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FINAL PHASE 3 WORK PLAN ADDENDUM FOR WASTE ACCUMULATION AREAS NAS FORT WORTH TX

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HYDROGEOLOGIC

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HYDRO GeoLogic INC.

FINAL PHASE III WORK PLANS ADDENDUM
RCRA FACILITY INVESTIGATION OF
WASTE ACCUMULATION AREAS

SWMUs 5, 6, 12, 31, AND 61
NAS FORT WORTH JRB, TEXAS

Prepared for

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

Contract Number F41624-95-D-8005

May 2001

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FEDERAL EXPRESS

May 23, 2001

Mr. Don Ficklen
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Re: Final Phase III RFI Work Plans Addendum SWMUs 5, 6, 12, 31, and 61
NAS Fort Worth JRB, Texas
F41624-95-D-8005-0015

Dear Mr. Ficklen:

Please find enclosed one copy of the Final Phase III RFI Work Plans Addendum SWMUs 5, 6, 12, 31, and 61at NAS Fort Worth JRB, Texas. Additional copies of the report have also been sent to Mike Dodyk and Audrie Medina.

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

Sincerely,

Miquette Rochford
Project Manager

Enclosure

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RCRA FACILITY INVESTIGATION OF
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SWMUS 5, 6, 12, 31, AND 61
NAS FORT WORTH JRB, TEXAS

Prepared for:
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13 ABSTRACT (Maximum 200 words)

This Draft Phase III RCRA Facility Investigation Work Plans Addendum provides a summary of the analytical results produced during the Phase I and Phase II RFI activities at SWMUs 5, 6, 12, 31, and 61, and presents the rationale for the selection of additional sampling locations and/or interim remedial actions required to achieve closure of the subject sites under the TNRCC Risk Reduction program.

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PREFACE

This document contains the Draft Phase III Work Plans Addendum (WPA) for the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) at solid waste management units (SWMUs) 5, 6, 12, 31, and 61 at the Naval Air Station (NAS) Fort Worth Joint Reserve Base (JRB), Texas.

HydroGeoLogic, Inc. (HydroGeoLogic) prepared this report under contract to the U.S. Air Force Center for Environmental Excellence (AFCEE), Contract No. F41624-95-D-8005, Delivery Order No. 0015, in support of the Air Force Installation Restoration Program (IRP).

Responsible key HydroGeoLogic personnel are as follows:

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This contract will be administered by the Defense Contract Management Command, 10500 Battleview Pkwy., Suite 200, Manassas, Virginia, 22110. The Contracting Officer will be Mr. Cliff Trimble. The Contracting Officer's Representative will be Mr. Don Ficklen (210/536-5290), located at the AFCEE/Environmental Restoration Division, 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
AOC	area of concern
AFB	Air Force base
bgs	below ground surface
CFR	Code of Federal Regulations
CoC	contaminant of concern
DPT	direct push technology
DRMO	Defense Reutilization and Marketing Office
EPA	U.S. Environmental Protection Agency
HSA	hollow stem auger
HW	hazardous waste
HydroGeoLogic	HydroGeoLogic, Inc.
IRA	interim remedial action
IRP	Installation Restoration Program
JRB	Joint Reserve Base
MEK	methyl ethyl ketone
MQL	method quantitation limit
MSC	medium-specific concentration
NAS	Naval Air Station
PAH	polynuclear aromatic hydrocarbon
PCE	tetrachloroethene
PHC	petroleum hydrocarbon
QA	quality assurance
QC	quality control
QAPP	quality assurance project plan
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA facility investigation
RRS	risk reduction standards

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

SPLP	Synthetic Precipitation Leaching Procedure
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TAC	Texas Administrative Code
TCE	trichloroethene
TNRCC	Texas Natural Resource Conservation Commission
TPH	total petroleum hydrocarbons
VOC	volatile organic compound
WAA	waste accumulation area
WP	work plan
WPA	work plans addendum

FINAL PHASE III WORK PLANS ADDENDUM
RCRA FACILITY INVESTIGATION OF
WASTE ACCUMULATION AREAS

SWMUs 5, 6, 12, 31, and 61
NAS FORT WORTH JRB, TEXAS

1.0 INTRODUCTION

In accordance with the hazardous waste (HW) permit HW-50289 issued to the former Carswell AFB dated February 7, 1991, a RFI was conducted on 14 SWMUs and two areas of concern (AOCs) at NAS Fort Worth JRB, Texas (HydroGeoLogic, 1999). The SWMUs and AOCs included in the RFI served mainly as waste accumulation areas (WAAs), which stored HW before it was either disposed of in landfills, reused on Base, or processed through the Defense Reutilization and Marketing Office (DRMO) for off-base recycling or disposal.

Phase I of the RFI was conducted at the subject WAAs during May and June of 1999 in an effort to obtain closure under the Texas Natural Resource Conservation Commission (TNRCC) Risk Reduction Standard (RRS) program (HydroGeoLogic, 1999). As a result of the initial field investigation, 7 of the 16 WAAs were recommended for no further action and closure under RRS 1 under a separate Closure Report cover (HydroGeoLogic, 2000c). Closure of these 7 sites was received in a TNRCC letter dated November 20, 2000. The remaining nine SWMUs were the subject of the Phase II RFI (HydroGeoLogic, 2000b). Phase II of the RFI was conducted during April through June of 2000. As a result of the Phase II RFI, four of the remaining nine SWMUs be will be recommended for closure under a separate report cover. The remaining five SWMUs are the subject of this Phase III WPA and require further investigation and/or interim remedial actions (IRAs) before closure may be requested. The locations of these five SWMUs in relation to NAS Fort Worth JRB are presented in Figure 1.1. The five SWMUs listed below are identified as they appear on the TNRCC letter dated March 2, 1995 with any exceptions footnoted. These SWMU identifications are based on the 1989 RCRA Facility Assessment (RFA) (A.T. Kearney, 1989) where each WAA was identified with the associated building number from which wastes were stored. These five SWMUs are identified as follows:

- SWMU 5 (Building 1628 WAA)
- SWMU 6 (Building 1628 Washrack and Drain)
- SWMU 12 (Building 1602 WAA[1])
- SWMU 31 (Building 1050 WAA)
- SWMU 61 (Building 1320 Power Production Maintenance Facility WAA)

[1] SWMU 12 is identified on the TNRCC letter dated March 2, 1995 as the Building 1619 WAA. However, interviews with site personnel and review of waste storage inventories and historic photographs indicate that SWMU 12 served as the WAA for Building 1602.

In 1990 new metal storage sheds designated as WAAs were built at SWMUs 5 and 61 in order to be in compliance with Permit HW-50289. Each storage shed was assigned a new, individual building number. These new WAA buildings are listed on Table 1.1 along with a summary description of each SWMU that requires additional investigation activities. Both of these new WAA buildings are currently used for the storage of HW. Following the 1989 RFA, wastes were removed from SWMUs 12 and 31, and the washrack and drain were removed at SWMU 6. SWMUs 6, 12 and 31 no longer serve as active WAAs at NAS Fort Worth JRB, and are being investigated for historical contamination only.

This WPA summarizes the field activities conducted at the five SWMUs in support of the RFI and presents rationale for additional investigations and/or IRAs to be conducted at the subject sites. When investigation activities are complete at each SWMU, all data will be compiled and presented in a RFI Report with a discussion of the RRS standard that is appropriate for closure at each site.

Table 1.1
SWMU Summary Information
NAS Fort Worth JRB, Texas

SWMU	Waste Source	Operational Period	Materials Received	Status
SWMU 5 WAA 1627	Building 1628 - Corrosion Control Shop Aerospace Ground Equipment Maintenance Shop	Approx. 1982 - Present	PD-680 (Type II) (petroleum naptha solvent)(660 gal/yr) -drummed JP-4 (2,500 gal/yr) - drummed Synthetic oil (150 gal/yr) - drummed 7808 engine oil (1,000 gal/yr) - 500-gallon bowser Hydraulic, transmission, and brake fluids (120 gal/yr) - bowser Antifreeze (60 gal/yr) - drummed Paints and thinners (toluol, MEK, isopropanol, naptha, xylene) (120 gal/yr) - drummed Paint stripper (methylene chloride, toluene)(110 gal/yr) - drummed Spent lead acid batteries (unspecified amount) - pallet Battery acid (unspecified amount) - DRMO Mean Green Soap (aircraft soap) (660 gal/yr) - OWS MEK (12 gal/yr) - used in process	New walls were added to the former storage shed in 1990, which is now used as a WAA by the 301st Air Reserve.
SWMU 6	Building 1628 - Washrack and Drain	1979 - Approx. 1990	Mean Green Soap (aircraft soap) (660 gal/yr) - OWS PD-680 (Type II) (petroleum naptha solvent)(300 gal/yr) - OWS Wastewater containing fractions of: JP-4, waste paints and thinners, hydraulic fluids, engine oil (unspecified amount) - OWS Possible surface water runoff from SWMU 5 which may have contained traces of wastes listed above.	The washrack and drain no longer exist at the site.
SWMU 12	Building 1602 - Propulsion Shop	Approx. 1982 – 1990	Waste JP-4 (84 gal/yr) - drummed 7808 engine oil (84 gal/yr) - drummed PD-680 (Type II)(petroleum naptha solvent) (60 gal/yr) - drummed	The concrete pad for the storage area no longer exists. No waste is currently stored in this area.

Table 1.1 (continued)
SWMU Summary Information
NAS Fort Worth JRB, Texas

SWMU	Waste Source	Operational Period	Materials Received	Status
SWMU 31	Building 1050 - Pneudraulics Shop Building 1055 - Fire Control Shop	1955 – 1990	Waste hydraulic fluid and oil (120 gal/yr) - drummed PD-680 (Type II) (petroleum naptha solvent)(150 gal/yr) - drummed MEK (unspecified amount) - unspecified container TCE (unspecified amount) - unspecified container Perchloroethylene (unspecified amount) - unspecified container SE-377C (solvent) contaminated with cadmium (unspecified amount) - unspecified container Citri-Kleen (solvent) (unspecified amount) - unspecified container Silicone damping fluid contaminated with Freon 113 (unspecified amount) - unspecified container	No waste is currently stored in the area. A roof has been erected over the concrete pad, which serves as a base for a picnic table.
SWMU 61 WAA 1319	Building 1320 - Power Production Maintenance Facility	Approx. 1982 – Present	Waste gasoline and diesel fuel (108 gal/yr) - drummed 7808 engine oil (156 gal/yr) - bowser PD-680 (Type II) (108 gal/yr) - drummed Antifreeze (156 gal/yr) - drummed Battery acid (360 gal/yr) - DRMO Hard material similar to roofing tar (unspecified amount) - bucket	Waste is currently stored by the Navy both within and outside the designated WAA at SWMU 61.

Sources:

A.T. Kearney 1989, RCRA Facility Assessment, PR/VSI Report, Carswell Air Force Base, Fort Worth, Texas
CH2M HILL, 1984, Installation Restoration Program Records Search for Carswell Air Force Base, Texas
The Earth Technology Corporation, 1993, Basewide Environmental Baseline Survey, Carswell Air Force Base, Texas
U.S. Air Force Occupational and Environmental Health Laboratory, Human Services Division, 1989, Hazardous Waste Technical Assistance Survey, Carswell AFB, Texas

2.0 PROJECT BACKGROUND

As stated in Section 1.0, the former Carswell AFB, now known as NAS Fort Worth JRB, was issued RCRA permit HW-50289 by the TNRCC on February 7, 1991. This permit requires a RFI of all SWMUs listed in Permit Provision VIII (as well as those SWMUs subsequently added to the list) in order to determine whether any of the hazardous constituents listed in 40 Code of Federal Regulations (CFR), Part 264, Appendix IX, have been released into the environment.

