSP. In the event that this assumption is found to be invalid through analysis of samples collected, or by some other means, the action levels will be modified as necessary.

6.4 INSTRUMENT MAINTENANCE AND CALIBRATION

Air monitoring instruments are rented and prefield-calibrated before shipment to the field site. Field maintenance will consist of daily cleaning of the instruments using a damp towel or rag to wipe off the instrument's outer casing, overnight battery recharging, and cleaning or replacing of the lamp whenever calibration cannot be attained. Procedures for accomplishing instrument

maintenance is contained in the PID/OVM User's Manual which will be provided with each instrument. The User's Manual provided with each instrument will be followed to field calibrate the instruments prior to each day of use under the environmental conditions (temperature and humidity) that sampling will occur. Field equipment will also be calibrated at the end of each day to account for instrument drift and reliability.

6.5 RECORDKEEPING

Instrument calibrations and readings will be recorded on the Air Monitoring Log Sheet provided in Appendix A of this HSP. Copies of these log sheets will be maintained on site until field activities covered by this HSP have been completed at which time the log sheets will be transmitted to the HydroGeoLogic HSO and to the project file.

**Table 6.1
Hazard Monitoring Methods, Action Levels,
and Protection Measures**

Hazard	Monitoring Method	Action Level	Protective Measures	Monitoring Schedule
Toxic Vapors (as identified in Table 4.1)	PID/OVM	0.0 to <1.0 ppm above background based on judgment of SSO	Level D (see Table 7.1)	-continue with regular monitoring of breathing zone
		1.0 ppm above background based on judgment of SSO	Level D (see Table 7.1)	-confirm/deny reading with vinyl chloride and benzene colorimetric tubes. -if confirmed as vinyl chloride and/or benzene, then see vinyl chloride/benzene hazard identified below. -if denied as vinyl chloride and benzene, then continue with regular monitoring of breathing zone.
		> 1 ppm to <10 ppm above background based on judgment of SSO (if denied as benzene and vinyl chloride)	Level D (see Table 7.1)	-continue with regular monitoring of breathing zone.
		10 ppm above background based on judgment of SSO (if denied as benzene and vinyl chloride)	Level D (see Table 7.1)	-confirm/deny reading with naphthalene colorimetric tubes. -if confirmed as naphthalene, then see naphthalene hazard identified below. -if denied as naphthalene, then continue with regular monitoring of breathing zone.
Benzene	Colorimetric Tubes	> 10 to < 100 ppm above background based on judgment of SSO (if denied as benzene, vinyl chloride and naphthalene)	Level D (see Table 7.1)	-continue with regular monitoring of breathing zone
		100 ppm or greater above background based on judgment of SSO (if denied benzene and naphthalene)	STOP WORK, EVACUATE AREA, NOTIFY PROJECT MANAGER	
Naphthalene	Colorimetric Tubes	confirmed 1.0 ppm or greater above background based on judgment of SSO.	Level C (See Table 7.1)	-continue regular monitoring of breathing zone.
		confirmed 10 ppm or greater above background based on judgment of SSO.	Level C (See Table 7.1)	-continue regular monitoring of breathing zone.

**Table 6.1 (continued)
Hazard Monitoring Methods, Action Levels,
and Protection Measures**

Hazard	Monitoring Method	Action Level	Protective Measures	Monitoring Schedule
Vinyl Chloride	Colorimetric Tubes	confirmed 1.0 ppm to 10 ppm above background based on judgment of SSO.	Level C (See Table 7.1)	-continue regular monitoring of breathing zone.
Flammable/ Explosive Gases and/or Vapors	LEL/O ₂	0.0 to 5.0 percent LEL	-notify sampling team of readings.	-prior to and during sampling activities, monitor all areas suspected of containing flammable/explosive gases and/or vapors. -continue with regular monitoring of breathing zone.
		5.0 to <10.0 percent LEL	-use spark proof equipment/tools	-continue with regular monitoring of breathing zone. - notify HSO and Project Manager
		> 10.0 percent LEL	STOP WORK, EVACUATE AREA, NOTIFY PROJECT MANAGER	-requires SHP amendments unless readings subside.

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7.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

This section presents requirements for the use of PPE for each of the activities being conducted. This section includes anticipated levels of protection for each of the activities, the criteria used for selecting various levels of protection, and criteria for modifying levels of protection based on monitoring instrument readings and personal observations.

7.1 ANTICIPATED LEVELS OF PROTECTION

All work is anticipated to be performed in Level D or Modified Level D protection. The levels of protection are presented in Table 7.1. Upgrading to the next level of protection can be made at any time based on visual observation and site monitoring. Downgrading to the next level of protection requires the concurrence of the project HSO and the SSO.

Table 7.1
Protective Equipment for On-site Activities

Activity	Level	Protective Equipment
Excavation of Soils Surface Water Sampling Surface Soil Sampling Subsurface Soil Sampling Waste Characterization	D	<ul style="list-style-type: none"> • Street clothes or overalls (long sleeves) • Impermeable safety boots/shoes (steel toed) • Safety glasses/goggles (if hazard to eyes exists) • Hard hat (if hazard to head exists) • Gloves (nitrile, neoprene, cotton, leather)
	D (modified)	<ul style="list-style-type: none"> • Safety boots (steel toed); chemically-resistant or chemical-resistant rubber boot covers • Gloves (nitrile, neoprene, cotton, leather) • Tape for sealing ankle and wrist openings • Hard hat • Safety glasses/goggles • Uncoated tyvek® or equivalent
	C As Required by Table 6.1	<ul style="list-style-type: none"> • Coated tyvek® or equivalent • Safety boots (steel toed); chemically-resistant or chemical-resistant rubber boot covers • Latex inner gloves • Tape for sealing ankle and wrist openings • Chemical resistant outer gloves (nitrile, neoprene) • Full-face respirator (organic vapor cartridges, HEPA) • Additional items may be required (site-specific)

7.2 PPE SELECTION CRITERIA

Respiratory protection is not anticipated for use during the initial stages of work until detectability of site contaminants with air monitoring instruments warrants the donning of respirator protection in accordance with Table 6.1. See Section 7.3 for modification criteria of respiratory protection. Basic requirements of field personnel prior to using respiratory protection include:

- All field personnel will be medically certified to wear a full face respirator, have been properly fit tested for the respirator site workers will be using, as outlined in OSHA Respiratory Protection Standard 29 CFR 1910.134, and have the proper documentation indicating that a fit test has been performed in the past 12 months prior to assignment.
- Only NIOSH approved respirators are to be used on site. The respirators are to be properly cleaned, inspected, and maintained prior to use at the conclusion of the work day.
- Cartridges to air-purifying respirators will be disposed of at the end of each work day or when load-up or breakthrough occurs.
- Field personnel will be clean shaven in areas which might prevent the seal of the respirator to the face and contact lenses will not be permitted while wearing a respirator.

Hard hats, safety glasses, and steel-toe work boots were selected as minimum protection to reduce the potential for injury resulting from exposure to the physical hazards associated with onsite investigations.

Boot covers, disposable nitrile gloves, and Tyvek® coveralls were selected to minimize contamination of work clothes and to prevent direct skin contact with low level contamination. Nitrile gloves were selected for activities that may involve direct contact with appreciable concentrations of contaminants thought to be present.

Polyvinyl chloride (PVC) or Saranex coveralls, hoods, and/or splash shields were selected to prevent saturation of work clothes during activities involving large volumes of liquids and/or saturated soils/equipment.

7.3 PPE MODIFICATION CRITERIA

This section presents criteria for upgrading and downgrading chemical protective clothing (CPC) and/or respiratory protection. Where uncertainties arise, the more protective requirement will apply.

7.3.1 CPC Modification Criteria

Tyvek® coveralls and boot covers must be worn anytime there is a reasonable potential for contamination of street clothes.

Disposable nitrile gloves must be worn anytime there is a reasonable potential for contact with unsaturated soils or equipment which may contain trace contamination.

Nitrile gloves (11 millimeter or greater) must be worn anytime there is a reasonable potential for contact with groundwater, saturated soils, and/or soils producing elevated PID/OVM readings.

PVC or Saranex coveralls must be worn anytime there is a reasonable potential for saturation of work clothes.

7.3.2 Respiratory Protection Modification Criteria

Air-purifying respirators must be worn when both of the following criteria exist:

- If dusty conditions become evident and cannot be controlled via other methods (e.g., wetting down areas of concern).
- None of the following are observed (if any are observed, amendments must be made to the HSP before initiating work activities):
 - Elevated PID/OVM readings in the worker's breathing zone, including intermittent readings that persist for greater than 15 minutes, in accordance with Table 6.1.
 - Unknown chemical odors present in the work space, including intermittent odors that persist for greater than 15 minutes.
 - Worker complaints of adverse health effects that indicate possible overexposure.

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8.0 DECONTAMINATION

This section describes the steps site personnel will follow to prevent the spread of site contaminants into areas that may affect unprotected, unsuspecting site personnel or the public. It includes requirements for decontamination of personnel, sampling equipment, and excavation equipment.

8.1 PERSONNEL DECONTAMINATION

The decontamination of personnel and their protective clothing will be performed within the decontamination zone. Table 8.1 presents the six stages for decontamination for Level D protection.

Table 8.1
Six stages for Decontamination for Modified Level D Protection

Stage	Procedure
Stage 1: Segregated Equipment Drop	Deposit equipment used on site on plastic drop cloths or in assigned containers with plastic liners.
Stage 2: Boot Cover and Glove Wash	Scrub outer boot covers and gloves with decontamination solution, and rinse with water.
Stage 3: Tape Removal	Remove tape around boots and gloves and deposit in container with plastic liner.
Stage 4: Remove boots, gloves, and disposable clothing	Deposit in appropriate plastic-lined container. Discard disposable clothing.
Stage 5: Field wash	Wash hands and face with soap and water.
Stage 6: Redress	Put on clean clothes.

Wash tubs containing a laboratory grade-detergent solution and soft-bristle brushes will be used to wash reusable personal protective equipment and boots. Clean water will be used for the final rinse. The choice of decontamination solution is dependent upon the type of materials which must be removed from reusable protective equipment. Based on the current understanding of potential site contaminants, a detergent and water solution is recommended for general purpose decontamination. Acceptable detergents include laboratory-grade cleaners (e.g., Alconox™, or equivalent), or a high strength consumer detergent such as Liquid Tide™.

Alternative decontamination solutions may be called for if the contaminants encountered are different or in a more concentrated state than anticipated. Alternative solutions include:

1. Dilute acids for removal of basic (caustic) compounds, amines, and hydrazines.
2. Dilute bases (soaps and detergents) for removal of acidic compounds, phenols, thiols and some nitro and sulfonic compounds.
3. Organic solvents for removal of nonpolar compounds (organic).