2.1 CURRENT INVESTIGATION

This RFI was designed to meet the requirements of Permit Provision VIII of RCRA permit HW-50289. The RFI Work Plans (WPs) and this WPA have been prepared using guidance documents from the IRP, RCRA, the U.S. Environmental Protection Agency (EPA), and the TNRCC RRS program.

Phase I and II of the RFI were conducted in accordance with the Revised Final WPs prepared by HydroGeoLogic dated May 1999 and the Final Phase II WPA prepared by HydroGeoLogic in April 2000. The WPs contain the Field Sampling Plan, which was followed during all sampling activities. The Final Basewide Quality Assurance Project Plan (QAPP), prepared by HydroGeoLogic dated February 1998, was used as guidance for managing specific quality assurance (QA) and quality control (QC) procedures as well as analytical data generated from the RFI. Analytical data generation and assessment procedures were designed to achieve data quality goals in accordance with the basewide QAPP. The basewide QAPP was revised and approved in March 2000. All additional sampling activities proposed in this WPA will be conducted in accordance with the Final 2000 Basewide QAPP (HydroGeoLogic, 2000a).

In May and June of 1999, an initial soil assessment was conducted at each site, which focused on characterizing any potential contaminant sources. The analytical results from Phase I of the RFI provided a preliminary evaluation of the nature and extent of any contamination detected. The analytical results of the inorganic samples collected during this initial investigation were compared to the base-specific background values as determined by the Final Basewide Background Study conducted by Jacobs in September 1998 to determine if closure under RRS I was appropriate (Jacobs, 1998). As background values are not available for organic compounds, the investigation results for organic compounds were compared to method quantitation limits (MQLs) for closure under RRS I.

The results of the initial investigation proposed in the RFI WPs were reviewed to determine if the full nature and extent of contamination had been delineated. After the results were reviewed, it was determined that the initial RFI activities did not provide a complete delineation of the nature and extent of contamination present at nine of the subject SWMUs. As a result, additional soil borings were advanced, new monitoring wells were installed, and soil and groundwater samples were collected as outlined in the Phase II WPA to continue characterization of contaminants identified during the initial sampling phase of the RFI. Results of the Phase II investigation indicated that the five SWMUs included in this WPA require additional site characterization and/or IRAs before closure can be requested. When delineation of the contamination is complete at each

of the subject SWMUs, the data will be compiled and presented in a RFI Report with a discussion of the RRS standard that is appropriate for closure at each site.

2.1.1 Investigation Objectives

The overall objective of this RFI is to obtain closure of the five subject SWMUs under the TNRCC RRS program. An overview of the RRS program is presented in Section 4.1 of the project WPs (HydroGeoLogic, 1999). In addition, the SWMUs at NAS Fort Worth JRB are subject to the specific requirements of the TNRCC HW permit number HW-50289. Specific permit requirements are discussed in greater detail in Section 3.2 of the project WPs (HydroGeoLogic, 1999). These sites are typically very small and each SWMU only received wastes produced from the industrial practices conducted within their associated building. As a result, a large soil boring network and the full suite of Appendix IX analyses was not justified at the majority of these sites. The field tasks described in the following sections were chosen by evaluating the type and purpose of data required to characterize the various SWMUs.

In summary, the RFI was designed and conducted to achieve the following objectives:

- Determine if a release from the units has occurred. During the initial investigation a minimum of one boring was completed to the top of the water table using direct push technology (DPT) methods at each unit, and the soil was sampled every 5 feet.

- If contamination is encountered, the nature and extent of the contamination must be characterized. Section 3.0 of this WPA presents how this objective will be accomplished at five SWMUs by presenting the third phase of the RFI, which focuses on defining the vertical and horizontal extent of constituents that exceed background or RRS 1. Field methods that will be utilized during this third phase of the RFI include additional soil boring installation using DPT, soil sample collection from selected boring intervals, monitoring well installation using a hollow stem auger (HSA), and groundwater sample collection from new and existing monitoring wells. In addition, IRA activities are proposed at various SWMUs to remove any "hot spots", which are isolated concentrations of analytes above RRS 2.

- If necessary, utilize the Synthetic Precipitation Leaching Procedure (SPLP) to provide a site-specific medium-specific concentration (MSC). Site-specific MSCs are presented and discussed in Section 3.0 of this WPA.

2.1.2 Investigation Strategy

The SWMUs involved in this RFI served as temporary waste storage sites that stored HW before it was either disposed of in landfills, reused on Base, or processed through the DRMO for off-base recycling or disposal. As stated in Section 1.0, new HW storage sheds were constructed in 1990 at the active WAAs in order to comply with permit requirements. The sites included in this Phase

III RFI WPA which currently serve as active WAAs are SWMUs 5 and 61. No waste is currently stored at SWMUs 6, 12, or 31.

Prior to initiating the intrusive investigation at each of these sites, the structural integrity of each of the shed's walls and floors was examined for cracks or gaps. During the initial RFI investigation, the integrity of each shed appeared to be intact. As a result, intrusive activities did not take place within any storage shed. At sites where sheds were built over former SWMUs, soil borings were placed as close to the sheds as possible. These borings were placed in addition to those advanced at locations where wastes are known to have been historically stored. Some soil boring locations were adjusted slightly from the locations proposed in the project WPs due to site-specific obstructions such as overhead and subsurface utilities, fences, and other surface barriers encountered during the field implementation.

2.1.3 Field Activities Summary

Phase I RFI field activities were conducted during May and June 1999. A total of 15 continuous-core soil borings were advanced at the five subject SWMUs (SWMUs 5, 6, 12, 31, and 61) to collect a total of 15 surface soil and 22 subsurface soil samples that were submitted for chemical analysis. Soil samples were collected from each boring every 5 feet from the ground surface to the top of the water table. All soil samples were analyzed in accordance with the analyses and rationale presented in the project WPs (HydroGeoLogic, 1999).

Phase II field activities were conducted from April through October 2000 at the subject SWMUs. A total of 22 additional soil borings were advanced and a total of 15 surface and 22 subsurface soil samples were collected for selected analyses. Three of the soil borings were converted into monitoring wells, and two rounds of groundwater samples were collected from a total of seven wells (three new and four existing) and analyzed for specific contaminants of concern (CoCs) identified in the soil at each site.

During each field effort, a portion of the soil sample volume submitted for each metals analysis was held at the laboratory to be utilized for SPLP extraction and analysis at a later date, if necessary. This SPLP extraction method was used in order to possibly provide an site-specific MSC if inorganic compounds were detected above the MSC. Therefore, if inorganic compounds were detected above the MSC and an SPLP extraction and analysis was performed, the results were compared to the industrial groundwater MSC. During Phase II of the RFI duplicate samples were collected for each organic constituent for immediate SPLP analysis in order provide a site-specific MSC before sample holding times expired. Table 2.1 presents the SPLP results and site-specific MSCs for the samples collected at SWMUs 5, 6, 12, 31, and 61.

Table 2.1
SPLP Results and Site-Specific MSCs
SWMUs 5, 6, 12, and 31
NAS Fort Worth JRB, Texas

Soil Boring	Sample Depth (ft)	Analyte	Result (mg/Kg)	SPLP Result (mg/L)	MSC[1] (mg/L)
BHGLSWMU05001	5'	Arsenic	11.4	0.0100 u	0.0500
BHGLSWMU05003	5'	Lead	23.9	0.0271	0.0150
BHGLSWMU06002	5'	Arsenic	12	0.0100 u	0.0500
BHGLSWMU06002	5'	Barium	1280*	1.1600	2.0000
BHGLSWMU06002	5'	Lead	14.8**	0.0100 u	0.0150
BHGLSWMU06003	5'	Arsenic	13.2*	0.0209	0.0500
BHGLSWMU12001	10'	Arsenic	10.5 J*	0.0113	0.0500
BHGLSWMU12002	0'	Cadmium	0.98*	0.0020 u	0.0050
BHGLSWMU12002	0'	Lead	89.4	0.0944	0.0150
BHGLSWMU12003	0'	Cadmium	0.74	0.0020 u	0.0050
BHGLSWMU12003	0'	Lead	57.8	0.1080	0.0150
BHGLSWMU12004	5'	Benzene	1.3 J	0.020	0.0050
BHGLSWMU12004	5'	TPH	1,100*	5.0 u	NV
BHGLSWMU12004	5'	PHC (gasoline range	370*	5.0 u	NV
BHGLSWMU12004	5'	PHC (diesel range)	740*	5.0 u	NV
BHGLSWMU31001	0'	Barium	506*	0.4030	2.0000
BHGLSWMU31001	0'	Cadmium	1.5*	0.0050 u	0.0050
BHGLSWMU31001	0'	Chromium	40.6*	0.0200 u	0.1000
BHGLSWMU31001	0'	Mercury	0.57*	0.0020 u	0.0020
BHGLSWMU31001	0'	Lead	159	0.0175	0.0150
BHGLSWMU31002	0'	Cadmium	0.99	0.0020 u	0.0050
BHGLSWMU31002	0'	Lead	58.5	0.0630	0.0150

Notes:
MSC = Medium-specific concentration for industrial groundwater.
Shaded cells indicate SPLP concentrations detected above MSC.
NV = No Value
* Indicates site-specific MSC.
** Indicates site-specific MSC for subsurface soil only.
u = The analyte was analyzed for, but not detected. The associated numerical value is the MQL.
J = Estimated concentration.

3.0 RFI SUMMARY AND PROPOSED PHASE III ACTIVITIES

The following sections discuss the analytical results from the initial RFI field activities and the rationale for the Phase III soil and groundwater sampling activities in order to complete delineation of the CoCs at the subject SWMUs. In addition, the following sections outline boundaries of any "hot-spots" requiring IRAs. A separate IRA WP will be prepared and referred to during excavation activities at the subject sites. Table 3.1 summarizes the proposed field activities for each SWMU.

3.1 SWMUS 5 AND 6

As SWMUs 5 and 6 are located very close to one another and managed similar types of waste, they have been investigated as one site.

During Phase I of the RFI, three characterization soil borings were advanced around SWMU 5 and two soil borings were advanced at SWMU 6 using DPT. Soil samples were collected from each boring every 5 feet from the ground surface to the top of the water table and analyzed for total petroleum hydrocarbons (TPH) by Texas method 1005 (TX1005), ethylene glycol by EPA method 8015 (8015), and soil pH by EPA method 9045 (9045). In addition, all soil samples were analyzed for Appendix IX volatile organic compounds (VOCs) by EPA method 8260B (8260B), semivolatile organic compounds (SVOCs) by EPA method 8270C (8270C), and metals/mercury by EPA method 6010/7000 (6010/7000). The water table was encountered at SWMUs 5 and 6 from 9.5 feet to 10.2 feet below ground surface (bgs). Analytical results above RRS 1 from the Phase I soil boring locations are presented in Figure 3.1.

No CoCs were identified in the surface soil samples during initial characterization sampling. However, several CoCs were identified in the subsurface. As a result, five additional soil borings were advanced during Phase II at SWMUs 5 and 6 in order to delineate the lateral extent of the subsurface contamination. Two of the soil borings, BHGLSWMU06003 and BHGLSWMU06004, were completed southwest and south of SWMU 6, respectively. The other three soil borings, BHGLSWMU05004, BHGLSWMU05005, and BHGLSWMU05006, were completed southeast, east, and northeast of SWMU 5, respectively. Although most CoCs were delineated during Phase II, additional sampling is necessary to achieve site closure under RRS 2. All Phase II soil analytical results at SWMUs 5 and 6 are presented in Figure 3.1. Specific analytical results and rationale for selection of soil boring locations and existing monitoring wells for groundwater sampling is provided in the following sections.

3.1.1 Surface Soil

No CoCs were identified in the surface soils at SWMUs 5 and 6 following Phase I of the RFI. One isolated concentration of ethylene glycol (10.03 mg/kg) was detected in the surface sample collected from boring BHGLSWMU05001. Since ethylene glycol was detected above RRS 1 in only one sample, no pattern of occurrence can be established. In addition, the concentration detected for this compound was only slightly above the MQL of 6 mg/kg and was well below the

Table 3.1
Proposed Phase III Sampling and Interim Remedial Actions

Location	Number of Borings	Soil Sampling	Groundwater Sampling	Excavation Area	Soil Interim Remedial Action
SWMUs 5 and 6	3	Three borings are proposed; BHGLSWMU06005 and BHGLSWMU06006 to delineate arsenic and cobalt; and BHGLSWMU05007 to delineate cobalt.	One groundwater sample will be collected from LSA1628-2 and analyzed for arsenic.	NA	No IRA is proposed.
SWMU 12	3	Three borings are proposed to delineate BTEX and TPH at the 5-foot interval of BHGLSWMU12004. BHGLSWMU12009, BHGLSWMU12010, and BHGLSWMU12011 will be located southwest, northwest, and northeast, respectively. One boring is propsed to delineate benzene at the 5-foot interval of BHGLSWMU12006; BHGLSWMU12008 will be located to the southwest.	After soil delineation is completed, one upgradient boring, BHGLSWMU12009, will be overdrilled (HSA) and completed as a monitoring well. A minumum of one additional round of groundwater sampling from the three wells in the area is recommended.	12A	Excavation of contaminated soils centered on the location of boring BHLSWMU12004. The initial excavation will extend to 7 feet wide by 7 feet long, with a depth of 7 feet (12.7 yd^3). Confirmation samples will be collected below BHGLSWMU12004 at a depth of 7 feet bgs. Four additional samples will be collected at 5-foot intervals centered on each the north, south, east, and west side walls of the excavation.
				12B	Excavation of contaminated soils centered on the location of boring BHLSWMU12002. The initial excavation will extend to 5 feet wide by 5 feet long, with a depth of 2 feet (1.9 yd^3). Confirmation samples will be collected below BHGLSWMU12002 at a depth of 2 feet bgs. Four additional samples will be collected at 2-foot intervals centered on each the north, south, east, and west side walls of the excavation.

Table 3.1 (continued)
Proposed Phase III Sampling and Interim Remedial Actions

Location	Number of Borings	Soil Sampling	Groundwater Sampling	Excavation Area	Soil Interim Remedial Action
SWMU 12 (Continued)				12C	Excavation of contaminated soils centered on the location of boring BHLSWMU12003. The initial excavation will extend to 5 feet wide by 5 feet long, with a depth of 2 feet (1.9 yd^3). Confirmation samples will be collected below BHGLSWMU12003 at a depth of 2 feet bgs. Four additional samples will be collected at 2-foot intervals centered on each the north, south, east, and west side walls of the excavation.
SWMU 31	0	No surface or subsurface soil investigation will be conducted.	No groundwater investigation will be conducted.	31A	Excavation of contaminated soils centered on the location of boring BHLSWMU31002. The initial excavation will extend to 5 feet wide by 5 feet long, with a depth of 2 feet (1.9 yd^3). Confirmation samples will be collected below BHGLSWMU31002 at a depth of 2 feet bgs. Four additional samples will be collected at 2-foot intervals centered on each the north, south, east, and west side walls of the excavation.

Table 3.1 (continued)
Proposed Phase III Sampling and Interim Remedial Actions

Location	Number of Borings	Soil Sampling	Groundwater Sampling	Excavation Area	Soil Interim Remedial Action
SWMU 31 (Continued)				31B	Excavation of contaminated soils centered on the location of boring BHLSWMU31001. The initial excavation will extend to 5 feet wide by 5 feet long, with a depth of 2 feet (1.9 yd^3). Confirmation samples will be collected below BHGLSWMU31001 at a depth of 2 feet bgs. Four additional samples will be collected at 2-foot intervals centered on each the north, south, east, and west side walls of the excavation.
SWMU 61	3	Three surface soil sampling locations are proposed to delineate PCE; BHGLSWMU61012, BHGLSWMU61013, and BHGLSWMU61014 will be collected south, northwest, and north of the unit, respectively. In addition to the surface soil sample collected at BHGLSWMU61012, a subsurface sample will also be collected.	Samples will be collected from WITCTA035, WHGLTA034, and WHGLTA035. To verify offsite upgradient sources a sample will be collected from SD13-05.	61A	Excavation of contaminated soils centered on the location of boring BHLSWMU61001. The initial excavation will extend to 10 feet wide by 10 feet long, with a depth of 2 feet (7.4 yd^3). Confirmation samples will be collected below BHGLSWMU61001 at a depth of 2 feet bgs. Four additional samples will be collected at 2-foot intervals centered on each the north, south, east, and west side walls of the excavation. Prior to excavation confirmation sampling using DPT is recommended to assure that the actual size of the excavation and volume of contaminated soils is known prior to the initiation of excavation activities.

MSC of 20,000 mg/kg. Based on this information, the detection of ethylene glycol is not indicative of a release from SWMUs 5 and 6 and does not warrant further consideration.

3.1.2 Subsurface Soil

Several CoCs were identified in the subsurface soils collected from the 5-foot interval at SWMUs 5 and 6 (Figure 3.1) during Phase I of the RFI. These CoCs consist of arsenic, barium, cobalt, and lead. Although nickel (20.8 mg/kg) was detected in the sample collected from the 5-foot interval of boring BHGLSWMU06002, this concentration was only slightly above the background level of 19.76 mg/kg, and was not repeated in any of the other samples collected at SWMUs 5 and 6. As a result, no pattern of occurrence could be established. Based on this information, the detection of nickel is not indicative of a release from SWMUs 5 and 6 and does not warrant further consideration.

Phase I results of the RFI revealed concentrations of arsenic, barium, cobalt, and lead above background values in the 5-foot interval of multiple boring locations at SWMUs 5 and 6. Concentrations of arsenic, barium and lead also exceeded the MSCs; however, arsenic and barium passed SPLP and site-specific MSCs of 12 mg/kg and 1280 mg/kg were established for the analytes, respectively. Lead passed SPLP at boring BHGLSWMU06002 (14.8 mg/kg) but failed SPLP at boring BHGLSWMU05003 (23.9 mg/kg). As a result, a site-specific MSC of 14.8 mg/kg was established for lead at SWMUs 5 and 6.

Phase II subsurface soil borings BHGLSWMU06003 and BHGLSWMU06004 were advanced southwest and south of SWMU 6, respectively (Figure 3.1) to delineate arsenic, barium, cobalt, and lead detected in the 5-foot intervals of borings BHGLSWMU06002 and BHGLSWMU05002. All CoCs were delineated to the south in boring BHGLSWMU06004. Barium, and lead were also delineated to the southwest in boring BHGLSWMU06003; however, cobalt was detected with an RRS 2 concentration of 9.1 mg/kg and arsenic was detected with a RRS 3 concentration of 13.2 mg/kg. This detection of arsenic subsequently passed SPLP to establish the new site-specific MSC of 13.2 mg/kg. Phase III borings BHGLSWMU06005 and BHGLSWMU06006 (Figure 3.1) are proposed to delineate arsenic and cobalt to the north and west of BHGLSWMU06003.

Boring BHGLSWMU05004 was advanced south of SWMU 5 to delineate barium and cobalt detected in the 5-foot interval of boring BHGLSWMU05002. Barium was clearly delineated; however, cobalt was detected below background in the parent sample (5.4 mg/kg) but above background in the duplicate sample (15.7 mg/kg). Phase III boring BHGLSWMU05007 (Figure 3.1) is proposed to delineate cobalt south of BHGLSWMU05002.

Borings BHGLSWMU05005 and BHGLSWMU05006, advanced southeast and northeast of boring BHGLSWMU05003, successfully delineated arsenic, barium, cobalt, and lead detected in the 5-foot intervals of borings BHGLSWMU05001 and BHGLSWMU05003 (Figure 3.1).

3.1.3 Proposed IRA

No IRA is proposed at SWMUs 5 and 6. As noted above, lead failed SPLP at a RRS 3 concentration of 23.9 mg/kg in the 5-foot interval of boring BHGLSWMU05003. However, it should be noted that the detected lead concentration of 23.9 mg/kg is below the Texas Statewide Background concentration of 30 mg/kg (Table 3.2). In addition, a concrete cover approximately 1-foot in thickness is present over the location of boring BHGLSWMU05003. This cover effectively prevents the migration of precipitation through the 5-foot interval containing the RRS 3 concentration of lead. It should also be noted that although this detection of lead failed SPLP, lead was not detected groundwater downgradient of the site (Figure 3.1). Consequently, the detection of lead in the 5-foot interval of boring BHGLSWMU05003 is not deemed to be a threat to the environment. As such, removal of the lead contaminated soil is not necessary and closure of this site under TNRCC RRS 2 should not be impeded by this detection of lead.

3.1.4 Groundwater

During Phase II of the RFI, two rounds of groundwater samples were collected at existing monitoring wells LSA1628-3 and LSA1628-2 (Figure 3.1). Groundwater samples were analyzed for selected total metals (arsenic, barium, cobalt, and lead). Analytical results from LSA1628-3, located in the center of SWMU 6, indicate all CoCs were either non-detect or detected below RRS 1 concentrations in both rounds of sampling. Analytical results from LSA1628-2, located downgradient of SWMUs 5 and 6, revealed no detections of CoCs above RRS 1 in Round 1; however, arsenic was detected at an RRS 2 concentration of 0.031 F mg/L in Round 2. During Phase III of the RFI, an additional groundwater sample will be collected from LSA1628-2 for arsenic to determine if the Round 2 concentration of arsenic is sporadic.

3.2 SWMU 12

During Phase I of the RFI, three characterization soil borings were advanced within SWMU 12 using DPT. Soil samples were collected from each boring every five feet from the ground surface to the top of the water table and analyzed for TPH (TX1005), and Appendix IX VOCs (8260B), SVOCs (8270C), and metals/mercury (6010/7000). The water table was encountered within SWMU 12 at 14.5 feet bgs. Analytical results above RRS 1 from the Phase I soil boring locations are presented in Figure 3.2.