Gloves and other PPE should be inspected frequently for integrity, and manufacturers' data for breakthrough times should be considered if concentrated contaminants are encountered.

The decontamination of personnel and their protective clothing will be performed in 18 stages for Level C protection, if necessary. The 18 stages are presented in Table 8.2 below.

Table 8.2
18 Stages for Decontamination in Level C Protection

Stage	Procedure
Stage 1: Segregated Equipment Drop	Deposit equipment used on site on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross-contamination. During hot weather operations, a cool-down station may be set up within this area.
Stage 2: Boot Cover and Glove Wash	Scrub outer boot covers and gloves with decon solution of detergent and water.
Stage 3: Boot Cover and Glove Rinse	Rinse off decon solution from Stage 2 using copious amounts of water.
Stage 4: Tape Removal	Remove tape around boots and gloves and deposit in container with plastic liner.
Stage 5: Boot Cover Removal	Remove boot covers and deposit in container with plastic liner.
Stage 6: Outer Glove Removal	Remove outer gloves and deposit in container with plastic liner.
Stage 7: Suit, Glove, and Boot Wash	Wash splash suit, gloves, and safety boots. Scrub with long-handle scrub brush and decon solution.
Stage 8: Suit, Glove and Boot Rinse	Rinse off decon solution using water. Repeat as many times as necessary.
Stage 9: Canister or Mask Change	Perform last step in the decontamination procedure (if worker is leaving exclusion zone to change canister or mask). Worker's canister is exchanged, new outer gloves and boot covers donned, and joints taped; worker returns to duty.
Stage 10: Safety Boot Removal	Remove safety boots and deposit in container with plastic liner.
Stage 11: Splash Suit Removal	Remove splash suit with assistance of helper. Deposit in container with plastic liner.
Stage 12: Inner Glove Wash	Wash inner gloves with decon solution.
Stage 13: Inner Glove Rinse	Rinse inner gloves with water.

Table 8.2 (continued)
18 Stages for Decontamination in Level C Protection

Stage	Procedure
Stage 14: Face Piece Removal	Remove face piece. Deposit in container with plastic liner. Avoid touching face with fingers. Note: Certain parts of contaminated respirators, such as the harness assembly and leather or cloth components are difficult to decontaminate. If grossly contaminated, they may need to be discarded. Rubber components can be soaked in soap and water and scrubbed with a brush. Use a final rinse of water and allow to air dry before using again. Inspect the respirator for damage and wear before and after each use.
Stage 15: Inner Glove Removal	Remove inner gloves and deposit in lined container.
Stage 16: Inner Clothing Removal	Remove clothing soaked with perspiration and place in lined container. Do not wear inner clothing off site since there is a possibility that small amounts of contaminants might have been transferred when removing the disposal coveralls.
Stage 17: Field Wash	Shower if highly toxic, skin-corrosive, or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.
Stage 18: Redress	Put on clean clothes.

All decontamination fluids generated will be contained and disposed of as specified in the Work Plan (WP). The decontamination area will be physically identified with rope or flagging and will be sufficiently equipped to be conducive for completion of the stages listed above.

8.1.1 Closure of the Personnel Decontamination Station

All disposable clothing and plastic sheeting used during the operation will be double-bagged and contained on site prior to removal off site. Decontamination and rinse solution will be contained on site prior to disposal. Reusable rubber clothing will be dried and prepared for future use. If contamination of non-disposable clothing has occurred, the item will be discarded. All wash tubs, pail containers, etc., will be thoroughly washed, rinsed, and dried prior to removal from the site.

8.1.2 Disposal of Decontamination and Other Wastes

All PPE, polyethylene sheeting, and sampling support materials (e.g. paper towels, ziplock bags) will be collected at the end of each work day, placed in plastic trash bags, and left at the site overnight. The following day, the air within the plastic trash bag will be tested using the PID/OVM. If the air within the bag does not show significant concentrations of organic vapors (greater than 10 ppm above background), the plastic trash bag will be double-bagged and placed in the municipal waste dumpster for disposal.

All other wastes generated during decontamination other than decontamination fluids will be placed into 55-gallon drums. The drums will be fully-opening with a top cover bung (type 17

E/H). The drums will be filled partially or completely, depending upon the difficulty of transporting them from the work site. All containers will be numbered and clearly labeled with the boring/well number and date of filling. The mixing of solid and liquid wastes will be avoided. The containers will be stored at a predesignated site for disposal after the analyses of the samples have been obtained.

8.2 EQUIPMENT DECONTAMINATION

All sampling equipment will be decontaminated prior to use, between sampling locations, and at the end of sampling activities to avoid cross-contamination, and to decrease personnel contact with contaminated materials, and reduce the probability of removing contamination from the site.

8.2.1 Excavation and Soil Sampling Equipment

Excavation equipment will be decontaminated between pit locations. The procedures for decontaminating equipment will consist of manually scraping visible soil and mud from the equipment and applying a high pressure low volume hot water wash.

Soil sampling equipment used to obtain soil samples for chemical analyses along with headspace analysis jars, knives, stainless steel trowels, spoons, mixing bowls, etc., will be decontaminated after each sampling interval according to the following procedures:

1. Scrub off a majority of the soil using potable water. Sampling equipment may also be washed by performing a high-pressure low volume hot water wash of the disassembled parts.
2. Wash with a mixture of potable water and Alconox detergent.
3. Rinse three times with distilled water.
4. Rinse with isopropanol and allow to air dry.

To facilitate the decontamination process, decontamination zones will be constructed. The decontamination zone for the soil samplers, water sampling tools, and miscellaneous small tools will be established near the sampling location. The decontamination area will consist of a low-lying area covered with a plastic sheeting. At the completion of decontamination procedures at each location, the debris will be enclosed in the plastic sheeting and deposited into 55-gallon type 17 E/H drums for later disposal as identified in the WP.

8.3 HEAVY EQUIPMENT DECONTAMINATION

Decontamination of excavators, loaders, and other heavy equipment will be accomplished through the use of a high pressure steam system. The HydroGeoLogic Project Geologist will inspect all heavy equipment prior to the equipment being released from the site. All decontamination fluids generated will be contained and disposed of as described in the WP.

9.0 MEDICAL SURVEILLANCE

9.1 REQUIREMENTS FOR HYDROGEOLOGIC PERSONNEL

All employees involved in field activities will be active participants in the HydroGeoLogic medical surveillance program. All medical examinations and procedures will be performed on a yearly basis by or under the supervision of a licensed occupational physician. If any employee is exposed or potentially exposed to hazardous chemicals during field operations, that employee will be required to have a follow-up medical examination. The examination will include the tests, procedures, and frequencies which comply with the requirements of OSHA Standard 29 CFR 1910.120 (f) and American National Standards Institute (ANSI) Z-88.2, and will ensure that the employee is medically qualified to perform hazardous waste site work under respiratory protection. Medical surveillance documents confirming the worker's fitness to perform hazardous waste operations on this project are on file at the HydroGeoLogic headquarters in Herndon, Virginia, and can be made available upon request.

9.2 REQUIREMENTS FOR SUBCONTRACTORS

Subcontractors are also required to obtain a certificate of their ability to perform hazardous waste operations work and to wear respiratory protection. Subcontractors who have a company medical surveillance program meeting the requirements of the OSHA Standard 29 CFR 1910.120 (f) will be required to submit a letter, on company letterhead, confirming all on-site workers to be utilized for this project are medically qualified to perform the investigation activities. In addition, medical surveillance documents for personnel assigned to this project must be made available upon request.

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10.0 TRAINING REQUIREMENTS

10.1 INITIAL TRAINING

10.1.1 Requirements for HydroGeoLogic Personnel

All investigation personnel to be utilized are currently enrolled in the HydroGeoLogic continuous training program in accordance with OSHA Standard 29 CFR 1910.120. Individuals working on a site have successfully completed an approved 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) Course including 24-hours of actual field experience under the direction of a trained supervisor, and any subsequent annual 8-hour refresher courses. In addition, the on-site Project Geologist will have completed an 8-hour supervisory course. A majority of HydroGeoLogic field investigation personnel are also current in first aid/CPR training requirements. HydroGeoLogic employee records are on file in the employees' home office in Herndon, Virginia.

10.1.2 Requirements for Subcontractors

All HydroGeoLogic subcontractor personnel must also have completed 40 hours of a HAZWOPER training course or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e) prior to performing work at the site. In addition, subcontractor personnel must have successfully completed any subsequent annual 8-hour refresher training.

HydroGeoLogic subcontractors must certify that each subcontractor employee, who will perform work at the site, has had training meeting the requirements of OSHA Standard 29 CFR 1910.120(e). This certification can be accomplished by submitting a letter to HydroGeoLogic, on company letterhead, containing such information. In addition, training documents for personnel assigned to this project must be made available upon request.

10.1.3 Requirements for Site Visitors

No person will be allowed in the work zones (exclusion and decontamination) unless they have completed the necessary health and safety training as required by OSHA Standard 29 CFR 1910.120(e) and are wearing the necessary protective equipment as required by this HSP. Site visitors will be required to read and sign the HSP and given a site safety briefing by the SSO.

10.2 SITE-SPECIFIC TRAINING

HydroGeoLogic will provide site-specific training to all HydroGeoLogic employees and subcontractor personnel who will perform work at the site. Daily health and safety meetings will be held prior to beginning of field activities to discuss each day's activities, potential hazards, and any new health and safety issues not previously discussed during which all HydroGeoLogic employees, subcontractors and site visitors will be required to attend prior to entering a work zone. Any personnel who do not participate in training will not be permitted to perform work at the site. Site-specific training will include:

- The contents of the HSP.
- Names of personnel and alternates responsible for site health and safety.
- Safety, health, and other hazards present on the site.
- Use of PPE.
- Work practices by which the employees can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.
- Decontamination procedures.
- Emergency response procedures.

HydroGeoLogic and subcontractor personnel will be required to sign a statement indicating receipt of site-specific training and understanding of site hazards and control measures. This form is presented in Appendix A.

11.0 STANDARD WORK PRACTICES

All site investigation activities will follow these appropriate Health and Safety Standard Work Practices.