Several CoCs were identified in the surface and subsurface soils during the initial characterization activities. As a result, five additional soil borings were advanced at SWMU 12 during Phase II in order to delineate the lateral extent of the surface and subsurface contamination. One soil boring, BHGLSWMU12004, was completed northwest of boring BHGLSWMU12001, and a second soil boring, BHGLSWMU12005, was completed southeast of boring BHGLSWMU12003. A third soil boring, BHGLSWMU12006, and a fourth soil boring, BHGLSWMU12007, were completed west of boring BHGLSWMU12001 and southwest of boring BHGLSWMU12003, respectively. A fifth soil boring, WHGLTA028, was advanced east of SWMU 12 and completed as a monitoring well to permit groundwater sampling downgradient of the site. All Phase II analytical results are presented in Figure 3.2.

Table 3.2
Texas State Background Values

Metal	Median Background Concentration mg/kg
Aluminum	30,000.0
Antimony	1.0
Arsenic	5.9
Barium	300.0
Beryllium	1.5
Boron	30.0
Total Chromium	30.0
Cobalt	7.0
Fluorine	190.0
Iron	15,000.0
Lead	15.0
Manganese	300.0
Mercury	0.0
Nickel	10.0
Selenium	0.3
Strontium	100.0
Tin	0.9
Titanium	2,000.0
Thallium	9.3
Vanadium	50.0
Zinc	30.0

Note: Table derived from Texas Administrative Code (TAC) 350.51

Analytical results from the Phase II surface and subsurface samples collected at SWMU 12 indicate that additional sampling and/or IRAs is required for delineation to background concentrations. Figure 3.2 illustrates the Phase III sampling locations with proposed analyses and the proposed excavation locations. One soil boring, BHGLSWMU12008, will be completed southwest of boring BHGLSWMU12006, and a second soil boring, BHGLSWMU12009, will be completed southwest of boring BHGLSWMU12004. A third soil boring, BHGLSWMU12010, will be completed northwest of boring BHGLSWMU12004. A fourth soil boring, BHGLSWMU12011, will be completed and northeast of boring BHGLSWMU12004, and north of BHGLSWMU12001, respectively. Boring BHGLSWMU12009 will be completed as a monitoring well in order to characterize groundwater upgradient of the site. Rationale for selection of soil boring and monitoring well locations is provided in the following sections.

3.2.1 Surface Soil

Several CoCs were identified in surface soils at SWMU 12 following Phase I of the RFI (Figure 3.2). These CoCs include cadmium and lead detected in the surface samples collected from borings BHGLSWMU12002 and BHGLSWMU12003. Additional CoCs detected in the surface soil sample collected from boring BHGLSWMU12003 include benzo[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, benzo[*k*]fluoranthene, and indeno[1,2,3-*c,d*]pyrene. Although other constituents were detected above background concentrations in these two borings, no pattern of occurrence could be established, and as a result, no further sampling was conducted.

In order to delineate the organic and inorganic CoCs in the surface soils at SWMU 12, boring BHGLSWMU12005 was advanced at the southeast end of SWMU 12 and boring WHGLTA028 was advanced to the east (Figure 3.2). Soil samples were collected at the surface interval of each boring and analyzed for cadmium and lead to delineate the lateral extent of contamination detected in borings BHGLSWMU12002 and BHGLSWMU12003. The surface sample collected from boring BHGLSWMU12005 was also analyzed for benzo[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, benzo[*k*]fluoranthene, and indeno[1,2,3-*c,d*]pyrene in order to delineate the lateral extent of the organic contamination in the surface of boring BHGLSWMU12003. These borings successfully delineated CoCs detected at BHGLSWMU12002 and BHGLSWMU12003.

Surface soil sampling locations BHGLSWMU12006 and BHGLSWMU12007 were advanced in the parking lot near the northwest and southwest sides of SWMU 12 respectively. Borings BHGLSWMU12006 and BHGLSWMU12007 successfully delineated cadmium and lead detected in borings BHGLSWMU12002 and BHGLSWMU12003. Note that cadmium was detected below background (0.556 mg/kg) in the BHGLSWMU12006 parent sample (0.24 F mg/kg) and just above background (0.7 F mg/kg) in the duplicate sample. The duplicate sample is considered a natural variation of background.

Concentrations of several polynuclear aromatic hydrocarbons (PAHs) were also detected in the surface sample collected from borings BHGLSWMU12002 and BHGLSWMU12003. These PAHs were detected in the surface sample collected adjacent to the asphalt parking lot, and were not detected in the subsurface samples collected from the same borings. As a result, these

concentrations of PAHs are most likely related to the asphalt parking lot and are not indicative of a release from SWMU 12.

3.2.2 Subsurface Soil

Several CoCs were identified in the subsurface characterization soil samples collected from SWMU 12. These CoCs include arsenic, which was detected in the sample collected at the 10-foot interval of boring BHGLSWMU12001, along with concentrations of TPH[2], benzene, and vinyl chloride, detected at the 5- and 10-foot intervals of borings BHGLSWMU12001 and BHGLSWMU12002. These CoCs were the subject of subsurface Phase II delineation at SWMU 12. Boring BHGLSWMU12004, advanced at the northwest end of SWMU 12 delineated the lateral extent of arsenic and benzene in the 10-foot interval of boring BHGLSWMU12001. However, the highest concentrations of benzene and TPH at SWMU 12 were detected in the 5-foot interval of BHGLSWMU12004 (Figure 3.2). TPH passed SPLP but benzene failed SPLP. As a result, three additional Phase III soil borings are proposed to delineate BTEX and TPH detected in the 5-foot interval of BHGLSWMU12004: Boring BHGLSWMU12009 will be advanced southwest of BHGLSWMU12004; Boring BHGLSWMU12010 will be advanced northwest of BHGLSWMU12004; and BHGLSWMU12011 will be advanced northeast of BHGLSWMU12004 and north of BHGLSWMU12001.

In addition, the Phase II soil boring BHGLSWMU12006 successfully delineated arsenic with a concentration of 6.8 F mg/kg, which is considered to be a natural variation of background, benzene and vinyl chloride in the 10-foot interval, and TPH in the 5-foot interval west of BHGLSWMU12002. However, as benzene was not delineated in the 5-foot interval of BHGLSWMU12006, Phase III boring BHGLSWMU12008 is proposed to delineate benzene southwest of BHGLSWMU12006. Similarly, Phase II soil boring BHGLSWMU12007 delineated arsenic, with a decreasing concentration considered a natural variation of background, benzene and vinyl chloride in the 10-foot interval; and benzene and TPH in the 5-foot interval south of BHGLSWMU12001. Note that further delineation of arsenic to the southwest would be impeded by utilities and Building 1602.

Subsurface soil samples collected at Phase II boring WHGLTA028 at the 5- and 10-foot intervals successfully provided eastern delineation of benzene and TPH (5-foot interval); and arsenic, benzene, and vinyl chloride (10-foot interval). These CoCs were originally detected in subsurface soils sampled from borings BHGLSWMU12001 and BHGLSWMU12002. Phase II boring BHGLSWMU12005 also provided delineation of subsurface PAHs to the southeast of boring BHGLSWMU12003.

Note that concentrations of several PAHs were detected in the soil sample collected at the 5-foot interval of boring BHGLSWMU12001. These PAHs were detected in the sample collected adjacent to the asphalt parking lot, and were not detected in the 10-foot sample collected from the

[2] TPH sample results are comprised of the total value of the sample results for gasoline range and diesel range petroleum hydrocarbons (PHCs).

same boring. As a result, these concentrations of PAHs are most likely related to the asphalt parking lot and are not indicative of a release from SWMU 12.

Concentrations slightly above RRS 1 of cobalt (7.5 mg/kg) and copper (15.8 J mg/kg) were detected in the sample collected from the 5-foot interval, and acetone (0.012 mg/kg) was detected in the sample collected from the 10-foot interval of boring BHGLSWMU12003. Since cobalt, copper, and acetone were detected in only one sample at SWMU 12, no pattern of occurrence can be established. Based on this information, these detections of cobalt, copper, and acetone are not indicative of a release from SWMU 12 and do not warrant further consideration.

3.2.3 Proposed IRA

As noted in the previous subsections, CoCs at several SWMU 12 boring locations failed SPLP and remain at RRS 3 concentrations. An IRA consisting of three excavations is proposed[3]. The proposed excavations, appear to be the best interim remedy for attaining RRS 2 closure for site soils (Figure 3.2). With the goal being to attain RRS 2 closure, confirmation sampling on excavation floors and sidewalls must indicate that CoCs are at RRS 2 concentrations or lower. This is determined by comparing the confirmation sampling result to the TNRCC established RRS 2 value, or the site-specific MSC, if it exists (Table 2.1). Pre-excavation confirmation sampling using DPT methods is recommended to assure that the actual size of the excavation and volume of contaminated soils removed is known prior to the initiation of excavation activities. If RRS 3 concentrations are identified on the floor or sidewall of the excavation, then two options exist. One option is to run the SPLP test on the sample containing the RRS 3 concentration to determine if the MSC for the site can be further adjusted. If this fails, or is not pursued, then the aerial extent and/or depth of the excavation should be incrementally enlarged until confirmation sampling indicates that RRS 2 concentrations of CoCs have been established on all faces of the excavation area. Specific details about each excavation are outlined below.

Excavation SWMU12A is proposed to remove benzene and TPH contaminated soils. Excavation SWMU12A will be centered on the location of boring BHGLSWMU12004. It is recommended that the initial excavation extend to 7 feet wide by 7 feet long, with an excavation depth of 7 feet (12.7 cubic yards). A confirmation sample should be collected and analyzed for benzene and TPH directly below BHGLSWMU12004 at a depth of 7 feet bgs. Four additional samples, analyzed for benzene and TPH only, should be collected at the 5-foot interval with locations centered on each the north, south, east, and west sidewalls of the excavation.

Excavation SWMU12B is proposed to remove soils contaminated with RRS 3 concentrations of lead and other RRS 2 compounds. Excavation SWMU12B will be centered on the location of boring BHGLSWMU12002. It is recommended that the initial excavation extend to 5 feet long by 5 feet wide, with an excavation depth of 2 feet (1.9 cubic yards). A confirmation sample should be collected and analyzed for lead, cadmium, and zinc directly below BHGLSWMU12002 at a depth of 2 feet bgs. Four additional samples, analyzed for lead, cadmium, and zinc only,

[3] IRA excavation boundaries may be altered and/or additional IRA sites may be added to the area of SWMU 12 based on the results of the Phase III sample analyses.

should be collected at the 2-foot interval with locations centered on each the north, south, east, and west sidewalls of the excavation.

Excavation SWMU12C is also proposed to remove soils contaminated with RRS 3 concentrations of lead and other RRS 2 compounds. Excavation SWMU12C will be centered on the location of boring BHGLSWMU12003. It is recommended that the initial excavation extend to 5 feet long by 5 feet wide, with an excavation depth of 2 feet (1.9 cubic yards). A confirmation sample should be collected and analyzed for cadmium, lead, zinc, and selected PAHs; benzo[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, benzo[*k*]fluoranthene, and indeno[1,2,3-*c,d*]pyrene, directly below BHGLSWMU12003 at a depth of 2 feet bgs. Four additional samples, analyzed for lead, cadmium, zinc and the selected PAHs only, should be collected at the 2-foot interval with locations centered on each the north, south, east, and west sidewalls of the excavation.

3.2.4 Groundwater

WHGLTA028 was completed as a downgradient monitoring well for SWMU 12. Well WHGLTA028 was the only monitoring well originally proposed for groundwater sampling at the site, however, based on the presence of BTEX related compounds in the Phase II delineation borings and the presence of benzene in the Round 1 groundwater sample collected from WHGLTA028, an additional well, WCHMHTA012, was sampled in order to gather cross-gradient background data at the site (Figure 3.3) during Round 2. Two rounds of groundwater sampling were conducted at WHGLTA028 and one round was collected at WCHMHTA012. Groundwater samples were analyzed for selected total metals (arsenic and lead), and selected VOCs (benzene and vinyl chloride). Arsenic and lead were not detected in the first round at WHGLTA012 but arsenic was detected at a low concentration slightly above background in the second round of sampling. Arsenic was also detected at a similar concentration in the sample collected from cross gradient well WCHMHTA012 suggesting that a source may exist to the west of SWMU 12. Similarly, benzene and vinyl chloride were detected at low concentrations in both rounds at WHGLTA028; however, benzene and vinyl chloride were detected at higher concentrations in WCHMHTA012 also suggesting an upgradient source for these compounds west of SWMU 12. The presence of vinyl chloride in the groundwater at the site is most likely attributed to the basewide TCE plume. As a result, no further groundwater sampling for vinyl chloride at SWMU 12 is recommended.

After soil delineation is completed at SWMU 12 during the Phase III investigation, one upgradient boring, possibly BHGLSWMU12009, should be overdrilled using an HSA and completed as a monitoring well in order to characterize groundwater upgradient of the site. A minimum of one additional round of groundwater sampling from the three wells in the area of SWMU 12 is recommended for arsenic and BTEX compounds.

3.3 SWMU 31

As depicted on Figure 3.3, SWMU 31 is located within the boundaries of SWMU 29/Landfill 2. Two initial characterization soil borings, BHGLSWMU31001 and BHGLSWMU31002, were advanced at SWMU 31 during Phase I of the RFI using DPT. Various types of landfill debris

were encountered in both borings between 4 and 10 feet bgs. This debris consisted of glass fragments, concrete rubble, and coarse gravel. SWMU 31 is located within the boundaries of Landfill 2 (SWMU 29). Soil samples were collected from each boring every five feet from the ground surface to the top of the water table and analyzed for TPH (TX1005), and Appendix IX VOCs/Freon 113 (8260B), SVOCs (8270C), and metals/mercury (6010/7000). The water table was encountered from 18 feet to 20 feet bgs. Analytical results above RRS 1 from the Phase I soil boring locations are presented in Figure 3.3.

Analytical results from surface samples collected at SWMU 31 indicated that additional sampling was required for delineation to background concentrations. Four additional Phase II surface soil samples were collected at SWMU 31 to delineate the lateral extent of the surface contamination. One surface soil sample, BHGLSWMU31003, was collected slightly west of boring BHGLSWMU31002, and a second surface soil sample, BHGLSWMU31004, was collected south of boring BHGLSWMU31002. A third surface soil sample, BHGLSWMU31005, was collected east of boring BHGLSWMU31001, and a fourth surface soil sample, BHGLSWMU31006 was collected northeast of boring BHGLSWMU31001. A discussion of the analytical results from these soil sample locations is provided in the following sections. All Phase II analytical results are presented in Figure 3.3.

3.3.1 Surface Soil

Several inorganic and organic CoCs were identified in the surface soil samples collected at SWMU 31 (Figure 3.3). These CoCs include cadmium, lead, benzene and methyl ethyl ketone (MEK) detected in the surface soil sample collected from BHGLSWMU31002, and barium, cadmium, chromium (total), lead, and mercury detected in the surface soil sample collected from BHGLSWMU31001. The delineation of these CoCs was the focus of the Phase II investigation activities. It should be noted that SPLP was performed on metals detected in the surface of BHGLSWMU31001 and BHGLSWMU31002. Results from the SPLP analysis show that barium, cadmium, chromium (total), and mercury all passed SPLP and new site-specific MSCs were applied; however, lead failed SPLP at both locations and remains at RRS 3 concentrations. Two Phase II surface soil samples, BHGLSWMU31003 and BHGLSWMU31004, located slightly west and south of boring BHGLSWMU31002 respectively, successfully delineated cadmium, lead, benzene and MEK. In addition, Phase II surface soil samples BHGLSWMU31005 and BHGLSWMU31006 successfully delineated barium, cadmium, chromium (total), lead, and mercury to the east and northwest of boring BHGLSWMU31001 respectively. As a result of the Phase II delineation results, no Phase III delineation at SWMU 31 is required.

Concentrations of copper, zinc, and acetone were also detected in the surface soil samples collected at SWMU 31 (Figure 3.3). Since copper, zinc, and acetone were detected in only one sample and the concentrations detected for these compounds were only slightly above RRS 1, no pattern of occurrence can be established. Based on this information, these detections of copper, zinc, and acetone are not indicative of a release from SWMU 31 and do not warrant further consideration. In addition, concentrations of several PAHs were detected in the surface soil samples collected at SWMU 31 (Figure 3.3). These PAHs were detected in the samples collected adjacent to the asphalt parking lot, and were not detected in the subsurface samples collected from

the same borings. As a result, these concentrations of PAHs are most likely related to the asphalt parking lot and are not indicative of a release from SWMU 31.

3.3.2 Subsurface Soil

No CoCs were identified in the subsurface soils at SWMU 31 following the initial RFI investigation. Mercury (0.2 mg/kg) was detected in the sample collected at the 15-foot interval of boring BHGLSWMU31002. However, since mercury was not detected the surface-, 5-, and 10-foot intervals, this detection is most likely not related to SWMU 31 activities. Consequently, the delineation of mercury in the 15-foot interval of BHGLSWMU31002 will be addressed as part of the current RFI of Landfill 2 (SWMU 29). No further subsurface soil sampling at this site is required.

3.3.3 Proposed IRA

As noted in the subsection 3.3.1, detections of lead at several SWMU 31 boring locations failed SPLP and remain at RRS 3 concentrations. As a result, an IRA consisting of two excavations is proposed at SWMU 31. The proposed excavations, appear to be the best interim remedy for attaining RRS 2 closure for site soils (Figure 3.3). With the goal being to attain RRS 2 closure, confirmation sampling on excavation floors and sidewalls must indicate that CoCs are at RRS 2 concentrations or lower. This is determined by comparing the confirmation sampling result to the TNRCC established RRS 2 value, or the site-specific MSC, if it exists (Table 2.1). Pre-excavation confirmation sampling using DPT methods is recommended to assure that the actual size of the excavation and volume of contaminated soils removed is known prior to the initiation of excavation activities. If RRS 3 concentrations are identified on the floor or sidewall of the excavation, then two options exist. One option is to run the SPLP test on the sample containing the RRS 3 concentration to determine if the MSC for the site can be further adjusted. If this fails, or is not pursued, then the aerial extent and/or depth of the excavation should be incrementally enlarged until confirmation sampling indicates that RRS 2 concentrations of CoCs have been established on all faces of the excavation area. Specific details about each excavation are outlined below.

Excavation SWMU31A, centered on BHGLSWMU31002, is proposed to remove soils contaminated with RRS 3 concentrations of lead and other RRS 2 compounds. It is recommended that the initial excavation extend to 5 feet long by 5 feet wide, with an excavation depth of 2 feet (1.9 cubic yards). A confirmation sample should be collected and analyzed for lead, cadmium, benzene, and MEK directly below BHGLSWMU31002 at a depth of 2 feet bgs. Four additional samples, analyzed for lead and cadmium only, should be collected at the 5-foot interval with locations centered on each the north, south, east, and west sidewalls of the excavation.

Excavation SWMU31B, centered on BHGLSWMU31001, is also proposed to remove soils contaminated with RRS 3 concentrations of lead and other RRS 2 compounds (Figure 3.3). It is recommended that the initial excavation extend to 5 feet long by 5 feet wide, with an excavation depth of 2 feet (1.9 cubic yards). A confirmation sample should be collected and analyzed for lead, barium, cadmium, chromium, mercury, and zinc directly below BHGLSWMU31001 at a

depth of 2 feet bgs. Four additional samples, analyzed for lead, barium, cadmium, chromium, mercury, and zinc only, should be collected at the 2-foot interval with locations centered on each the north, south, east, and west sidewalls of the excavation.

3.3.4 Groundwater

All CoCs at SWMU 31 were identified in the surface soil samples only. As a result, a groundwater investigation at SWMU 31 will not be conducted.

3.4 SWMU 61

During Phase I of the RFI, five characterization soil borings were advanced at SWMU 61 using DPT. Characterization soil boring locations are presented in Figure 3.4. Soil samples were collected from each boring every five feet from the ground surface to the top of the water table and analyzed for TPH (TX1005), soil pH (SW9045), ethylene glycol (8015) and Appendix IX VOCs (8260B), SVOCs (8270C), and metals/mercury (6010/7000). The water table was encountered between 9.5 and 10 feet bgs. Analytical results above RRS 1 from the Phase I soil boring locations are presented in Figure 3.4.

Eight Phase II soil borings were advanced at SWMU 61 in May 2000 to delineate the lateral extent of the surface and subsurface contamination encountered in the Phase I characterization borings. Three of the borings, BHGLSWMU61006, BHGLSWMU61007, and BHGLSWMU61008, were completed from southwest to northwest, respectively, to delineate the western extent of SWMU 61. Five additional soil borings, BHGLSWMU61009, BHGLSWMU61010, WHGLTA034, BHGLSWMU61011, and WHGLTA035, were completed from the north to southeast, respectively, to delineate the northern and eastern extent of SWMU 61. Borings WHGLTA034 and WHGLTA035 were completed as monitoring wells to confirm subsurface lithology and to characterize groundwater downgradient of the site. Analytical results from these soil boring and monitoring well locations are provided in the following sections. All Phase II analytical results are presented in Figure 3.3.

3.4.1 Surface Soil

One CoC, tetrachloroethene (PCE), was detected at concentrations above the MQL in surface soil samples collected from characterization borings BHGLSWMU61001 through SBSWMU61004 during the initial sampling event (Figure 3.4). PCE was not detected at characterization boring BHGLSWMU61005. Surface samples were collected from all eight Phase II borings (WHGLTA034, WHGLTA035 and BHGLSWMU61006 through BHGLSWMU61011) to delineate PCE. Analytical results indicate that PCE was delineated to the east of the unit at BHGLSWMU61010 and WHGLTA034; and to the southeast of the unit at BHGLSWMU61011 and WHGLTA035. However, PCE was detected in surface soils to the north and west of the unit at BHGLSWMU61006, BHGLSWMU61007, BHGLSWMU61008 and BHGLSWMU61009 with the highest concentration occurring at BHGLSWMU61008 (0.022 mk/kg). As a result, three Phase III surface soil sampling locations are proposed to further delineate PCE at SWMU 61;

BHGLSWMU61012 will be collected south of the unit, BHGLSWMU61013 will be collected northwest of the unit, and BHGLSWMU61014 will be collected north of the unit.