11.1 GENERAL REQUIREMENTS/PROHIBITIONS

- A copy of this HSP will be available on-site for all field personnel, including visitors, to reference during investigation activities.
- No running or horseplay.
- Eating, drinking, chewing gum or tobacco, taking medication, applying cosmetics, and/or smoking are prohibited in the exclusion and decontamination zones, or any location where a possibility for contact with site contaminants exists.
- The required level of PPE must be worn by all on site personnel to include at a minimum steel-toed safety boots, safety glasses, and hard hat.
- Upon leaving the exclusion zone, hands and face must be thoroughly washed. Any protective outer clothing is to be decontaminated and removed as specified in this HSP, and left at a designated area prior to entering the clean area.
- Contact with potentially contaminated substances must be avoided. Contact with the ground or with contaminated equipment must also be avoided. Air monitoring equipment must not be placed on potentially contaminated surfaces.
- No facial hair, which interferes with a satisfactory fit of the mask-to-face seal, is permitted on personnel required to wear respiratory protective equipment.
- All personnel must satisfy medical surveillance procedures.
- No flames or open fires will be permitted on site.
- All personnel must be aware of and follow the action levels presented in this HSP for upgrading respiratory protection.
- Any new analytical data must be promptly conveyed via telephone to the project HSO by the laboratory technician or Project Geologist.
- Personnel must develop hand signals with users of heavy equipment (i.e., excavator operators, etc.) and in the event Level C PPE is required. Standard hand signals to be used by personnel for nonverbal communication include:

Stop

With arm extended to the side and palm down, hold position rigidly.

Hoist	With forearm and forefinger pointing up, move hand in small horizontal circle.
Lower	With forearm extended and forefinger pointing down, move hand in a small horizontal circle.
Travel	With palm up, fingers closed, and thumb pointing in the direction of motion, jerk hand horizontally.
Slow Move	Use one hand to give any motion signal, and place the other hand motionless in front of the hand giving the motion signal.
Emergency Stop	With arm extended to the side and palm down, move hand rapidly right and left.

Standard hand signals will be discussed during each daily health and safety meeting when the use of heavy equipment is anticipated.

- A copy of the OSHA “Job Safety and Health Protection” poster must be prominently posted at each site.
- Only equipment which has been approved by the manufacturer may be used in conjunction with site equipment.
- Medicine and alcohol can intensify the effects from exposure to toxic chemicals. Prescribed drugs should not be taken by personnel on operations where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Alcoholic beverage intake will not be allowed at anytime, including during breaks.
- All work activities inside the Exclusion Zone will be conducted using the buddy system.
- Safety devices on equipment must be left intact and used as designed.
- Equipment and tools will be kept clean and in good repair and used only for their intended purpose.
- Spark arrestors will be used on all site equipment with internal combustion engines.
- Eye protection must be worn when any hammering or pounding is performed that may product flying particles or slivers.
- Field personnel are not allowed to lift more than 60 pounds. Rules to remember when attempting to lift heavy objects include:
 - Size up the load before trying to lift it, test the weight, and get help if needed
 - Bend the knees and lift with a straight back using the leg muscles
 - Do not twist or turn your body once you have made the lift
 - Make sure you can carry the load where you need to go before lifting it

- Set the load down properly, lower slowly by bending the knees
- Always push, not pull, the object when possible

- Heavy lifting (more than 60 pounds per worker) must be accomplished using mechanical lifting equipment. Mechanical lifting equipment that will be available on site will include forklifts, hoists, dollies, backhoe/tracker and other types of equipment that can be easily rented from an off-site location.

- Leather gloves must be worn when handling objects that may produce splinters (e.g., driving wood stakes, handling drill rods/augers).

- No person shall climb the drill mast without the use of ANSI approved fall protection (i.e., approved belts, lanyards, and a fall protection slide rail) or portable ladder which meets the requirements of OSHA standards.

- The SSO must make an entry into the site field logbook at least daily, to include:
 - Weather conditions
 - Site Personnel
 - New arrivals and their clearance for site work
 - Air monitoring data summary
 - Monitoring instrument calibration
 - Indications of inhalation exposure
 - PPE used per task
 - Deviations from HSP
 - Inspection and cleaning of respiratory equipment
 - General health and safety problems/corrective actions

- If personnel note any warning properties of chemicals (irritation, odors, symptoms, etc.) or even remotely suspect the occurrence of exposure, they must immediately notify the SSO for further direction.

11.2 EXCAVATION ACTIVITIES

Prior to the commencement of excavation work, all locations will be surveyed and marked for underground utilities. If any uncertainties exist, no digging will begin until Base or utility company personnel have verified the absence of underground lines. The subcontractor shall provide a competent person familiar with safe excavation work practices.

The following general drilling practices must be adhered to during investigation activities:

- All excavation equipment must be inspected by the Subcontractor and SSO prior to starting work. Defective equipment will be removed from service and replaced.

- No heavy equipment use within 20 feet in any direction of overhead power lines will be permitted. The locations of all underground utilities must be identified and marked prior to initiating any subsurface activities.
- All excavators and other machinery with exposed moving parts must be equipped with an operational emergency stop device. The Subcontractor and site geologist must be aware of the location of this device. This device must be tested prior to job initiation, and periodically thereafter.
- Equipment operators must wear hearing protection if sound levels exceed 85 dBA.
- Excavation activities shall immediately cease when inclement weather (e.g., heavy rains, lightning) and high winds occurs at the site. All site personnel should immediately seek shelter.
- Only equipment that has been approved by the manufacturer may be used in conjunction with site equipment.

A variety of additional work practices are to be adhered to by the excavation crew, which will not be addressed in this HSP. If the on-site Project Site Manager observes any operations or actions that are perceived as threatening to the health and safety of site personnel, excavation operations will be temporarily suspended until a mutual understanding of the action(s) in question are addressed and/or corrected. Examples of such activities include:

- Operating heavy equipment too close to excavations which may cause the excavation to cave in.
- Piling removed soil too close to excavations which may cause the excavation to cave in.
- Piling remove soil too high which may cause the slope of the soil pile to fail.

Unearthed petroleum storage containers have the potential for releases to the environment and exposure to personnel. Gases and vapors that have a vapor density less than 1.0 are lighter-than-air and tend to migrate upward in the atmosphere and disperse (i.e., volatiles). Heavier-than-air gases and vapors tend to stay close to the ground and may migrate to low-lying areas (i.e., hydrogen sulfide). In general, the only containment for a release to the air is termination of the release at the source (i.e., plug the boring). Depending on the contaminant encountered, it may be necessary to evacuate persons downwind of the area of the release. Emergency response personnel should be notified (Section 13.6) if air concentrations at the perimeter of the exclusion zone exceed threshold limit values (TLVs) or Permissible Exposure Levels (PELs).

The potential exists for cutting (hot work) of removed metal tanks and piping from excavations. If hot work becomes necessary, the atmosphere within the tank or piping will be checked with a LEL/O₂ to ensure a safe atmosphere is present before hot work begins.

11.3 HOUSEKEEPING

Housekeeping is a very important aspect of an investigation program and will be strictly adhered to in all aspects of field work. Good housekeeping plays a key role in occupational health protection and is a way of preventing dispersion of dangerous contaminants. All work areas will be kept as clean as possible at all time and spills will be cleaned up immediately. Housekeeping will be the responsibility of all employees.

HydroGeoLogic will implement a housekeeping program for the field activities to minimize the spread of contamination beyond the work site. The program will include:

- Daily policing of the area for debris, including paper products, cans, and other materials brought on site.
- Changing of wash and rinse water for hands, face, and equipment as needed.
- Periodic (daily minimum) removal of all garbage bags and containers used to dispose of food products, plastic inner gloves, and contaminated disposable clothing.

11.4 WORK LIMITATIONS

All investigation activities will be performed during normal daylight hours.

11.5 CONFINED SPACE ENTRY

When possible, the unearthed objects at the three sites will be extracted from the excavation pits using the excavator arm and bucket, then cut into sections after portions are pulled above grade. If removal of objects utilizing the excavator arm is not possible at some locations, confined space entry into the trench will be necessary to dismantle and extract objects from the excavation. If confined space entry becomes necessary, the pit will be entered by two properly trained and equipped personnel. One individual will provide health and safety support of the excavation crew by staying outside of the confined space. The three people will communicate via an acceptable means of communications. All personnel involved will be trained in confined space procedures. In portions of the work area where confined space entry is required, the open trench or pit must be sloped, shored, or otherwise braced in a manner that conforms to OSHA 3138 and 29 CFR 1910.146 before personnel attempt to enter the excavation. The Subcontractor shall provide a recommended approach for shoring/sloping of the trench, and a proposed technique for removal of objects along sections where entry into the trench is needed. No work will be conducted if there is a chance of rain during confined space entry. Under no circumstances will any HydroGeoLogic employee enter a confined space.

11.6 SPILL CONTAINMENT

The procedures defined in this section comprise the spill containment activities in place at the site.

- All drums and containers used during the clean-up will meet the appropriate Department of Transportation (DOT), OSHA, and EPA regulations for the waste they will contain.
- Drums and containers will be inspected and their integrity assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions, will be positioned in an accessible location and inspected prior to further handling.
- 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 will be warned of the hazards associated with the containers.
- Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment (absorbent, pillows, etc.) will be stationed in the immediate area. The spill containment program must be sufficient to contain and isolate the entire volume of hazardous substances being transferred.
- Drums or containers that cannot be moved without failure, will be emptied into a sound container.
- Fire extinguishing equipment meeting 29 CFR Part 1910. Subpart 1 shall be on hand and ready for use to control fires.

12.0 SITE CONTROL

12.1 WORK ZONES

Each investigation location will be physically barricaded with rope flagging or caution tape to control entry and exit into and from the area. These barricaded areas will be referred to as the exclusion zones. The exclusion zone will be identified by the Project Geologist and consist of a twenty foot radius surrounding the drilling or test pit location. Each person leaving an exclusion zone will proceed directly to the decontamination zone which will be located adjacent to the exclusion zone and also identified by physical barriers. The decontamination zone will consist of a low-lying area covered with a plastic sheeting. At the completion of decontamination procedures at each location, the debris will be enclosed in the plastic sheeting and deposited into 55-gallon type 17 E/H drums for later disposal as identified in the WP. Only personnel who are cleared by the HydroGeoLogic field leader and SSO will be permitted in the exclusion zones and/or decontamination zones. Clearance for accessing these areas will only be given to personnel who meet the training and medical surveillance requirements of OSHA Standard 29 CFR 1910.120 and are wearing the appropriate PPE required for the work activity.

The support zone, where the administrative, communications, and other support services will be based, will be in a controlled area off the site or on the far end away from site contamination or areas of potential exposure. Only persons and equipment that are free of contamination will be permitted in the support zone.

12.2 ON-SITE/OFF-SITE COMMUNICATIONS

Communications will consist of a centrally located telephone within the designated support zone (i.e., trailer, office) in addition to a mobile phone stationed within the on-site vehicle utilized for transportation. Field personnel may also utilize telephones located at NAS Fort Worth JRB in emergency situations.