In addition to PCE, concentrations of several VOCs and TPH were detected in the surface interval of boring BHGLSWMU61001. None of these constituents were detected in any of the other surface or subsurface samples collected at the site. In addition, boring BHGLSWMU61001 was advanced over a small stain at the surface of the unit. As these constituents are limited to the surface location of boring BHGLSWMU61001, no further sampling was conducted. However, excavation of this surface location and conformation sampling is proposed in the following Section 3.4.3.

Nickel (14.7 mg/kg) was detected slightly above background (14.6 mg/kg) in the surface soil sample collected from boring BHGLSWMU61005. As this detection of nickel was not repeated in any of the other samples collected at SWMU 61, no pattern of occurrence could be established. Based on this information, the detection of nickel is not indicative of a release from SWMU 61 and does not warrant further consideration (Figure 3.4).

3.4.2 Subsurface Soil

One CoC was detected in subsurface characterization samples at SWMU 61. PCE was detected at concentrations above the MQL in the 5-foot intervals of borings BHGLSWMU61001 through BHGLSWMU61004 (Figure 3.4). Subsurface samples were collected from the 5-foot intervals of all of the eight Phase II delineation borings, BHGLSWMU61006 through BHGLSWMU61011, WHGLTA034, and WHGLTA035. The Phase II soil samples were successful in delineating PCE to the north, east, southeast, and west of the unit. However, as PCE is not delineated to the south of SWMU 61, an additional Phase III soil sample will be collected from soil boring BHGLSWMU61012 to complete the delineation of this CoC in the subsurface.

3.4.3 Proposed IRA

Several other petroleum related VOCs were detected in the surface sample collected from boring BHGLSWMU61001. This sample was collected directly above a small area of stained soil. As the concentrations of these VOCs, with the exception of PCE, were detected in the surface sample of boring BHGLSWMU61001 only, an IRA is proposed to remove these CoCs. The proposed excavation, appears to be the best interim remedy for attaining RRS 2 closure for site soils (Figure 3.4). With the goal being to attain RRS 2 closure, confirmation sampling on excavation floors and sidewalls must indicate that CoCs are at RRS 2 concentrations or lower. This is determined by comparing the confirmation sampling result to the TNRCC established RRS 2 value, or the site-specific MSC, if it exists (Table 2.1). Pre-excavation confirmation sampling using DPT methods is recommended to assure that the actual size of the excavation and volume of contaminated soils removed is known prior to the initiation of excavation activities. If RRS 3 concentrations are identified on the floor or sidewall of the excavation, then two options exist. One option is to run the SPLP test on the sample containing the RRS 3 concentration to determine if the MSC for the site can be further adjusted. If this fails, or is not pursued, then the aerial extent and/or depth of the excavation should be incrementally enlarged until confirmation sampling indicates that RRS

2 concentrations of CoCs have been established on all faces of the excavation area. Specific details about each excavation are outlined below.

Excavation SWMU61A, centered on BHGLSWMU61001, is proposed to remove soils contaminated with RRS 3 concentrations of PCE and TPH as well as other RRS 2 VOCs. It is recommended that the initial excavation extend to 10 feet long by 10 feet wide, with an excavation depth of 2 feet (7.4 cubic yards). A confirmation sample should be collected and analyzed for VOCs and TPH directly below BHGLSWMU61001 at a depth of 2 feet bgs. Four additional samples, analyzed for VOCs and TPH, should be collected at the 2-foot interval with locations centered on each the north, south, east, and west sidewalls of the excavation.

3.4.4 Groundwater

Groundwater samples were collected from existing upgradient monitoring well WITCTA034, and the new downgradient monitoring wells, WHGLTA034 and WHGLTA035 and analyzed for PCE and trichloroethene (TCE). Analytical results from two rounds of sampling indicate that no PCE or TCE was detected in downgradient monitoring wells WHGLTA034 and WHGLTA035; however, PCE was detected at RRS 2 concentrations in both rounds, and TCE was detected at an RRS 2 concentration in the second round at the upgradient monitoring well WITCTA034[4]. These results indicate a possible upgradient source of PCE and TCE. A third round of groundwater sampling for PCE and TCE is proposed for monitoring wells WITCTA035, WHGLTA034, and WHGLTA035. In addition, collection of a groundwater sample from monitoring well SD13-05 is proposed to verify an offsite upgradient source of the PCE and TCE (Figure 3.4).

[4] TCE was not sampled for in the initial groundwater sample collected from WITCTA034.

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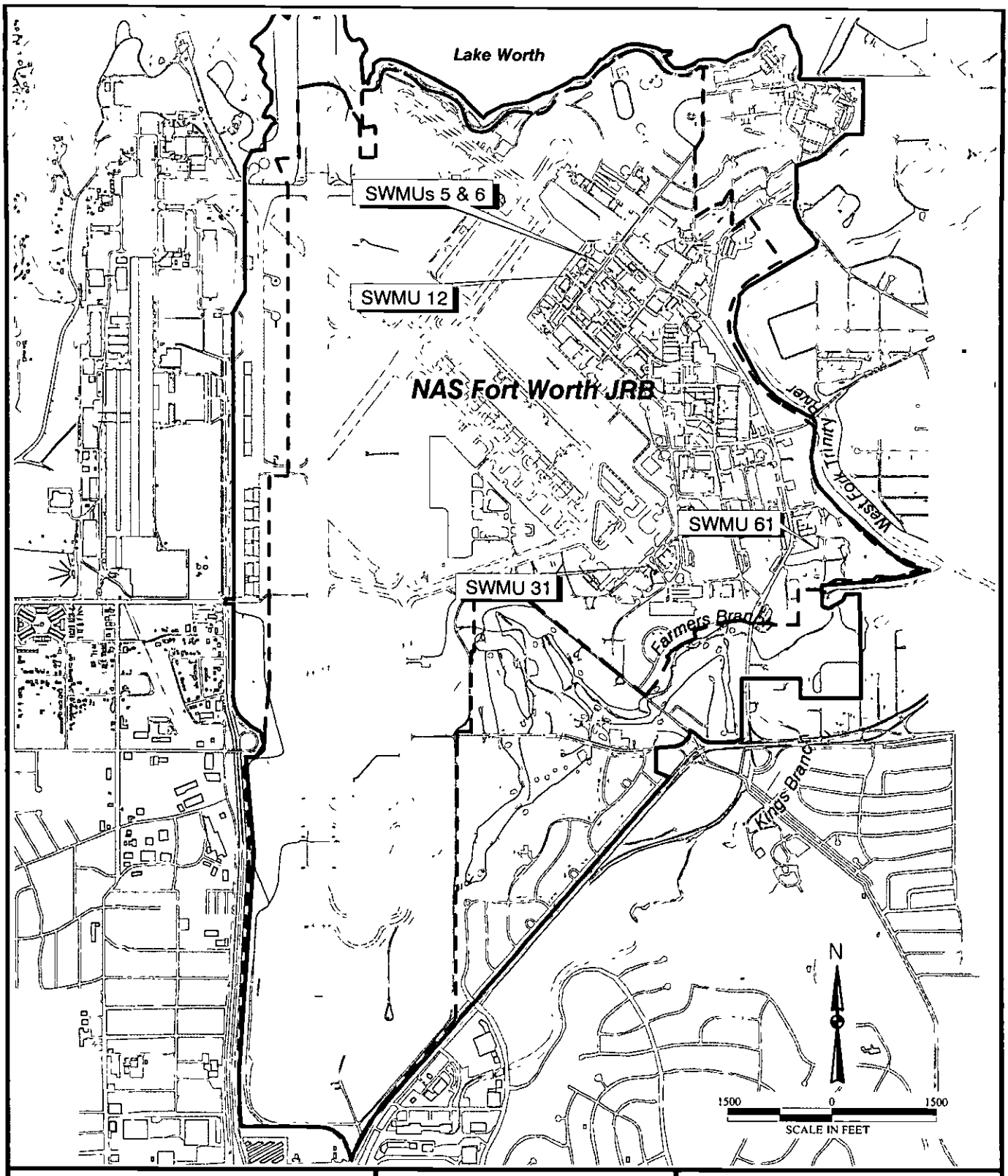
FIGURES



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Created 03/11/99 jbelcher
Revised 02/26 01 asp
Source HydroGeoLogic, Inc—GIS Database

HYDRO GeoLogic

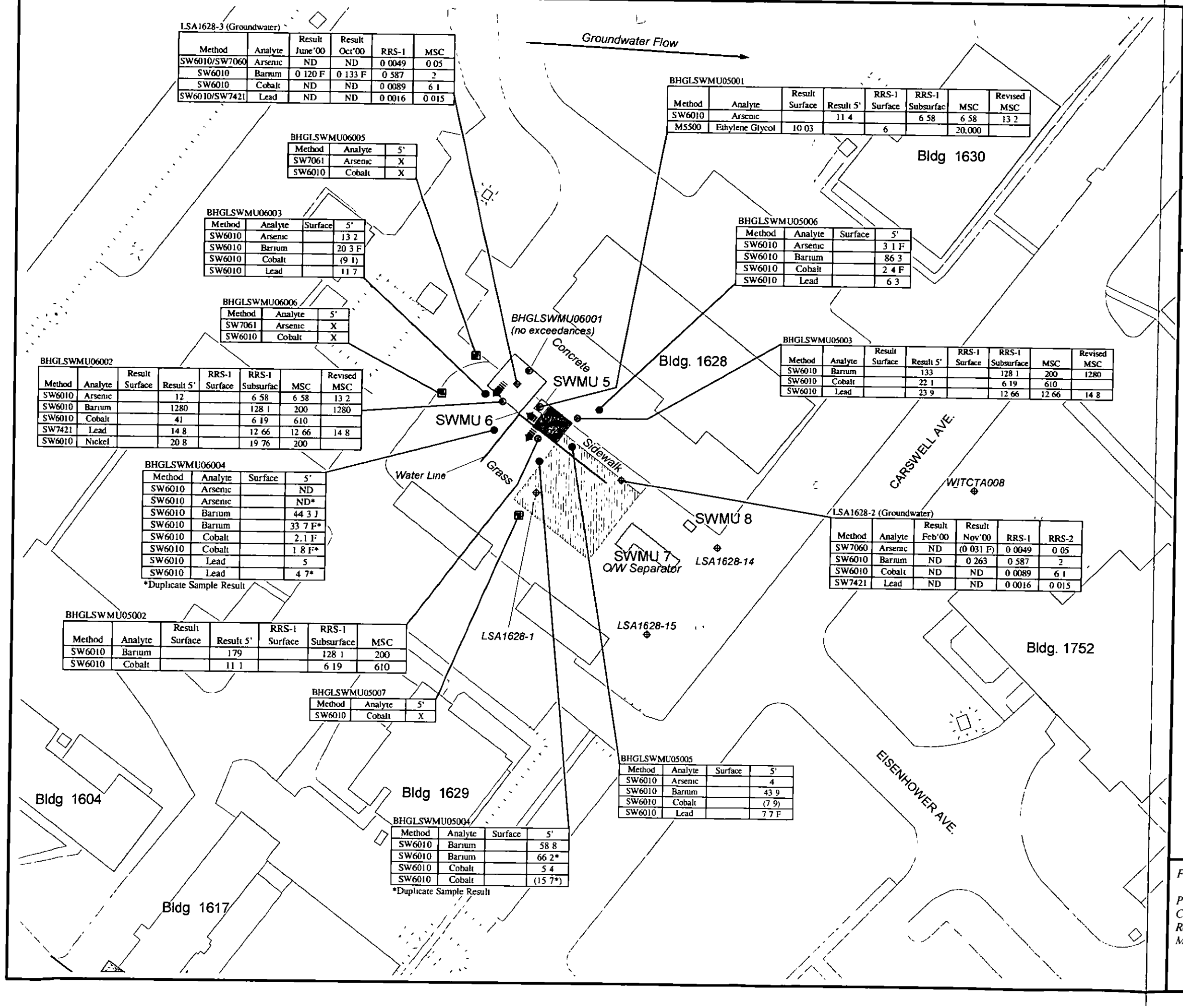
Legend

NAS Fort Worth JRB Boundary

Former Carswell AFB Boundary

Figure 1.1

SWMU Locations
NAS Fort Worth JRB, Texas



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NAS Fort Worth JRB, Texas

Figure 3.1
Phase I and II Results and Proposed Actions SWMU 5 and SWMU 6

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Legend

- Solid Waste Management Unit (SWMU)
- Waste Accumulation Area (WAA)
- Former UST Site
- Monitoring Well
- Phase I Soil Boring Location
- Phase II Soil Boring Location
- Phase III Soil Boring Location
- Surface Runoff

- Phase I Results (header)
- Phase II Results (header)
- Phase III Proposed Analyses (header)
- Analyte detected above MSC SPLP not performed
- Analyte detected above MSC in soil and in SPLP extract
- Analyte detected above MSC in soil, but detected below MSC in SPLP extract

Notes
Soil concentrations reported in mg/kg
Groundwater concentrations reported in mg/L
MSC—Medium-Specific Concentration
Revised MSC—Value based on SPLP result
NV—No Value
F—The analyte was positively identified but the associated numerical value is below the adjusted method quantitation limit
J—The analyte was positively identified, the quantitation is an estimation
Phase I Results - Only detections above RRS-1 are reported on the figure
Phase II Results - All results are reported Analytes depicted in (parentheses) exceed RRS-1 but are below MSC

N

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Revised 05/20/01 jb
Map Source HGL ArcView Database

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Figure 3.2
Phase I and II Results and Proposed Actions SWMU 12

U.S. Air Force Center for Environmental Excellence

Legend

- Solid Waste Management Unit (SWMU)
- Waste Accumulation Area (WAA)
- Monitoring Well
- Phase I Soil Boring Location
- Phase II Soil Boring Location
- Phase III Soil Boring Location
- Proposed Excavation Location
- Surface Runoff

Phase I Results (header)
Phase II Results (header)
Phase III Proposed Analyses (header)
Analyte detected above MSC SPLP not performed.
Analyte detected above MSC in soil and in SPLP extract
Analyte detected above MSC in soil, but detected below MSC in SPLP extract

Notes
Soil concentrations reported in mg/kg
Groundwater concentrations reported in mg/L
MSC—Medium-Specific Concentration
Revised MSC—Value based on SPLP result
NV—No Value
F—The analyte was positively identified but the associated numerical value is below the adjusted method quantitation limit
J—The analyte was positively identified, the quantitation is an estimation
Phase I Results - Only detections above RRS-1 are reported on the figure
Phase II Results - All results are reported Analytes depicted in (parentheses) exceed RRS-1 but are below MSC
PHC—Petroleum Hydrocarbons
* TNRCC Action Level for course-grained soils (TNRCC RG-17)

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Revised 02/27/01 asp
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BHGLSWMU12011

Method	Analyte	5'	10'
SW6010	Arsenic	NS	X
SW8260	BTEX	X	X
SW8310	PAHs	X	X
TX1005	TPH	X	X

BHGLSWMU12004

Method	Analyte	Surface	5'	10'
SW6010	Arsenic			3 2 F
SW8260	Benzene		1 3 J	ND
TX1005	TPH		1,100	
TX1005	PHC (Gasoline Range)		370	
TX1005	PHC (Diesel Range)		740	

BHGLSWMU12010

Method	Analyte	5'
SW8260	BTEX	X
SW8310	PAHs	X
TX1005	TPH	X

SWMU 12A
7' X 7' X 7'

BHGLSWMU12002

Method	Analyte	Result Surface	Result 5'	Result 10'	RRS-1 Surface	RRS-1 Subsurface	MSC	Revised MSC
SW6010	Cadmium	0.98			0 556		0 556	0 98
SW6010	Lead	89 4			30.97		30 97	
SW6010	Zinc	84.8			38 8		3,100	
SW8260	Benzene		0 003	0 006		0.002	0 5	
SW8260	Vinyl chloride			0 007		0 005	0.007	
SW8270	Fluoranthene	0.37F			0 33		410	
SW8270	Pyrene	0 42			0 33		310	

BHGLSWMU12009

Method	Analyte	5'
SW8260	BTEX	X
SW8310	PAHs	X
TX1005	TPH	X

BHGLSWMU12006

Method	Analyte	Surface	5'	10'
SW6010	Arsenic			(6 8 F)
SW6010	Cadmium	0 24 F		
SW6010	Cadmium	(0 70 F**)		
SW6010	Lead	11 3 F		
SW6010	Lead	9 6 F**		
SW8260	Benzene		(0 015)	ND
SW8260	Vinyl Chloride			ND
TX1005	TPH		ND	
TX1005	PHC (Gasoline Range)		ND	
TX1005	PHC (Diesel Range)		ND	

**Duplicate sample result

BHGLSWMU12008

Method	Analyte	5'
SW8260	Benzene	X

WCHMHTA012 (Groundwater)

Method	Analyte	Result Oct'00	RRS-1	MSC
SW7060	Arsenic	(0 035 F)	0 0049	0 05
SW7421	Lead	ND	0 0016	0 015
SW8260	Benzene	(0 004 F)	0 0002	0 005
SW8260	Vinyl Chloride	(0 003)	0 0004	0 002

BHGLSWMU12001

Method	Analyte	Result Surface	Result 5'	Result 10'	RRS-1 Surface	RRS-1 Subsurfac	MSC	Revised MSC
SW6010	Arsenic			10 5J		6 58	6 58	10 5
SW6010	Cobalt		7 7			6 19	610	
SW8260	Benzene		0 1J	0 003		0 002	0 5	
SW8260	Ethylbenzene		0 006J			0 003	70	
SW8270	Fluorene		0 61			0 33	410	
SW8270	2-Methylnaphthalene		0 47			0 33	410	
SW8270	Naphthalene		0 85			0 33	200	
SW8270	Phenanthrene		0 57			0 33	310	
TX1005	TPH		771 13			59	500*	1,100
TX1005	PHC (Gasoline Range)		391 46			59	100*	370
TX1005	PHC (Diesel Range)		379 67			59	500*	740

WHGLTA028
Soil

Method	Analyte	Surface	5'	10'
SW6010	Arsenic			2 5 F
SW6010	Cadmium	ND		
SW6010	Lead	10 5		
SW8260	Benzene		ND	ND
SW8260	Vinyl Chloride			ND
TX1005	TPH		ND	
TX1005	PHC (Gasoline Range)		ND	
TX1005	PHC (Diesel Range)		ND	

Groundwater

Method	Analyte	Result May'00	Result Oct'00	RRS-1	MSC
SW6010/SW7060	Arsenic	ND	(0 0165 F)	0 0049	0 05
SW6010/SW7421	Lead	ND	ND	0 0016	0 015
SW8260	Benzene	(0 001)	(0 002)	0 0002	0 005
SW8260	Vinyl Chloride	(0 009)	(0 012)	0 0004	0 002

SWMU 12B
5' X 5' X 2'

SWMU 12C
5' X 5' X 2'

Bldg. 1604

SWMU 12

Concrete

Groundwater Flow

ACCESS ROAD

Power Line

Wash Rack

Water Line

Bldg. 1617

WAA 1618
SWMU 11

Power Line

Grass

Bldg 1619

Bldg 1602

WHGLTA027

BHGLSWMU12005

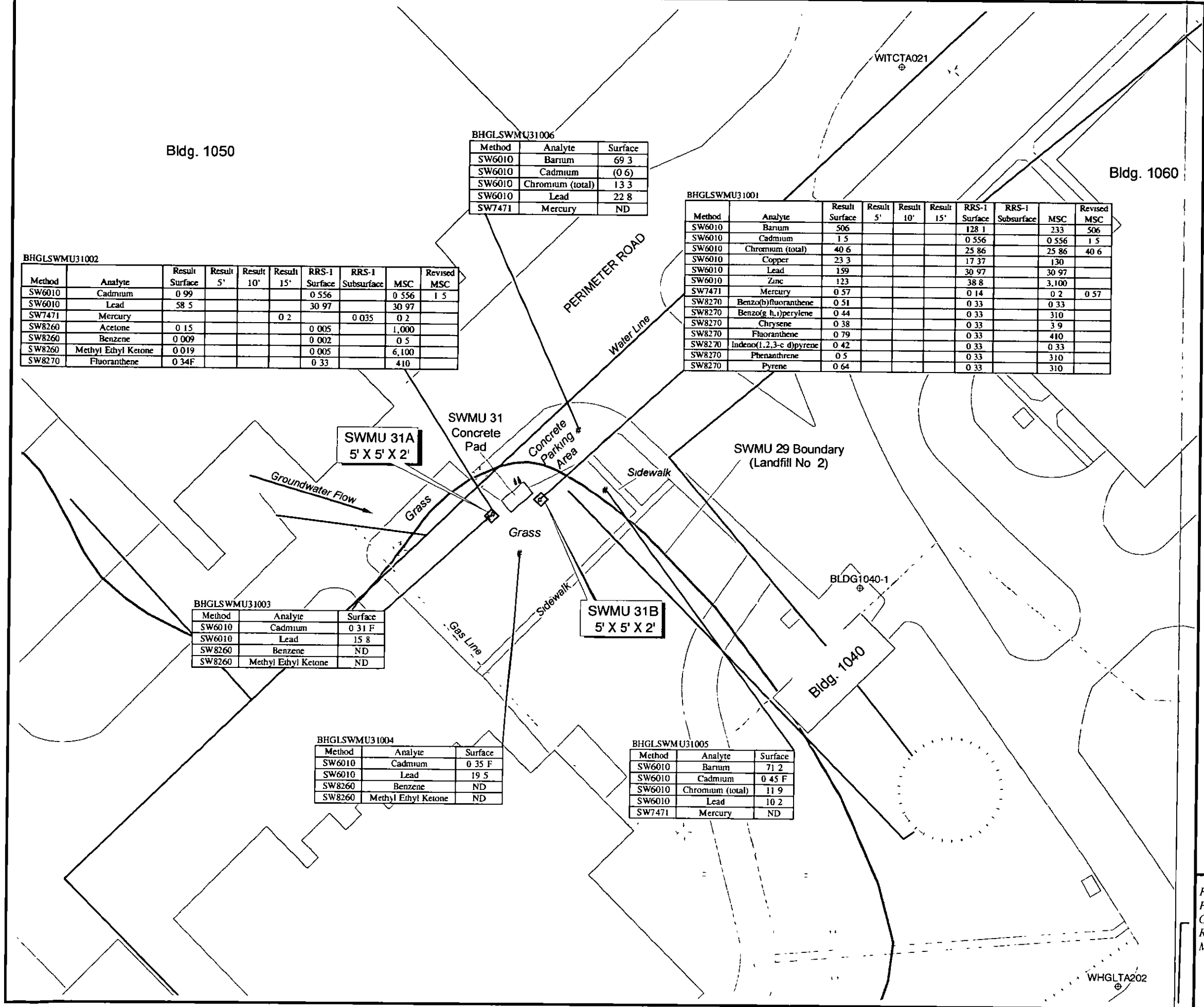
Method	Analyte	Surface	5'
SW6010	Cadmium	ND	
SW6010	Lead	5 4 F	
SW8270	Benzo(a)anthracene	ND	ND
SW8270	Benzo(a)pyrene	ND	ND
SW8270	Benzo(b)fluoranthene	ND	ND
SW8270	Benzo(k)fluoranthene	ND	ND
SW8270	Indeno(1,2,3-c,d)pyrene	ND	ND