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13.0 EMERGENCY RESPONSE

This HSP has been developed in an attempt to prevent the occurrence of situations that may jeopardize the health and safety of on-site personnel. However, supplemental emergency procedures must be identified in the event that an unforeseen accident or incident occurs. In general, HydroGeoLogic will evacuate their employees and subcontractors from the workplace if an emergency involving chemical spills, chemical fires, chemical exposure, and/or chemical emissions occurs. For this reason, Emergency Response planning will be in accordance with OSHA Standard 29 CFR 1910.38(a).

13.1 PREPLANNING

Upon initial arrival at the site, the HydroGeoLogic Project Geologist and the SSO will visit NAS Fort Worth JRB's fire department to determine the status of emergency response services. This meeting will include a determination as to the need for further coordination with local rescue and police services.

Another aspect of preplanning for emergencies includes completion of the medical data sheet (Section 14.1). This sheet must be completed by all HydroGeoLogic personnel and subcontractors so that, in the event of personal injury or illness, the examining physician has background information readily available on the injured/ill party.

13.2 EMERGENCY PROCEDURES AND ASSIGNMENTS

Upon notification of a site emergency requiring evacuation, all HydroGeoLogic personnel and subcontractors will proceed directly to the support zone (i.e., trailer, office). If personnel cannot reach the support zone without endangering life or health, an alternate meeting point will be specified by the HydroGeoLogic SSO.

In the event of an emergency, the following procedures will be implemented:

- The Project Site Manager will evaluate the incident, assess the need for assistance, and call the appropriate contacts, if necessary.
- The Project Site Manager will act as the point of contact for outside emergency personnel and on site personnel.
- The Project Site Manager will advise emergency response and emergency room personnel to the types of contamination potentially contacted by injured workers receiving emergency care.
- The Project Site Manager will ensure that the SSO promptly notifies the HydroGeoLogic PM and HSO of the incident.

13.2.1 Chemical Inhalation

It is not anticipated that chemicals of concern are present at the site in concentrations to cause immediate danger to life and health. However, any field personnel exhibiting or complaining of symptoms of chemical exposure as described in Section 4.1 will be removed from the work zone and transported to the designated medical facility for examination and treatment.

13.2.2 Eye and Skin Contact

Field personnel who come into contact with contaminants while in the exclusion zone will immediately proceed to the decontamination zone, where an eyewash station will be located. Decontamination procedures will not be conducted prior to using the eyewash. PPE necessary to performing the eyewash procedures will be removed. Flush the eye with the clean water for at least 15 minutes and arrange for prompt transport to the designated medical facility.

Unless skin contact with contaminants is severe, decontamination (if required) will be conducted first. Field personnel should remove any contaminated PPE and wash the affected area for at least 15 minutes. If the personnel show signs of skin irritation, they will be transported to the designated facility.

13.3 PROCEDURES FOR PERSONNEL REMAINING ON SITE

No HydroGeoLogic or subcontractor personnel will remain on site to operate critical site emergency operations.

13.4 PROCEDURES TO ACCOUNT FOR SITE PERSONNEL

The HydroGeoLogic Project Geologist and SSO will ensure that the whereabouts of all personnel are known.

13.5 RESCUE AND MEDICAL DUTIES

Only those persons who have been trained by the American Red Cross, or equivalent, will be permitted to perform rescue, first aid, and/or CPR treatment. Outside emergency services and medical facilities will be the primary providers of such services. At least two persons who are currently certified in first aid and CPR will be on-site at all times during field activities. A "physicians approved" first aid kit, an ANSI approved eye wash station, and a Class ABC fire extinguisher will be readily available on site.

Any HydroGeoLogic employee who shows signs of symptoms of overexposure must immediately be examined by a licensed physician. Subcontractor personnel who show signs or symptoms of overexposure will be encouraged to visit a licensed physician as well. Figure 13.1 describes the directions to the nearest medical facility.

13.6 EMERGENCY COMMUNICATION PROCEDURES, CONTACTS AND PHONE NUMBERS

Persons who observe an emergency situation must immediately notify the HydroGeoLogic Project Geologist and/or SSO. The Project Geologist or SSO will then immediately assess the emergency and appoint someone to telephone appropriate outside emergency services and then coordinate site evacuation. Emergency telephone numbers and directions to the nearest medical facility are included as Table 13.1, a copy of which will be posted at the nearest telephone. In addition, Figure 13.1 illustrates the directions to the nearest medical facility.

13.7 ACCIDENT/INCIDENT FOLLOW-UP AND REPORTING

On receiving a report of accident/incident (or near-incident) occurrence, the SSO shall immediately investigate the circumstances and shall make appropriate recommendations to prevent recurrence. The HSO shall also be immediately notified by telephone on the occurrence of a serious accident or incident.

Details of the incident shall be documented on the Accident/Incident Report form (Section 14.1) within 24 hours of the incident and shall be distributed to the PM, HSO and AFCEE COR. A copy of this report shall also be sent to the appropriate administrative contact for inclusion into the OSHA Form 101 and 200 log. Incident report forms will be available at the site support facilities.

Table 13.1
Emergency Telephone Numbers, Contacts, and
Directions to Nearest Medical Facility

Key Personnel	Number
Pete Dacyk - Project Manager	(518) 782-3435
Joseph Jurinski, CIH - Health and Safety Officer	(703) 535-3180
Miquette Rochford, P.G. - Deputy Program Manager	(703) 736-4511
Jim Costello, P.G. - Program Manager	(703) 736-4507
Don Ficklen - AFCEE/ERD Contracting Officers Rep.	(210) 536-5290
Michael R. Dodyk, P.E. - Base Point of Contact (AFCEE/ERD)	(817) 732-7167
Emergency Phones Numbers	
Ambulance -	911 or (817) 782-6330
Fire Department -	911 or (817) 782-6330
Poison Control	911 or (800) 441-0040
Hospital - Harris Methodist Hospital - Fort Worth 1301 Pennsylvania Avenue	911 or (817) 882-2000
Directions to Nearest Medical Facility (Figure 13.1)	
Exit NAS Fort Worth JRB south toward the East-West Freeway (Interstate 30). Follow signs for I-30 East. Follow I-30 for approximately 7 miles to the exit for Henderson Street. At Henderson Street turn left (south). Follow to Pennsylvania Avenue and turn right (west). Follow one block and turn left (south) onto Fifth Avenue. Emergency entrance is located on the right.	

14.0 DOCUMENTATION AND EQUIPMENT

This section summarizes the documentation and equipment needs for the project as specified in the HSP. Its purpose is to serve as a partial checklist to help ensure all of the necessary resources are available to carry out the requirements of the HSP.

14.1 DOCUMENTATION AND FORMS

The following documents are presented in Appendix A for use during site operations:

- Site Safety Briefing Forms
- HSP Compliance Agreement Forms
- HSP Amendments Forms
- Accident/Incident Report Forms
- Personnel Medical Data Sheets
- Equipment Calibration Logs
- Air Monitoring Logs

In addition, the following documentation will be present on-site during site operations:

- Approved HSP (Signed copy)
- OSHA poster
- MSDSs
- Employee training and medical surveillance certificates
- Subcontractor training and medical surveillance certificates

14.2 EMERGENCY AND HEALTH AND SAFETY EQUIPMENT

- First aid kit
- Eye wash
- Inner latex or vinyl gloves
- Outer nitrile gloves (disposable and 11 millimeter thickness)
- Boot covers
- Hard hats and safety glasses
- Tyvek®
- PVC and/or Saranex (with hoods)
- Decontamination kit
- Fire extinguisher
- Duct tape
- LEL/O₂ meter
- PID/OVM

The Project Site Manager and/or the SSO shall be responsible for maintaining first aid kits and fire extinguishers at each site where field activities are taking place. The location of first aid kits and fire extinguishers will be discussed during each daily health and safety meeting.

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15.0 REFERENCES

Federal Acquisition Regulation, FAR Clause 52.236-13: Accident Prevention.

NIOSH/OSHA/USGC/EPA, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," October 1985. (DHHS (NIOSH) Publication No. 85-115); EPA "Standard Operating Safety Guides," June 1992. (NTIS Publication No. 9285.1-03).

Occupational Safety and Health Administration (OSHA) General Industry Standards, 29 CFR 1910, and Construction Industry Standards, 29 CFR 1926; especially 29 CFR 1910.120/29 CFR 1926.65, "Hazardous Waste Site Operations and Emergency Response."

U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health (NIOSH), Pocket Guide to Chemical Hazards, June 1994.

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APPENDIX A
FIELD FORMS

SITE SAFETY BRIEFING FORM

Project _____
 Date _____ Time _____ Job No. _____
 Location _____
 Type of Work _____

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment _____

 Chemical Hazards _____

 Physical Hazards _____

 Emergency Procedures _____

 Hospital/Clinic _____ Phone _____
 Hospital Address _____
 Special Equipment _____

 Other _____

ATTENDEES

<u>Name (Printed)</u>	<u>Signature</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Meeting Conducted by: _____

Site Safety Officer: _____

607 202

**HEALTH AND SAFETY PLAN
COMPLIANCE AGREEMENT FORM**

PROJECT: Former Underground Storage Tank Site Investigation
CLIENT: U.S. Air Force Center for Environmental Excellence
LOCATION: NAS Fort Worth JRB, Texas
PROJECT NO: AFC001-0009

I, _____, have received a copy of the Health and Safety Plan for the above-referenced project. I have read the plan, understand it, and agree to comply with all its provisions. I understand that I can be prohibited from working on the project for violating any of the safety requirements specified in the plan.

Signed:

Signature

Date

Company

HEALTH AND SAFETY PLAN AMENDMENT FORM

Change in field activities or hazards: _____

Proposed Amendments: _____

Proposed by: _____ Date: _____

Approved by: _____

Accented: _____ Declined: _____ Date: _____

Amendment Number: _____

Amendment Effective Date: _____

HYDROGEOLOGIC, INC.
Accident/Incident/Near Miss Investigation Form

Employee's Name: _____

Address: _____

SS# _____

Job Title: _____ Supervisor's Name: _____

Office Location: _____

Location at Time of Incident: _____

Date/Time of Incident: _____

Describe clearly how the accident occurred: _____

Was incident: Physical _____ Chemical _____

Parts of body affected _____ Exposure: Dermal _____

right _____ left _____ Inhalation _____

Ingestion _____

Witnesses: 1) _____ 2) _____

Conditions/acts contributing to this incident _____

Managers must complete this section:

Explain specifically the corrective action you have taken to prevent a recurrence: _____

Did injured go to doctor: _____ Where: _____

When: _____

Did injured go to hospital: _____ Where: _____

When: _____

Signatures:

Employee

Reporting Manager

Health & Safety Officer

Date

Date

Date

Accidents must be reported immediately; this form must be completed and returned to the Health and Safety Officer within **24 hours**.

MEDICAL DATA SHEET

This brief Medical Data Sheet will be completed by all onsite personnel and will be kept in the command post during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project _____

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Name of Next of Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do You Wear Contacts? _____

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals.

What medications are you presently using? _____

Do you have any medical restrictions? _____

Name, Address, and Phone Number of personal physician: _____

I am the individual described above. I have read and understand this HSP:

Signature

Date

Project _____

HEALTH AND SAFETY/AIR MONITORING LOG

Date: _____ Logged by: _____

Weather: _____

Field Tasks: _____

HydroGeoLogic Personnel (or subs) working on the site (name and affiliation):

HydroGeoLogic Personnel (or subs) working in restricted zone:

HydroGeoLogic Site Visitors:

Air Quality Monitoring Measurements:

<u>Time</u>	<u>Instrument</u>	<u>Parameter</u>	<u>Concentration</u>	<u>Locations</u>
-------------	-------------------	------------------	----------------------	------------------

Background:

Exclusion zone:

Level of PPE: _____

Comments on other safety-related matters:

(including infractions, accidents, injuries, unusual occurrences, physical complaints)

APPENDIX B
MATERIAL SAFETY DATA SHEETS

UNION OIL OF CALIF; UNION CHEMICAL DIV -- HEXANE (N-HEXANE) (AMSCO SOLV 1487) - HE
MATERIAL SAFETY DATA SHEET
FSC: 8040
NIIN: 008538913
Manufacturer's CAGE: 94684
Part No. Indicator: A
Part Number/Trade Name: HEXANE (N-HEXANE) (AMSCO SOLV 1487)

=====
General Information
=====

Item Name: HEXANE
Company's Name: UNION OIL CO OF CALIF; UNION CHEMICAL DIVISION
Company's Street: 1345 NORTH MEACHAM ROAD
Company's City: SCHAUMBURG
Company's State: IL
Company's Country: US
Company's Zip Code: 60196
Company's Emerg Ph #: 714-864-2310
Company's Info Ph #: 714-864-2310
Record No. For Safety Entry: 006
Tot Safety Entries This Stk#: 006
Status: SM
Date MSDS Prepared: 28NOV88
Safety Data Review Date: 18DEC92
Supply Item Manager: GSA
MSDS Preparer's Name: C A EISENHARD
Preparer's Company: UNION OIL CO OF CALIF; UNION CHEMICAL DIV
Preparer's St Or P. O. Box: 1345 NORTH MEACHAM ROAD
Preparer's City: SCHAUMBURG
Preparer's State: IL
Preparer's Zip Code: 60196
MSDS Serial Number: BRFQQ
Hazard Characteristic Code: N/
Unit Of Issue: GL
Unit Of Issue Container Qty: 1 GL CN
Type Of Container: METAL

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: HEXANE (N-HEXANE)
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: MN9275000
CAS Number: 110-54-3
OSHA PEL: 500 PPM
ACGIH TLV: 50 PPM; 9293
Other Recommended Limit: NONE SPECIFIED

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: CLEAR, HAS CHARACTERISTIC ODOR
Boiling Point: 150 TO 158F
Vapor Density (Air=1): HEAVIER
Specific Gravity: LIGHTER THN WTR
Evaporation Rate And Ref: SLOWER (ETHER=1)
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume: 100

=====
Fire and Explosion Hazard Data
=====

Flash Point: -24F, -31C
Flash Point Method: TCC
Lower Explosive Limit: 1.1

Upper Explosive Limit: 7.5

Extinguishing Media: FOAM, CO2, OR DRY CHEMICAL

Special Fire Fighting Proc: SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED FOR FIREFIGHTERS. WATER MAY BE UNSUITABLE AS AN EXTINGUISHING MEDIA, BUT HELPFUL IN KEEP ADJACENT CNTNRS COOL.

Unusual Fire And Expl Hazrds: AVOID SPREADING BURNING LIQUID WITH WATER FOR COOLING PURPOSES. KEEP WORK AREA FREE OF HOT METAL SURFACES AND OTHER SOURCES OF IGNITION.

Reactivity Data

Stability: YES

Materials To Avoid: INCOMPATIBLE WITH STRONG OXIDIZING AGENTS, STRONG ACIDS OR BASES AND AMINES.

Hazardous Decomp Products: THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD CARBON MONOXIDE AND/OR CARBON DIOXIDE.

Hazardous Poly Occur: NO

Health Hazard Data

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: MAY BE AN EYE IRRITANT. MAY CAUSE SKIN IRRITATION UPON PROLONGED OR REPEATED CONTACT. RESPIRATORY TRACT IRRITATION. CENTRAL NERVOUS SYSTEM DEPRESSION IN HIGH CONCENTRATIONS. WEAKENING AND NUMBNESS IN EXTREMITIES.

Emergency/First Aid Proc: EYES: FLUSH WITH LARGE AMOUNTS OF WATER FOR 15 MINS & GET IMMED MED ATTENTION. SKIN: WASH WITH SOAP & LARGE AMOUNTS OF WATER & SEEK MED ATTENTION IF IRRITATION PERSISTS. INHALATION: IF BREATHING DIFFIULTIES, DIZZINESS, OR LIGHTHEADEDNESS OCCUR, VICTIM SHOULD SEEK AIR FREE OF VAPORS. IF BREATHING STOPS, BEGIN ARTIF RESPIRATION & SEEK IMMED MED AID. INGESTION: DONT INDUCE VOMIT. GET IMMED MED AID.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: KEEP IGNITION SOURCES AND HOT METAL SURFACES ISOLATED FROM SPILL. FLUSH SPILLED MATERIAL INTO SUITABLE RETAINING AREAS OR CONTAINERS WITH LARGE AMOUNTS OF WATER. SMALL AMOUNTS OF SPILLED MATERIAL MAY BE ABSORBED INTO AN APPROPRIATE ABSORBENT.

Waste Disposal Method: DISPOSE OF PRODUCT IN ACCORDANCE WITH APPLICABLE LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

Precautions-Handling/Storing: KEEP PRODUCT CONTAINERS COOL, DRY AND AWAY FROM IGNITION SOURCES. USE AND STORE THIS PRODUCT WITH ADEQUATE VENTILATION.

Other Precautions: PERSONNEL SHOULD AVOID INHALATION OF VAPORS. PERSONAL CONTACT WITH THE PRODUCT SHOULD BE AVOIDED. SHOULD CONTACT BE MADE, REMOVE SATURATED CLOTHING AND FLUSH AFFECTED AREAS WITH WATER.

Control Measures

Respiratory Protection: THE USE OF RESPIRATORY PROTECTION DEPENDS ON VAPOR CONCENTRATION ABOVE THE TIME-WEIGHTED TLV; USE A NIOSH APPROVED CARTRIDGE RESPIRATOR OR GAS MASK. RESPIRATORY MASK OR ENVIRONMENTAL DEVICES MAY BE REQ'D IN EXTREME CASES.

Ventilation: GENERAL MECHANICAL VENT MAY BE SUFFICIENT. IF GENERAL VENT PROVES INADEQUATE, SUPPLEMENTAL LOCAL EXHAUST MAY BE REQ'D.

Protective Gloves: IMPERMEABLE

Eye Protection: SAFETY GLASSES, CHEM GOGGLES, FACESHIELD

Other Protective Equipment: IMPERMEABLE APRONS ARE ADVISED. EYE WASH & SHOWERS.

Transportation Data

607 211

Trans Data Review Date: 92356
DOT PSN Code: HEX
DOT Proper Shipping Name: HEXANES
DOT Class: 3
DOT ID Number: UN1208
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: IBK
IMO Proper Shipping Name: HEXANES
IMO Regulations Page Number: 3129
IMO UN Number: 1208
IMO UN Class: 3.1
IMO Subsidiary Risk Label: - *
IATA PSN Code: NKG
IATA UN ID Number: 1208
IATA Proper Shipping Name: HEXANES
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: NKG
AFI Prop. Shipping Name: HEXANES
AFI Class: 3
AFI ID Number: UN1208
AFI Pack Group: II
AFI Label: FLAMMABLE LIQUID
AFI Basic Pac Ref: 7-7
MMAC Code: NK

=====
Disposal Data
==========
Label Data
=====

Label Required: YES
Label Status: G
Common Name: HEXANE (N-HEXANE) (AMSCO SOLV 1487)
Special Hazard Precautions: MAY BE AN EYE IRRITANT. MAY CAUSE SKIN
IRRITATION UPON PROLONGED OR REPEATED CONTACT. RESPIRATORY TRACT
IRRITATION. CENTRAL NERVOUS SYSTEM DEPRESSION IN HIGH CONCENTRATIONS.
WEAKENING AND NUMBNESS IN EXTREMITIES. N/K
Label Name: UNION OIL CO OF CALIF; UNION CHEMICAL
DIVISION
Label Street: 1345 NORTH MEACHAM ROAD
Label City: SCHAUMBURG
Label State: IL
Label Zip Code: 60196
Label Country: US
Label Emergency Number: 714-864-2310

=====
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delete information in this archive please sent updates to dan@hazard.com.

607.212

FISHER SCIENTIFIC -- METHANOL - METHANOL, TECHNICAL
 MATERIAL SAFETY DATA SHEET
 FSC: 6810
 NIIN: 002929676
 Manufacturer's CAGE: 1B464
 Part No. Indicator: A
 Part Number/Trade Name: METHANOL

 =====
 General Information
 =====

Item Name: METHANOL, TECHNICAL
 Company's Name: FISHER SCIENTIFIC CO.
 Company's Street: 1 REAGENT LANE
 Company's City: FAIR LAWN
 Company's State: NJ
 Company's Country: US
 Company's Zip Code: 07410
 Company's Emerg Ph #: 201-796-7100 OR 201-796-7523
 Company's Info Ph #: 201-796-7100
 Record No. For Safety Entry: 003
 Tot Safety Entries This Stk#: 013
 Date MSDS Prepared: 01JAN87
 Safety Data Review Date: 21OCT86
 Supply Item Manager: CX
 MSDS Serial Number: BDVSF
 Specification Number: O-M-232 (GR A)
 Hazard Characteristic Code: F3
 Unit Of Issue: QT
 Unit Of Issue Container Qty: 32 FL OZ
 Type Of Container: CN

 =====
 Ingredients/Identity Information
 =====

Proprietary: NO
 Ingredient: METHYL ALCOHOL (METHANOL) (SARA III)
 Ingredient Sequence Number: 01
 Percent: 99.9
 NIOSH (RTECS) Number: PC1400000
 CAS Number: 67-56-1
 OSHA PEL: S, 200PPM/250STEL
 ACGIH TLV: S, 200PPM/250STEL; 93

 =====
 Physical/Chemical Characteristics
 =====

Appearance And Odor: CLEAR FLAMMABLE LIQUID, ALCOHOL ODOR
 Boiling Point: 149F/65C
 Vapor Pressure (MM Hg/70 F): 100
 Vapor Density (Air=1): 1.11
 Specific Gravity: 0.79
 Evaporation Rate And Ref: 12 (BUAC=1)
 Solubility In Water: COMPLETE
 Percent Volatiles By Volume: 100

 =====
 Fire and Explosion Hazard Data
 =====

Flash Point: 50.0F/10C CC
 Lower Explosive Limit: 6
 Upper Explosive Limit: 36
 Extinguishing Media: ALCOHOL FOAM, DRY CHEM, CO*2, WATER FOG (NO LIQ WATER)
 Special Fire Fighting Proc: USE SCBA AND FULL BODY PROTECTIVE GEAR
 Unusual Fire And Expl Hazrds: VAPORS ARE TOXIC AND EXPLOSIVE. AVOID VAPOR FLASHBACK SITUATIONS.

607 213

=====
Reactivity Data
=====

Stability: YES

Cond To Avoid (Stability): AVOID IGNITION SOURCES.SPONTANEOUS IGN OCCURS AT 385C.

Materials To Avoid: STRONG OXIDIZERS.CHROMIC ANHYDRIDE,PERCHLORIC ACID;SEE SUPP

Hazardous Decomp Products: FORMALDEHYDE,CO,FORMIC ACID.

Hazardous Poly Occur: NO
=====Health Hazard Data
=====

Signs/Symptoms Of Overexp: EYE:IRRIT,OPTIC NERV DAMAGE,BLIND.SKN:IRRIT, DRY,DEFAT,INHL,INGEST:HEAD,NAUS,DEPRESS,SHOCK,COMA,EYE DAM

Emergency/First Aid Proc: EYE:FLUSH 15 MIN W/AMPLE WATER.SKN:WATER

WASH.INHL:REMOVE TO FRESH AIR,ART RESP.INGEST:INDUCE VOMIT OR GAS LAVAGE.

CALL PHYS IMMED ALL CASES.CONTROL SHOCK.SUGGESTED 1-2% SOD BICARBONATE FOR LAVAGE & ACIDOSIS CONTROL
=====Precautions for Safe Handling and Use
=====

Steps If Matl Released/Spill: EVACUATE AREA.CONFINE SPREAD OF SPILL.REMOVE ALL IGNITION SOURCES.REMOVE VAPORS W/WATER FOG.WEAR SCBA & FULL BODY PROTECT.COVER SPILL W/ALCO FOAM,PUMP INTO CLOSED CONTAINERS.WATER DILUTION DOES NOT REMOVE TOXIC/FIRE HAZARD

Waste Disposal Method: INCINERATE IN APPROVED FACILITY IAW ALL LAWS & REGS.EPA HAZ WASTE ID# IS U154.

Precautions-Handling/Storing: FLAMMABLE,POISONOUS LIQUID.REMOVE ALL IGN SOURCES,KEEP CONTAINERS COOL.GROUND CONTAINERS WHEN XFER LIQ.PROVIDE ADEQUATE VENTILATION.

Other Precautions: AVOID CREATING MISTS.AVOID INHL,INGEST,SKN & EYE CONTACT.
=====Control Measures
=====

Respiratory Protection: USE SCBA <=2000PPM.USE PAPR FOR HIGHER CONC.W/FULL FACE SHIELD

Ventilation: LOCAL VENTILATION PREFERRED

Protective Gloves: BUTYL RUBBER

Eye Protection: USE FULL FACE SHIELD

Other Protective Equipment: BUTYL RUBBER APRON

Suppl. Safety & Health Data: ENTRY PER NON-OSHA MSDS DTD 8APR80,ADDED INCOMPAT:IODINE,HGO,KOH,NAOH,CHLOROFORM.
=====Transportation Data
=====

Trans Data Review Date: 86294

DOT PSN Code: JEZ

DOT Proper Shipping Name: METHANOL, OR METHYL ALCOHOL

DOT Class: 3

DOT ID Number: UN1230

DOT Pack Group: II

DOT Label: FLAMMABLE LIQUID, POISON

IMO PSN Code: JPB

IMO Proper Shipping Name: METHANOL

IMO Regulations Page Number: 3251

IMO UN Number: 1230

IMO UN Class: 3.2

IMO Subsidiary Risk Label: TOXIC *

IATA PSN Code: QHQ

IATA UN ID Number: 1230

IATA Proper Shipping Name: METHANOL *

IATA UN Class: 3

IATA Subsidiary Risk Class: 6.1
IATA Label: FLAMMABLE LIQUID & TOXIC *
AFI PSN Code: QHQ
AFI Prop. Shipping Name: METHANOL OR METHYL ALCOHOL
AFI Class: 3
AFI ID Number: UN1230
AFI Pack Group: II
AFI Label: FLAMMABLE LIQUID, POISON
AFI Basic Pac Ref: 7-7

=====
Disposal Data
=====

Disposal Data Review Date: 88237
Rec # For This Disp Entry: 02
Tot Disp Entries Per NSN: 006
Landfill Ban Item: YES
Disposal Supplemental Data: ENTRY PER NON-OSHA MSDS DTD 8APR80, ADDED
INCOMPAT: IODINE, HGO, KOH, NAOH, CHLOROFORM. IN CASE OF ACCIDENTAL EXPOSURE OR
DISCHARGE, CONSULT HEALTH AND SAFETY FILE FOR PRECAUTIONS.
1st EPA Haz Wst Code New: U154
1st EPA Haz Wst Name New: METHANOL; METHYL ALCOHOL
1st EPA Haz Wst Char New: IGNITABLE (I)
1st EPA Acute Hazard New: NO

=====
Label Data
=====

Label Required: YES
Label Status: F
Special Hazard Precautions: POISONOUS; MAY BE FATAL IF INHALED, SWALLOWED
OR ABSORBED THROUGH SKIN. CONTACT MAY CAUSE BURNS TO SKIN AND EYES. RUNOFF
FROM FIRE CONTROL OR DILUTION WATER MAY CAUSE POLLUTION.
Label Name: FISHER SCIENTIFIC, CHEMICAL DIV.
Label Street: 1 REAGENT LANE
Label City: FAIR LAWN
Label State: NJ
Label Zip Code: 07410
Label Country: US
Label Emergency Number: 201-796-7100 OR 201-796-7523

=====
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delete information in this archive please sent updates to dan@hazard.com.

607 215

ALCONOX -- ALCONOX - DETERGENT, GENERAL PURPOSE
MATERIAL SAFETY DATA SHEET
NSN: 7930011986050
Manufacturer's CAGE: 17534
Part No. Indicator: A
Part Number/Trade Name: ALCONOX

=====
General Information
=====

Item Name: DETERGENT, GENERAL PURPOSE
Company's Name: ALCONOX INC.
Company's Street: 215 PARK AVE SOUTH
Company's City: NEW YORK
Company's State: NY
Company's Country: US
Company's Zip Code: 10003-1603
Company's Emerg Ph #: 212-473-1300
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SEU
Date MSDS Prepared: 01FEB91
Safety Data Review Date: 04DEC91
Supply Item Manager: CX
MSDS Serial Number: BLLFP
Hazard Characteristic Code: N1
Unit Of Issue: BX
Unit Of Issue Container Qty: 4.00 LBS
Type Of Container: BOX
Net Unit Weight: 4.00 LBS

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: THE MANUFACTURER STATES THAT NO HAZARDOUS INGREDIENTS ARE
PRESENT IN THIS PRODUCT.
Ingredient Sequence Number: 01
Percent: N/A
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Other Recommended Limit: NONE SPECIFIED

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: WHITE POWDER INTERSPERSED WITH CREAM COLORED FLAKES,
ODORLESS.
Boiling Point: N/A
Melting Point: N/A
Vapor Pressure (MM Hg/70 F): N/A
Vapor Density (Air=1): N/A
Specific Gravity: N/A
Evaporation Rate And Ref: N/A
Solubility In Water: APPRECIABLE (>10%)
Percent Volatiles By Volume: N/A
pH: N/A

=====
Fire and Explosion Hazard Data
=====

Flash Point: NONE
Lower Explosive Limit: N/A

607 216

Upper Explosive Limit: N/A

Extinguishing Media: WATER, CARBON DIOXIDE, FOAM, SAND/EARTH.

Special Fire Fighting Proc: FOR FIRES INVOLVING THIS MATERIAL DO NOT ENTER WITHOUT PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS.

Unusual Fire And Expl Hazrds: NONE

=====
Reactivity Data

Stability: YES

Cond To Avoid (Stability): NONE

Materials To Avoid: STRONG ACIDS.

Hazardous Decomp Products: MAY RELEASE CARBON DIOXIDE GAS ON BURNING.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT APPLICABLE

=====
Health Hazard Data

LD50-LC50 Mixture: UNKNOWN

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: INHALATION OF POWDER MAY PROVE LOCALLY IRRITATING TO MUCOUS MEMBRANES. INGESTION MAY CAUSE DISCOMFORT.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT APPLICABLE

Signs/Symptoms Of Overexp: INGESTION MAY CAUSE DIARRHEA.

Med Cond Aggravated By Exp: RESPIRATORY CONDITIONS.

Emergency/First Aid Proc: EYES: FLUSH WITH PLENTY OF WATER FOR 15 MIN.

SKIN: FLUSH WITH PLENTY OF WATER. INGESTION: DRINK LARGE QUANTITIES OF WATER. GET MEDICAL ATTENTION FOR DISCOMFORT.

=====
Precautions for Safe Handling and Use

Steps If Matl Released/Spill: MATERIAL FOAMS PROFUSELY. SHOVEL AND RECOVER AS MUCH AS POSSIBLE. RINSE REMAINDER TO SEWER. MATERIAL IS COMPLETELY BIODEGRADABLE.

Neutralizing Agent: NONE

Waste Disposal Method: SMALL QUANTITIES MAY BE DISPOSED OF IN SEWER. LARGE QUANTITIES SHOULD BE DISPOSED OF ACCORDING TO LOCAL REQUIREMENTS FOR NON-HAZARDOUS DETERGENTS.

Precautions-Handling/Storing: STORE IN A DRY AREA TO PREVENT CAKING.

Other Precautions: NO SPECIAL REQUIREMENTS OTHER THAN THE GOOD INDUSTRIAL HYGIENE AND SAFETY PRACTICES EMPLOYED WITH ANY INDUSTRIAL CHEMICAL.

=====
Control Measures

Respiratory Protection: DUST MASK.

Ventilation: NORMAL LOCAL EXHAUST.

Protective Gloves: USEFUL BUT NOT REQUIRED.

Eye Protection: USEFUL BUT NOT REQUIRED.

Other Protective Equipment: NONE REQUIRED.

Work Hygienic Practices: NO SPECIAL PRACTICES REQUIRED.

Suppl. Safety & Health Data: NONE

=====
Transportation Data

Trans Data Review Date: 91338

DOT PSN Code: ZZZ

DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI PSN Code: ZZZ
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
Additional Trans Data: NONE

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Disposal Data
=====

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Label Data
=====

Label Required: YES
Technical Review Date: 04DEC91
Label Date: 04DEC91
Label Status: F
Common Name: ALCONOX
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: INHALATION OF POWDER MAY PROVE LOCALLY IRRITATING TO MUCOUS MEMBRANES. INGESTION MAY CAUSE DISCOMFORT. STORE IN A DRY AREA TO PREVENT CAKING. FIRST AID: EYES: FLUSH WITH PLENTY OF WATER FOR 15 MIN. SKIN: FLUSH WITH PLENTY OF WATER. INGESTION: DRINK LARGE QUANTITIES OF WATER. GET MEDICAL ATTENTION FOR DISCOMFORT.
Protect Eye: Y
Protect Respiratory: Y
Label Name: ALCONOX INC.
Label Street: 215 PARK AVE SOUTH
Label City: NEW YORK
Label State: NY
Label Zip Code: 10003-1603
Label Country: US
Label Emergency Number: 212-473-1300

MATERIAL SAFETY DATA SHEET

Identity: Eyesaline® Concentrate - #509 or as included with #100				
Section I				
Manufacturer: Fendall Company		Emergency Telephone: 847-577-7400		
Address: 5 East College Drive Arlington Heights, IL 60004		Information Telephone: 800-543-4842		
Date Prepared: 09/17/96				
Section II - Hazardous Ingredients/Identity Information				
Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other limits recommended	% (optional)
BENZALKONIUM CHLORIDE CAS #8001-54-5	NONE	NONE	N/A	< 0.1%
Section III - Physical/Chemical Characteristics				
Boiling Point: 212° F (100° C)		Specific Gravity (H₂O)=1: NOT DETERMINED		
Vapor Pressure (mm Hg.): 760		Melting Point: N/A		
Vapor Density (Air = 1): NOT DETERMINED		Evaporation Rate (Butyl Acetate = 1): NOT DETERMINED		
Solubility in Water: 100%				
Appearance and Odor: COLORLESS LIQUID WITH NO DISCERNIBLE ODOR.				
Section IV - Fire and Explosion Hazard Data				
Flash Point (Method Used): N/A		Flammable Limits:	LEL: N/A	UEL: N/A
Extinguishing Media: THIS IS A NONFLAMMABLE AQUEOUS SOLUTION				
Special Fire Fighting Procedures: N/A				
Unusual Fire and Explosion Hazards: N/A				
Section V - Reactivity Data				
Stability	Unstable: NO	Conditions to Avoid: THIS PRODUCT IS STABLE CONSIDERED NON-REACTIVE AND STABLE UNDER NORMAL CONDITIONS OF STORAGE AND USAGE.		
	Stable: YES			
Incompatibility (Materials to Avoid): NONE KNOWN				
Hazardous Decomposition or Byproducts: NONE				
Hazardous Polymerization	May Occur: NO	Conditions to Avoid: NONE		
	Will Not Occur: YES			
Section VI - Health Hazard Data				
Route(s) of Entry: Inhalation? NO Skin? NO Ingestion? YES				
Health Hazards (Acute and Chronic): INGESTION OF VOLUMES IN EXCESS OF 2 LITERS MAY CAUSE GASTRIC IRRITATION				
Carcinogenicity: NTP? NO IARC Monographs? NO OSHA Regulated? NO				
Signs and Symptoms of Exposure: N/A				
Medical Conditions Generally Aggravated by Exposure: N/A				
Emergency First Aid Procedures: NOTES TO PHYSICIAN: IN THE UNLIKELY EVENT OF RAPID INGESTION OF LARGE VOLUMES OF THE SOLUTION, INDUCE VOMITING AND OBSERVE THE PATIENT FOR GASTRIC IRRITATION.				
Section VII - Precautions for Safe Handling and Use				
Steps to Be Taken in Case Material is Released or Spilled: FLUSH AREA WITH WATER. THE SOLUTION IS NOT RCRA HAZARDOUS WASTE				
Waste Disposal Method: N/A				
Precautions to Be Taken in Handling and Storing: DO NOT FREEZE OR EXPOSE TO TEMPERATURES IN EXCESS OF 110° F (43° C) FOR EXTENDED PERIODS				
Other Precautions: N/A				
Section VIII - Control Measures				
Respiratory Protection: N/A				
Ventilation	Local Exhaust: N/A		Special: N/A	
	Mechanical: N/A		Other: N/A	
Protective Gloves: USE OF PROTECTIVE GLOVES SUGGESTED WHEN MIXING THE CONCENTRATE WITH WATER		Eye Protection: USE OF EYE PROTECTION SUGGESTED WHEN MIXING THE CONCENTRATE WITH WATER		
Other Protective Clothing: N/A				
Work Hygienic Practices: N/A				

MSDS DATE: 11/06/96
CHANGE NO.: 0745For Assistance, Contact:
Regulatory Affairs Dept.
PO Box 907 Ames, IA 50010
(800) 227-4224**HACH COMPANY**
PO BOX 907
AMES, IA 50010Emergency Telephone #
Rocky Mountain Poison Ctr.
(303) 423-5714

607 219

I. PRODUCT IDENTIFICATIONPRODUCT NAME: Aika-Seltzer Without Aspirin
CAS NO.: NA CHEMICAL NAME: Not applicable
FORMULA: Not applicable CHEMICAL FAMILY: Not applicable
MSDS NUMBER: M00550**II. INGREDIENTS**Sodium Bicarbonate
PCT: <35 CAS NO.: 144-55-0 SARA: NOT LISTED
TLV: Not established PEL: Not established
HAZARD: Moderately toxicCitric Acid
PCT: <30 CAS NO.: 77-92-9 SARA: NOT LISTED
TLV: Not established PEL: Not established
HAZARD: May cause irritationPotassium Bicarbonate
PCT: <15 CAS NO.: 290-14-4 SARA: NOT LISTED
TLV: Not established PEL: Not established
HAZARD: Moderately toxic; may cause irritationOther component
PCT: to 100 CAS NO.: Proprietary SARA: NOT LISTED
TLV: Not established PEL: Not established
HAZARD: Practically non-toxic**III. PHYSICAL DATA**STATE: solid APPEARANCE: White tablets ODOR: None
SOLUBILITY IN: WATER: Soluble ACID: Not determined
OTHER: Not determined BOILING POINT: NA MELTING PT.: ND
SPEC GRAVITY: ND pH: Not applicable VAPOR PRESSURE: Not applicable
VAPOR DENSITY (air=1): NA EVAPORATION RATE: NA
METAL CORROSIVITY - ALUMINUM: ND STEEL: ND STABILITY: Stable
STORAGE PRECAUTIONS: Store in a cool, dry place.**IV. FIRE, EXPLOSION HAZARD AND REACTIVITY DATA**FLASH PT.: Not applicable METHOD: NA
FLAMMABILITY LIMITS - LOWER: NA UPPER: NA
SUSCEPTIBILITY TO SPONTANEOUS HEATING: None
SHOCK SENSITIVITY: None AUTOIGNITION PT.: NA
EXTINGUISHING MEDIA: Use media appropriate to the surrounding fire conditions.
FIRE/EXPLOSION HAZARDS: None reported
HAZARDOUS DECOMP. PRODUCTS: None reported
OXIDIZER: No NFPA Codes: Health: 1 Flammability: 1 Reactivity: 0
CONDITIONS TO AVOID: Extreme temperatures, excess moisture**V. HEALTH HAZARD DATA**ACUTE TOXICITY: Moderately toxic
ROUTES OF EXPOSURE: Ingestion
TARGET ORGANS: Not determined
CHRONIC TOXICITY: Not determined
ROUTES OF EXPOSURE: Not determined
TARGET ORGANS: Not determined
CANCER INFORMATION: Not applicable
ROUTES OF EXPOSURE: Not applicable
TARGET ORGANS: Not applicable
OVEREXPOSURE: None known
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None reported**VI. PRECAUTIONARY MEASURES**Store in cool, dry place.
PROTECTIVE EQUIPMENT: None required**VII. FIRST AID**EYE AND SKIN CONTACT: Flush with plenty of water.
INGESTION: Give large quantities of water. Call physician immediately.
INHALATION: Not applicable**VIII. SPILL AND DISPOSAL PROCEDURES**IN CASE OF SPILL OR RELEASE: Sweep up powder. Avoid breathing material.
Dissolve in water. Flush down the drain with excess water.
DISPOSE OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.**IX. TRANSPORTATION DATA**D.D.T. PROPER SHIPPING NAME: Not Currently Regulated
HAZARD CLASS: NA ID: NA GROUP: NAI.C.A.O. PROPER SHIPPING NAME: Not Currently Regulated
HAZARD CLASS: NA ID: NA GROUP: NAI.M.O. PROPER SHIPPING NAME: Not Currently Regulated
HAZARD CLASS: NA ID: NA GROUP: NA**X. REFERENCES**

- 1) TLV's Threshold Limit Values and Biological Exposure Indices for 1986-1989. American Conference of Governmental Industrial Hygienists, 1987
- 2) Air Contaminants, Federal Register, Vol. 54, No. 12, Thursday, Janur 19, 1989, pp. 2352-2903.
- 3) Technical judgment
- 4) Vendor information.

607 220

MATERIAL SAFETY DATA SHEET

AMEREX CORPORATION

P. O. BOX 81, TRUSSVILLE, AL 35173-0081

RESPONSIBLE PARTY: MSDS COORDINATOR

TELEPHONE: 205-655-3271

EMERGENCY TELEPHONE NO. DAY/NIGHT:

Lab Safety Supply Inc.

1.800.356.0783

(PICST
PART#

MSDS1015

DATE: 01/06/96

IDENTIFICATION

PRODUCT NAME: ABC DRY CHEMICAL

SYNONYMS: MULTI-PURPOSE DRY CHEMICAL, MAP, (MONO) AMMONIUM PHOSPHATE, ALL-PURPOSE DRY CHEMICAL

HAZARDOUS INGREDIENTS

MATERIAL	CAS NO.	OSHA PEL TWA - mg/m3	ACGIH TLV TWA - mg/m3
Mica	12001-26-2	3 Respirable Dust	3 Respirable Fraction
Kaolin	1332-58-7	10 Total Dust 5 Respirable Fraction	10 (c)

OTHER INGREDIENTS

MATERIAL	CAS NO.	OSHA PEL TWA - mg/m3	ACGIH TLV TWA - mg/m3
Monoammonium Phosphate	7722-76-1	15 Total Dust (a) 5 Respirable Fraction	10 (b)
Ammonium Sulfate	7783-20-2	15 Total Dust (a) 5 Respirable Fraction	10 (b)

(a) Particulate matter not otherwise classified.
(b) Particulate matter not otherwise classified. Total dust containing no asbestos & less than 1% crystalline silica.
(c) Total dust containing no asbestos & less than 1% crystalline silica.

PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT (°F): NA	SPECIFIC GRAVITY (H ₂ O = 1): 0.85	VAPOR PRESSURE (MM HG): NA
PERCENT VOLATILE (%): NA	VAPOR DENSITY (AIR = 1): NA	EVAPORATION RATE: NA
SOLUBILITY IN WATER: Water repellent coated	REACTIVITY IN WATER: None	MELTING POINT(°F): NA
pH: 4.4	APPEARANCE & ODOR: Yellow powder. No characteristic odor.	
FLASH POINT (°F): None	AUTO IGNITION TEMPERATURE (°F): NA	FLAMMABLE LIMITS IN AIR BY VOL: NA
EXTINGUISHER MEDIA: None. This material is an extinguishing agent.		
SPECIAL FIRE FIGHTING PROCEDURES: None		UNUSUAL FIRE AND EXPLOSION HAZARDS: None

PHYSICAL HAZARDS

STABILITY: Stable	CONDITIONS TO AVOID: NA
INCOMPATIBILITY (MATERIALS TO AVOID): Strong Alkalis, Mg, Sodium Nitrite, Swimming Pool Sanitizers (Inorganic Perchlorates, Sodium Dichloroisocyanurate Dihydrate, Trichloroisocyanuric Acid, Calcium Hypochlorite, Etc.)	
HAZARDOUS DECOMPOSITION PRODUCTS: Ammonia, Carbon Monoxide and Oxides of Nitrogen	
HAZARDOUS POLYMERIZATION: Will not occur	CONDITIONS TO AVOID: NA

HEALTH EFFECTS AND FIRST AID

EFFECTS OF ACUTE OVEREXPOSURE FOR PRODUCT:

EYES: Slight irritant.
SKIN: Slight irritant.
BREATHING: Irritant to respiratory tract. Treat as a mineral dust.
SWALLOWING: Harmful if swallowed. May cause sore throat, abdominal pain, nausea, vomiting.

FIRST AID:

IF IN EYES: Flush with water for 15 minutes. If irritation persists, seek medical attention.
IF ON SKIN: Wash with soap and water. If irritation persists, seek medical attention.
IF BREATHED: Remove victim to fresh air. Seek medical attention if discomfort continues.
IF SWALLOWED: Rinse mouth and drink large amounts of water. Do not induce vomiting. Seek medical attention.

PRIMARY ROUTES OF ENTRY: Eyes, Skin Contact, Breathing, Swallowing

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Pre-existing respiratory disease.

EFFECTS OF CHRONIC OVEREXPOSURE FOR PRODUCT: No adverse chronic effects could be found for this substance.

PRODUCT LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN:

NATIONAL TOXICOLOGY PROGRAM:	<input type="checkbox"/> YES	IARC MONOGRAPHS:	<input type="checkbox"/> YES	OSHA:	<input type="checkbox"/> YES
	<input checked="" type="checkbox"/> NO		<input checked="" type="checkbox"/> NO		<input checked="" type="checkbox"/> NO

CONTROL MEASURES AND PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION (TYPE): Dust respirator required when exposure limits are exceeded. Dust respirator recommended whenever airborne dust is present.

VENTILATION: **GENERAL AREA:** Recommended **LOCAL EXHAUST:** Recommended

SKIN PROTECTION: Protective Gloves **EYE PROTECTION:** Safety Glasses

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: None required

WORK/HYGIENE PRACTICES: Use good personal hygiene and good housekeeping practices.

SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store in closed, moisture-free containers in a cool, dry location. Avoid unnecessary dustiness.

OTHER PRECAUTIONS: Do not cross contaminate with other extinguisher agents.

STEPS TO BE TAKEN IN CASE PRODUCT IS RELEASED OR SPILLED: Contain and sweep up. Dispose of in accordance with local, state and federal regulations.

HMIS RATINGS:

HEALTH 1
FLAMMABILITY 0
REACTIVITY 0

HMIS HAZARD INDEX:

MINIMAL 0
SLIGHT 1
MODERATE 2
SERIOUS 3
SEVERE 4

The information provided herein is offered in good faith and is to the best of our knowledge current. Although certain hazards are described herein we cannot state that these are the only hazards which exist. Final determination of suitability and safe usage of this material is the sole responsibility of the user who is obligated to review this data in the specific context of the intended use and determine appropriateness. No guarantee is implied or expressed regarding the accuracy of this information or the use of this material since the conditions of use are beyond our control.

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ENVIROSORB**Material Safety Data Sheet (MSDS)****Manufacturer Identification**

Manufacturer's Name: Lab Safety Supply, Inc.
P.O. Box 1368
Janesville, WI 53547-1368

Emergency Tel. Number: 800-356-2501
Tel. Number for Information: 800-356-2501
(The above numbers, during hours of 6 a.m.-9 p.m. EST)
FAX No.: 800-543-9910 (24 Hour)

Date Prepared: March 1, 1996

Trade Names/Synonyms: Surface treated & processed cellulose fibers

Chemical Name: N/A

Molecular Formula: N/A

INGREDIENTS AND RECOMMENDED OCCUPATIONAL EXPOSURE LIMITS

<u>Component</u>		<u>OSHA Exposure Limits</u>	<u>ACGIH Exposure Limits</u>
<u>Wood Fiber</u>	Softwoods	Total: 15 mg/m ³ Respirable: 5 mg/m ³	5 mg/m ³
	Hardwoods	Total: 15 mg/m ³	
	1 mg/m ³	Clay	Respirable: 5 mg/m ³ Total: 15 mg/m ³ Respirable: 5 mg/m ³
<u>Coal Ash</u>	Aluminum	Total: 15 mg/m ³ Respirable: 5 mg/m ³	10 mg/m ³
	Iron	N/A	1 mg/m ³
	Silicon (Conglomerate)	20 mppcf	N/A
<u>Aluminum Compounds</u>		2 mg/m ³	2 mg/m ³

Relevant CAS Numbers: Cellulose 9004-34-6, Aluminum compounds 7429-90-5, Aluminum 7429-90-5, Silicon (Conglomerate) 12001-26-2

PHYSICAL AND CHEMICAL CHARACTERISTICS

Description: Dull colors, odor of clay or earth.

pH Value (Neutral = 7): 4.0

Specific Gravity (H₂O=1): 0.8

Solubility in Water: 0.1%

Vapor Density (Air=1): N/A

Vapor Pressure (mg Hg): N/A

Odor - Threshold: N/A

Reactivity: N/A

Incompatibilities: NONE

Polymerization: Will not occur.

IDLH (NIOSH): N/A

Melting Point Temperature: N/A

Boiling Point Temperature: N/A

Flash Point Temperature: 450° F

Autoignition Temperature: 460° F

Upper Explosion Limit: N/A

Lower Explosion Limit: N/A

Warning Properties: N/A

Decomposition: None, under normal use of this absorbent.

EXPLOSION AND FIREFIGHTING INFORMATION

Explosion Data: Sensitivity to Mechanical Impact: N/A

Sensitivity to Static Charge: N/A

Fire Hazard Comments: Thermal-oxidative degradation produces irritating and toxic gases; including carbon monoxide, aldehydes, and organic acids.

EXPLOSION AND FIREFIGHTING INFORMATION (continued)

- Fire Extinguishing Agents:** Water spray, carbon dioxide or sand should be utilized.
- Fire Fighting Procedures:** Water should be used to wet down and reduce the likelihood of ignition or dispersion of absorbent into the air. Remove burned material to an open area after fire is extinguished. Self-contained breathing apparatus should be worn.

HEALTH HAZARD AND FIRST AID INFORMATION

- Eye:** May cause eye irritation; larger particles may cause physical injury.
In the event of injury; flush eyes thoroughly with running water, for at least 15 minutes, including eyelids to remove particulates. Foreign objects in the eye may require medical treatment. Consult physician if irritation persists.
- Skin:** Salts of aluminum and wood dust may cause irritation of the skin and mucous membrane.
In the event of injury, wash exposed areas thoroughly with soap and water. Practice good hygiene.
- Ingestion:** N/A
- Inhalation:** Inhalation may cause nasal dryness, irritation and obstruction. Coughing, sneezing, sinusitis, frequent headaches and upper respiratory symptoms have been reported.
If inhaled, move to fresh air immediately. Consult a physician if persistent irritation, severe coughing or breathing difficulty occurs.

SPECIAL PRECAUTIONS, SPILLS/LEAKS, WASTE DISPOSAL

- Transportation Procedure:** This product should be labeled, classified and transported in accordance with applicable local, state, federal and DOT regulations.
- Spill/Leak Prevention Procedure:** Provide adequate ventilation. Clean-up of spills for recovery or disposal should be performed while wearing a properly selected respirator to prevent inhalation of particles. Use vacuuming or wet sweeping to contain residues and to keep airborne dust at a minimum. Place in an appropriate container for disposal or reclamation. Dispose of water-wet material promptly.
- Waste Disposal Method:** Material contains no hazardous chemical ingredients under RCRA 40 CFR-Part 261. Dispose of UNUSED product in a non-hazardous waste landfill or incinerate in an appropriately-designed facility.
- Engineering Controls/Ventilation:** Provide adequate general ventilation to maintain safe and healthful working conditions. Precautions should be taken to prevent sparks or other sources of ignition in ventilation equipment. Practice good housekeeping techniques to prevent accumulation of dust, and follow sound cleaning procedures to minimize airborne particles. In dusty conditions wear NIOSH/MSHA approved respirators appropriate for dust/particulate exposure.
- Protective Apparel:** Appropriate eyewear and work clothing should be worn when handling absorbent. Gloves may be worn when handling absorbent to prevent possible skin irritation.

The information set forth herein is offered as a service to our customers and is not intended to relieve a customer from its responsibility to determine the suitability of this information or of the materials described herein for purchaser's purposes, to investigate other sources of information, to comply with all laws and procedures regarding safe use of these materials; and to use these materials in a safe manner. Although this information is believed to be accurate, LAB SAFETY SUPPLY specifically disclaims responsibility for any inaccuracy set forth herein. Thus, LAB SAFETY SUPPLY disclaims liability of any kind arising from any party's use of or reliance on information or recommendations set forth herein. Furthermore, no warranty of any kind shall be construed to arise by implication from any information or recommendation contained herein, or otherwise.

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