BHGLSWMU12003

Method	Analyte	Result Surface	Result 5'	Result 10'	RRS-1 Surface	RRS-1 Subsurface	MSC	Revised MSC
SW6010	Cadmium	0 74			0 556		0 556	0 98
SW6010	Cobalt		7 5			6 19	610	
SW6010	Copper		15 8J			13 72	130	
SW6010	Lead	57 8			30 97		30 97	
SW6010	Zinc	97 9			38 8		3,100	
SW8260	Acetone			0 012		0 005	1,000	
SW8270	*bis* (2-Ethylhexyl)phthalate	0 42			0 33		0 6	
SW8270	Benzo(a)anthracene	1 7			0 33		0 33	
SW8270	Benzo(a)pyrene	1.4			0 33		0 33	
SW8270	Benzo(b)fluoranthene	2			0 33		0 33	
SW8270	Benzo(g,h,i)perylene	0.75			0 33		310	
SW8270	Benzo(k)fluoranthene	0 76			0 33		0 39	
SW8270	Chrysene	1 8			0 33		3 9	
SW8270	Fluoranthene	3 3			0 33		410	
SW8270	Indeno(1,2,3-c d)pyrene	0 96			0 33		0 33	
SW8270	Phenanthrene	1 6			0 33		310	
SW8270	Pyrene	3 3			0 33		310	

BHGLSWMU12007

Method	Analyte	Surface	5'	10'
SW6010	Arsenic			(8 4 F)
SW6010	Cadmium	0 08 F		
SW6010	Lead	4 5 F		
SW8260	Benzene		ND	ND
SW8260	Vinyl Chloride			ND
TX1005	TPH		ND	
TX1005	PHC (Gasoline Range)		ND	
TX1005	PHC (Diesel Range)		ND	



BHGLSWMU31002

Method	Analyte	Result Surface	Result 5'	Result 10'	Result 15'	RRS-1 Surface	RRS-1 Subsurface	MSC	Revised MSC
SW6010	Cadmium	0 99				0 556		0 556	1 5
SW6010	Lead	58 5				30 97		30 97	
SW7471	Mercury				0 2		0 035	0 2	
SW8260	Acetone	0 15				0 005		1,000	
SW8260	Benzene	0 009				0 002		0 5	
SW8260	Methyl Ethyl Ketone	0 019				0 005		6,100	
SW8270	Fluoranthene	0 34F				0 33		410	

BHGLSWMU31006

Method	Analyte	Surface
SW6010	Barium	69 3
SW6010	Cadmium	(0 6)
SW6010	Chromium (total)	13 3
SW6010	Lead	22 8
SW7471	Mercury	ND

BHGLSWMU31001

Method	Analyte	Result Surface	Result 5'	Result 10'	Result 15'	RRS-1 Surface	RRS-1 Subsurface	MSC	Revised MSC
SW6010	Barium	506				128 1		233	506
SW6010	Cadmium	1 5				0 556		0 556	1 5
SW6010	Chromium (total)	40 6				25 86		25 86	40 6
SW6010	Copper	23 3				17 37		130	
SW6010	Lead	159				30 97		30 97	
SW6010	Zinc	123				38 8		3,100	
SW7471	Mercury	0 57				0 14		0 2	0 57
SW8270	Benzo(b)fluoranthene	0 51				0 33		0 33	
SW8270	Benzo(g h,i)perylene	0 44				0 33		310	
SW8270	Chrysene	0 38				0 33		3 9	
SW8270	Fluoranthene	0 79				0 33		410	
SW8270	Indeno(1,2,3-c d)pyrene	0 42				0 33		0 33	
SW8270	Phenanthrene	0 5				0 33		310	
SW8270	Pyrene	0 64				0 33		310	

BHGLSWMU31003

Method	Analyte	Surface
SW6010	Cadmium	0 31 F
SW6010	Lead	15 8
SW8260	Benzene	ND
SW8260	Methyl Ethyl Ketone	ND

BHGLSWMU31004

Method	Analyte	Surface
SW6010	Cadmium	0 35 F
SW6010	Lead	19 5
SW8260	Benzene	ND
SW8260	Methyl Ethyl Ketone	ND

BHGLSWMU31005

Method	Analyte	Surface
SW6010	Barium	71 2
SW6010	Cadmium	0 45 F
SW6010	Chromium (total)	11 9
SW6010	Lead	10 2
SW7471	Mercury	ND

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Figure 3.3
Phase I and II Results and Proposed Actions SWMU 31

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Legend

- Solid Waste Management Unit (SWMU)
- Monitoring Well
- # Round I Soil Boring Location
- # Round II Soil Boring Location
- Proposed Excavation Location
- Surface Runoff

Phase I Results
Phase II Results
Analyte detected above MSC SPLP not performed
Analyte detected above MSC in soil and in SPLP extract
Analyte detected above MSC in soil, but detected below MSC in SPLP extract

Notes
Soil concentrations reported in mg/kg
MSC—Medium-Specific Concentration
Revised MSC—Value based on SPLP result
NV—No Value
F—The analyte was positively identified but the associated numerical value is below the adjusted method quantitation limit
J—The analyte was positively identified, the quantitation is an estimation
Phase I Results - Only detections above RRS-1 are reported on the figure
Phase II Results - All results are reported Analytes depicted in (parentheses) exceed RRS-1 but are below MSC

N

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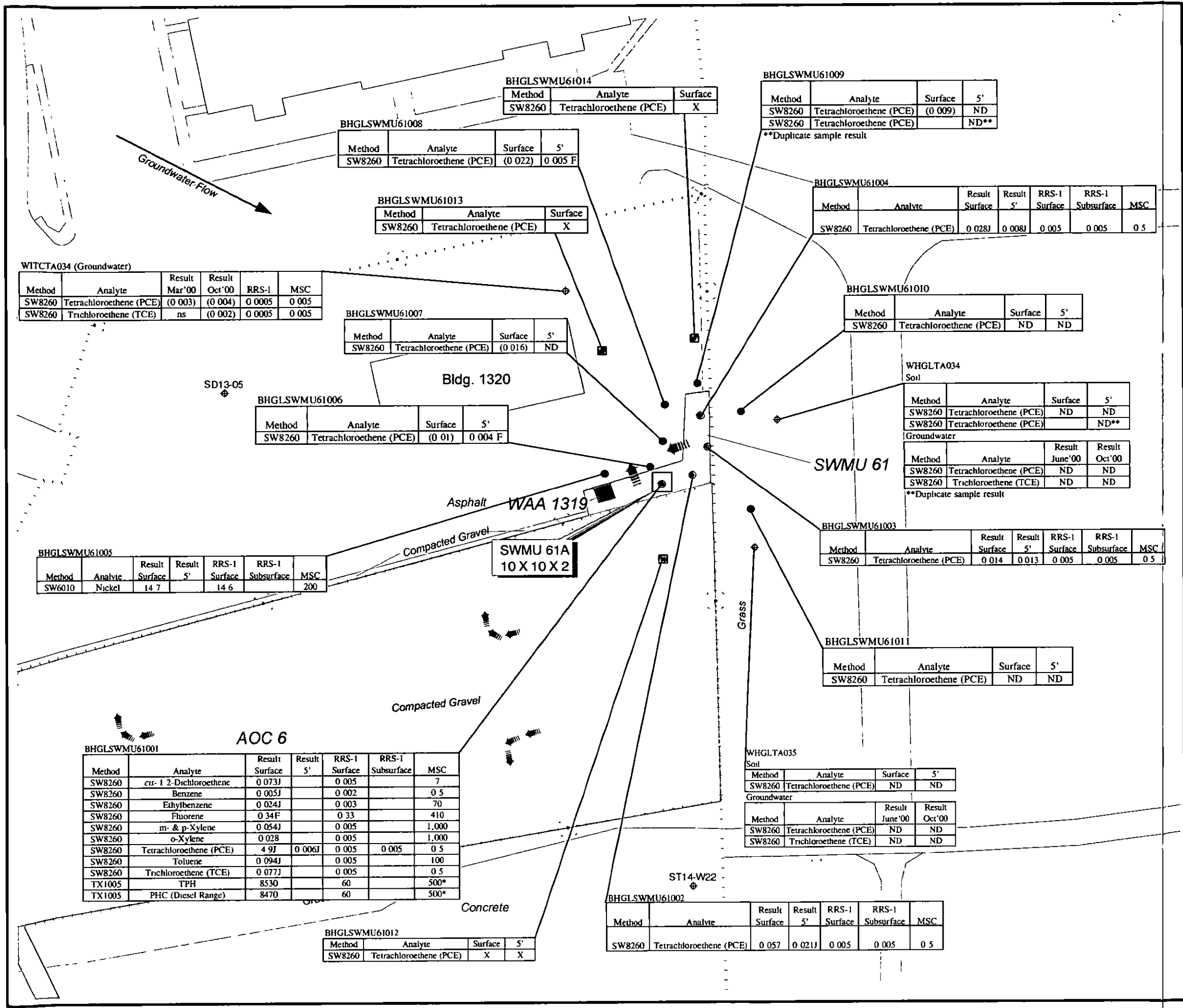

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Figure 3.4
Phase I and II Results and Proposed Actions SWMU 61

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Legend

- Solid Waste Management Unit (SWMU)
- Area of Concern (AOC)
- Waste Accumulation Area (WAA)
- Monitoring Well
- Round I Soil Boring Location
- Round II Soil Boring Location
- Proposed Soil Boring Location
- Proposed Excavation Location
- Surface Runoff

Phase I Results (header)
Phase II Results (header)
Phase III Proposed Analyses (header)
Analyte detected above MSC SPLP not performed
Analyte detected above MSC in soil and in SPLP extract.
Analyte detected above MSC in soil, but detected below MSC in SPLP extract

Notes
Soil concentrations reported in mg/kg
Groundwater concentrations reported in mg/L
MSC—Medium-Specific Concentration
Revised MSC—Value based on SPLP result
NV—No Value
F—The analyte was positively identified but the associated numerical value is below the adjusted method quantitation limit
J—The analyte was positively identified, the quantitation is an estimation
Phase I Results - Only detections above RRS-1 are reported on the figure
Phase II Results - All results are reported Analytes depicted in (parentheses) exceed RRS-1 but are below MSC
PHC—Petroleum Hydrocarbons
* TNRCC action level for course-grained soils (TNRCC RG-17)

N

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FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE