

Kirtland Air Force Base Albuquerque, New Mexico

Interim Corrective Measures

Work Plan

**Solid Waste Management Unit WP-58,
East Laundry (Building 20451) (WP-58)**

Final Draft - October 22, 1997



377 ABW/EMR

2000 Wyoming Blvd. SE

Kirtland AFB, New Mexico 87117-5659

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Albuquerque, New Mexico**

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**INSTALLATION RESTORATION PROGRAM
KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO**

**INTERIM CORRECTIVE MEASURES WORK PLAN FOR
SOIL REMOVAL AND CHARACTERIZATION AT
SWMU WP-58, EAST LAUNDRY(BUILDING 20451) (WP-58)**

FINAL DRAFT

OCTOBER 22, 1997

Prepared for

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DSN: 240-5288 COMM: (210) 536-5288
USAF CONTRACT NO. F41624-94-D-8053 DELIVERY ORDER NO. 0092**

Prepared by

**CH2M HILL
ALBUQUERQUE, NEW MEXICO**

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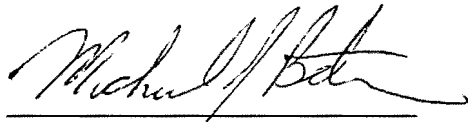
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PREFACE

This Interim Corrective Measures Work Plan describes the soil removal and disposal activities that will be performed during 1997 at one solid waste management unit (WP-58, East Laundry (Building 20451) (WP-58)) of the RCRA Part B Permit for Kirtland Air Force Base (AFB). The plan addresses the requirements of the U.S. Air Force (USAF) statement of work, dated March 6, 1997.

This plan was prepared by CH2M HILL in October 1997. Mr. Bassim D. Shebaro of the Air Force Center for Environmental Excellence was the Restoration Team Chief and Mr. Rodney Arnold served as the Contracting Officer's Representative.



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CONTENTS

Section	Page
Preface	iii
Acronyms	vi
Executive Summary.....	ES-1
1. INTRODUCTION	1
1.1 Description of Interim Corrective Measures	1
1.1.1 Project Objectives.....	1
1.2 Scoping Documents	1
2. BACKGROUND INFORMATION	4
2.1 Results of Previous Investigations.....	4
2.1.1 June 1995 RFI.....	8
2.1.2 July 1997 RFI	8
2.2 Work Plan and Rationale.....	13
2.3 ICM Schedule	15
REFERENCES	17

FIGURES

Figure		Page
1-1	Site Location, SWMU WP-58, East Laundry (Building 20451).....	2
2-1	Soil Sampling Locations and ICM Excavation Locations, SWMU WP-58, East Laundry (Building 20451).....	5
2-2	ICM Schedule.....	16

TABLES

Table		Page
2-1	Summary of 1983 Landscaping Study Reportable Analytical Results, SWMU WP-58, East Laundry (Building 20451) (WP-58)	4
2-2	Summary of SWMU Assessment Study Reportable Analytical Results, SWMU WP-58, East Laundry (Building 20451) (WP-58)	6
2-3	Summary of 1995 RFI Reportable Analytical Results, SWMU WP-58, East Laundry (Building 20451) (WP-58)	9
2-4	Summary of July 1997 RFI Reportable Analytical Results that Exceed HHRB Screening Levels, SWMU WP-58, East Laundry (Building 20451) (WP-58)	11

ACRONYMS

AFB	Air Force Base
bgs	below ground surface
EPA	U.S. Environmental Protection Agency
HHRB	human health risk-based (EPA Region 6 Media-Specific Screening Levels)
ICM	interim corrective measures
in	inch
mg/kg	milligram per kilogram
PID	photoionization detector
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SNL	Sandia National Laboratories
sq ft	square foot
SWMU	Solid Waste Management Unit
SSHP	Site Safety and Health Plan
SVOC	semi-volatile organic compound
USAF	U.S. Air Force
UTL	upper tolerance limit
VOC	volatile organic compound

EXECUTIVE SUMMARY

This Work Plan was prepared as guidance for the Interim Corrective Measures (ICM) to be conducted at Solid Waste Management Unit (SWMU) WP-58, East Laundry (Building 20451)(WP-58), Kirtland Air Force Base, New Mexico. The goal of the ICM is to reduce the risk to human health and the environment associated with contamination that was identified during various assessment investigations and during the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) conducted in 1995.

This site was initially investigated when two soil borings were installed as part of a SWMU assessment investigation to determine if hazardous constituents were released from the sumps that drained the facility. This investigation revealed the presence of semi-volatile organic compounds (SVOCs) in excess of U.S. Environmental Protection Agency (EPA) Region 6 human health risk-based (HHRB) screening levels (EPA Region 6 Media-Specific Screening Levels). An RFI was conducted in 1995 to further characterize the SVOC contamination at the site. This investigation revealed the presence of several additional areas with concentrations of SVOCs in excess of HHRB screening levels. Additional RFI activities were conducted in 1997 to determine the extent of the contamination identified during the 1995 RFI. Results of this investigation indicated that all compounds were below HHRB screening levels and therefore indicates that the extent of the SVOC contamination has been delineated.

Based on the RFI results, an ICM has been recommended for this site. The ICM will consist of excavation, soil characterization, and disposal of SVOC-contaminated soil as detected in the previous investigations. Soil contaminated with SVOCs above the HHRB screening levels will be removed from the discrete areas in which it occurs to a maximum depth of 10 ft below ground surface. Removal of contaminated soil to a depth of 10 ft should mitigate any potential human exposure to compounds that exceed HHRB screening levels. Representative soil samples will be collected from the bottom and sides of the excavated areas to verify contaminant removal.

1. INTRODUCTION

This Work Plan was prepared as guidance for an Interim Corrective Measures (ICM) to be conducted at solid waste management unit (SWMU) WP-58, East Laundry (Building 20451), Kirtland Air Force Base (AFB), New Mexico. The location of the site is shown in Figure 1-1. The ICM goal is to reduce the risk to human health and the environment. Contamination was identified during a SWMU assessment investigation and then again during the initial phase of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) conducted in June 1995 and summarized in the February 1996 Appendix V RFI report. This ICM Work Plan was developed to serve as a guide in the field and contains a site description, results of previous investigations, and a Work Plan and rationale for the removal and characterization of contaminated soil. This Work Plan is considered a deliverable under Contract No. F41624-94-D-8053, Delivery Order No. 0092.

1.1 Description of the Interim Corrective Measures

Based on the RFI results, an ICM has been recommended for this site. The ICM will consist of excavation, characterization for disposal, transport, and removal of near-surface contaminated soil at SWMU WP-58. Representative soil samples will be collected from the bottom of the excavated area for confirmation of contaminant reduction/removal.

1.1.1 Project Objectives

The objective of the ICM is to reduce the risk to human health and the environment posed by shallow subsurface contaminated soil at SWMU WP-58. Five semi-volatile organic compounds (SVOCs) were detected at concentrations above EPA Region 6 human health risk-based (HHRB) screening levels (EPA Region 6 Media-Specific Screening Levels) (EPA, 1996). Contaminated soil above these screening levels will be excavated and disposed of during the ICM.

These actions should effectively reduce exposure risk to human health and the environment. During the ICM excavation activities, attempts will be made to remove all soil with SVOC concentrations above HHRB screening levels. However, some of the sample locations that displayed SVOC concentrations in excess of HHRB screening levels were immediately adjacent to Building 20451. In these areas as much soil will be removed as is practicable without compromising the structural integrity of the building. In order to protect the integrity of the adjacent building, soil will not be excavated closer than 2 feet from the building walls. Furthermore, the excavation wall closest to the building will be excavated maintaining a slope of two vertical units for each one horizontal unit.

1.2 Scoping Documents

The following project scoping document will be used to implement the ICM at ST-58:

- *Kirtland AFB Base-Wide Plans for Installation Restoration Program (IRP)* (U.S. Air Force [USAF], 1995)

Field activities include, but are not limited to, soil excavation, waste transport and disposal, sample handling and shipping, and equipment decontamination and calibration.

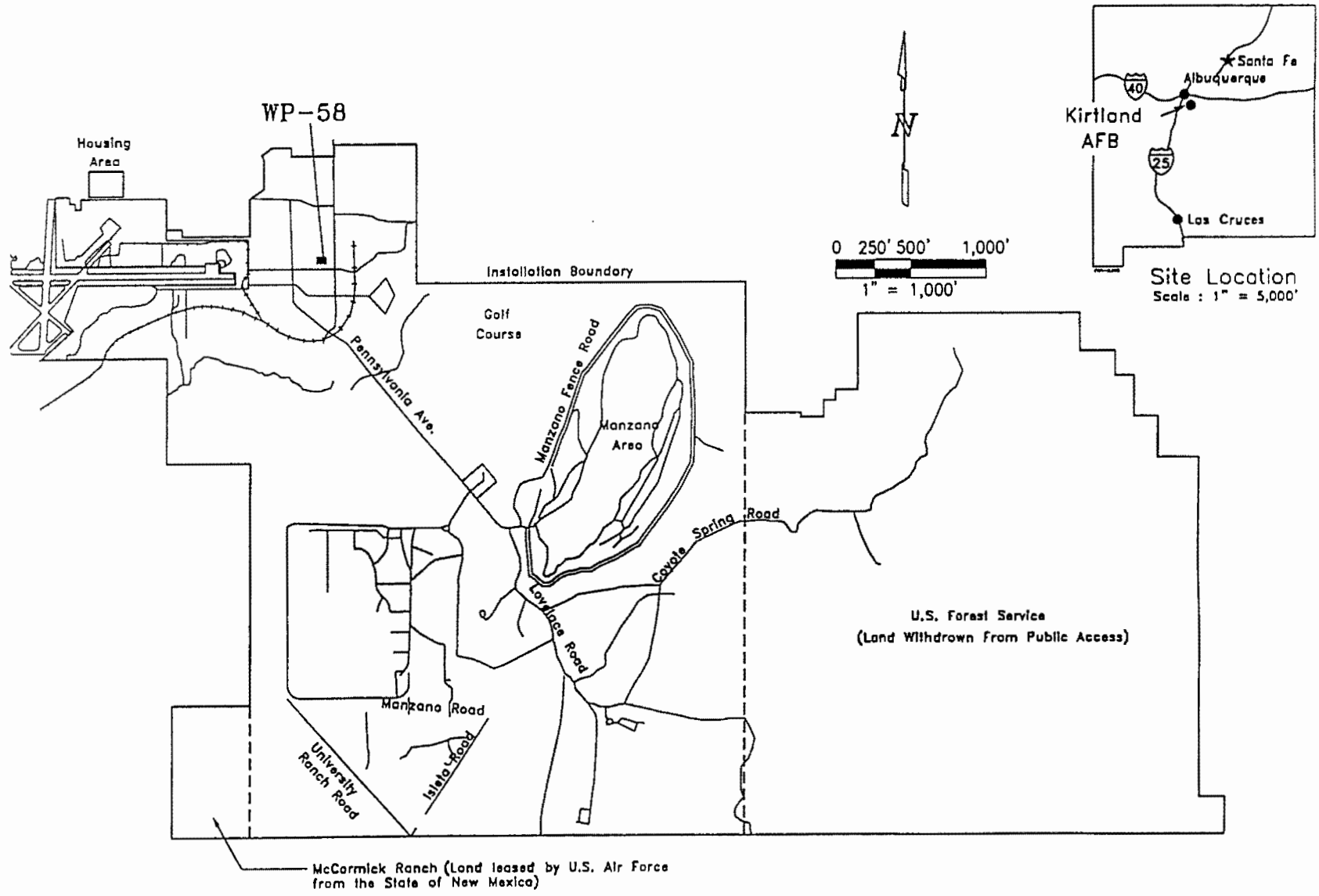


Figure 1-1. Site Location, SWMU WP-58, East Laundry (Building 20451)

Exceptions to the above document are indicated in this site-specific ICM Work Plan and the Site Safety and Health Plan (SSHP) addendum.

2. BACKGROUND INFORMATION

SWMU WP-58, East Laundry (Building 20451) (WP-58), is located at 2251 Wyoming Blvd SE on the east side of Kirtland AFB and functioned as the Sandia Army Base laundry facility (Figure 2-1). Although the exact period of operation is unknown, the building was erected in 1950 and probably operated as a laundry until the mid-1960s.

The building was renovated in 1983 and currently is used as an office for the Defense Evaluation Support Activity. The building is a single-story, approximately 17,500 sq ft. slab-on-grade structure. Washers, dryers, steam presses, and a water-softening unit were used during the facility operation. Effluent was discharged from the washers to a central concrete drainage trench that drained to a belowgrade sump on the east side of the building. The 500-gallon concrete sump discharged to the sanitary sewer via a 6-in discharge line. The sump was removed during the building renovation. A second, smaller sump was located inside the building next to the former water-softening units. This sump also discharged to the sanitary sewer via a 4-in line on the east side of the building.

Waste generated at the site included detergent and water effluent from the washers and calcium salts from the water softeners. The laundry did not operate a dry-cleaning service. Herbicides were formerly used for landscape weed control. The compounds detected indicate that dyeing operations or leaching of dyes occurred at the site.

2.1 Results of Previous Investigations

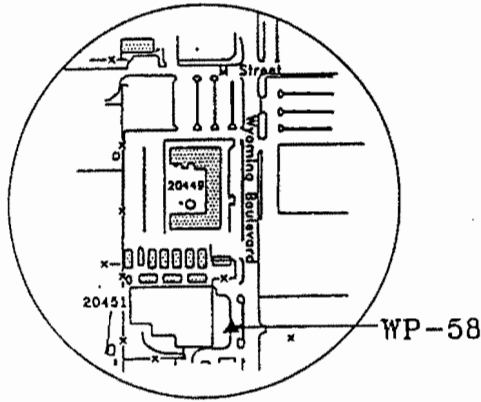
Several surveys and investigations have been conducted at this site:

- A site landscaping study identified the herbicides 2,4-D and dicamba in subsurface soil (USAF, 1983). Levels were not in exceedance of the EPA Region 6 HHRB screening levels. The analytical results are presented in Table 2-1, with only those compound concentrations that exceeded the method detection levels reported.

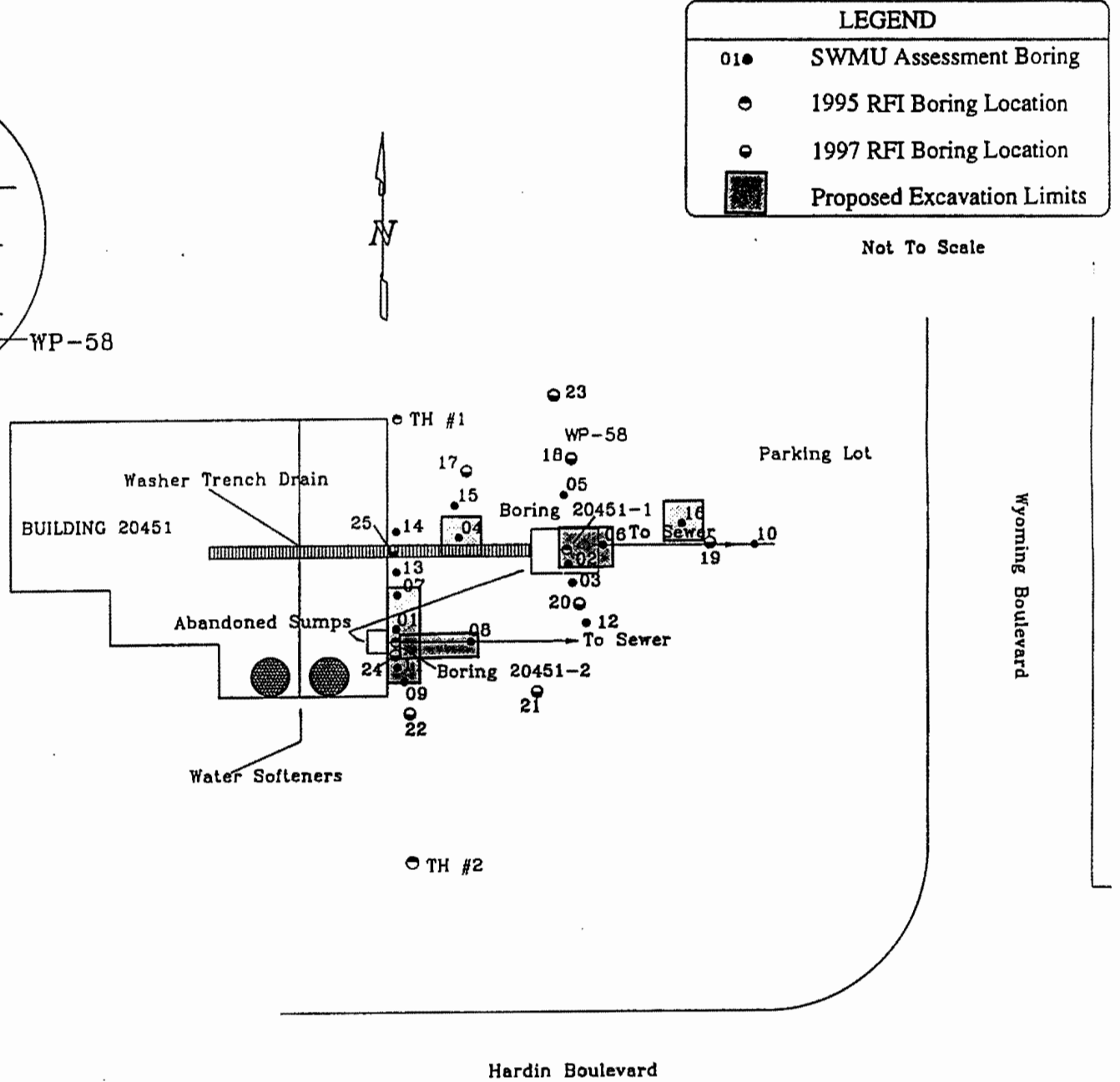
Table 2-1. Summary of 1983 Landscaping Study Reportable Analytical Results, SWMU WP-58, East Laundry (Building 20451) (WP-58)

Chemical Class	Analyte	Boring Number and Depth (Concentrations in mg/kg)			
		TH-1		TH-2	
		1.5 feet bgs	6 feet bgs	1.5 feet bgs	6 feet bgs
Herbicides	2,4 - D	0.308	not detected	not detected	not detected
	Dicamba	0.247	0.147	0.106	0.054

- A SWMU assessment investigation was conducted to determine if hazardous constituents were released from the sumps. Concentrations of the SVOCs benzidine, benzo(a)anthracene, benzo (b) fluoranthene, benzo(a)pyrene, and ideno (1,2,3-cd) pyrene were detected in subsurface soils on the east side of the building (USAF, 1994) at concentrations in exceedance of the EPA Region 6 HHRB residential screening levels. The analytical results are summarized in Table 2-2, with only those compound concentrations that exceeded the method detection levels reported.



Site Location
Scale: 1" = 600'



LEGEND	
01 ●	SWMU Assessment Boring
○	1995 RFI Boring Location
○	1997 RFI Boring Location
■	Proposed Excavation Limits

Not To Scale

Figure 2-1. Soil Sampling Locations and ICM Excavation Locations, SWMU WP-58, East Laundry (Building 20451)

Table 2-2. Summary of SWMU Assessment Study Reportable Analytical Results,
SWMU WP-58, East Laundry (Building 20451) (WP-58)

Chemical Class	Analyte	HHRB ¹⁾ Screening Level	Borehole Number and Sample Depth Interval (Concentrations in mg/kg)				
			20451-1		20451-2		
			5-6	9-10	5-6	9-10	9-10 ²⁾
SVOC	Acetone	360	ND	ND	0.031	ND	ND
	Naphthalene	800	1.9	0.091	ND	ND	ND
	2-Methylnaphthalene		0.55	ND	ND	ND	ND
	Acenaphthylene	360	1.9	0.098	ND	ND	ND
	Chlorobenzene		ND	ND	ND	0.001	ND
	Dibenzofuran	1,300	0.85	ND	ND	ND	ND
	Fluorene	300	1.3	0.075	ND	ND	ND
	Benidine	0.002	49	3.0	0.28	1.3	0.20
	Phenanthrene	N/A	2.5	0.16	ND	ND	ND
	Anthracene	19.0	12.0	0.76	0.077	ND	ND
	di-n-Butylphthalate	6,500	0.39	0.16	0.35	1.4	0.12
	Fluoranthene	2,600	12.0	0.83	0.10	ND	ND
	Pyrene	2,000	11.0	0.75	0.088	ND	ND
	Benzo(a)anthracene	0.60	5.1	0.33	< 0.37	ND	ND
	Chrysene	24.0	4.7	0.30	ND	ND	ND
	bis (2-Ethylhexyl) phthalate	32.0	ND	0.076	ND	ND	ND
	Benzo(b)fluoranthene	0.60	4.3	0.28	ND	ND	ND
	Benzo(k)fluoranthene	6.1	2.4	0.17	ND	ND	ND
	Benzo(a)pyrene	0.06	4.7	0.28	ND	ND	ND
	Indeno(1,2,3-c,d)pyrene	0.60	2.8	0.19	ND	ND	ND
Benzo(g,h,i)perylene	N/A	3.0	0.20	ND	ND	ND	
METALS	Arsenic ⁴⁾	0.32 ⁴⁾	3.34	1.79	9.6	1.29	0.96
	Barium	5,300	135	166	914	121	101
	Chromium	210	4.0	7.4	3.45	8.9	9.8
	Mercury	23.0	0.47	ND	ND	ND	ND
	Lead	400	ND	ND	ND	7.4	ND

FOOTNOTES

- 1** HHRB Screening Level - EPA Region 6 human health risk-based residential screening level
- 2** Duplicate soil sample
- 3** Concentrations in excess of HHRB screening levels are shown bold and shaded
- 4** Arsenic concentrations are considered to be background concentrations rather than being attributable to anthropogenic activities at the site
- HHRB** human health risk-based
- mg/kg** milligrams per kilogram
- ND** not detected above the method detection level
- SVOC** semi-volatile organic compounds

2.1.1 June 1995 RFI

The June 1995 RFI identified 17 SVOCs in surface and subsurface soil at the site (USAF, 1996). Four SVOCs were detected in soil samples at concentrations above EPA Region 6 residential HHRB screening levels. The analytical results are presented in Table 2-3, with only those compound concentrations that exceeded the method detection levels reported (USAF, 1996). The SVOCs detected above HHRB screening levels and the concentration range of each compound, are also summarized below:

- benzo(a)anthracene (0.91 to 2.9 milligram per kilogram [mg/kg]) (HHRB residential screening level 0.6 mg/kg)
- benzo(a)pyrene (0.35 to 2.6 mg/kg) (HHRB residential screening level 0.06 mg/kg)
- benzo(b)fluoranthene (0.96 to 3 mg/kg) (HHRB residential screening level 0.6 mg/kg)
- indeno(1,2,3-c,d)pyrene (2.1 mg/kg) (HHRB residential screening level 0.6 mg/kg)

The remaining SVOCs were detected at concentrations below HHRB residential screening levels.

2.1.2 July 1997 RFI

The purpose of the July 1997 RFI conducted by CH2M HILL was to fully delineate the horizontal and vertical extent of subsurface soil contamination and to determine whether contamination existed under the building foundation. This was done through the advancement of nine direct-push (Geoprobe) soil borings, two of which were borings angled underneath the building foundation to assess potential contaminant releases from the main wasteline and former sump that were located inside the building.

No SVOCs or volatile organic compounds (VOCs) were detected at concentrations in exceedance of HHRB screening levels for a residential scenario in the July 1997 RFI samples.

Metals data from the July 1997 RFI indicated concentrations of arsenic in exceedance of EPA Region 6 residential and industrial HHRB screening levels; beryllium in exceedance of EPA Region 6 residential HHRB screening levels, but less than industrial HHRB screening levels; and manganese in exceedance of EPA Region 6 residential HHRB screening levels, but less than industrial HHRB screening levels. However, these concentrations are most likely attributable to background concentrations since certain metals, particularly arsenic, beryllium, and manganese, are naturally occurring at concentrations exceeding HHRB screening levels throughout Kirtland AFB (Sandia National Laboratories/New Mexico [SNL/NM], 1996). The analytical results are summarized in Table 2-4, with only those compound concentrations that exceed HHRB screening levels presented.

Upper tolerance limits (UTLs) are used as a major criterion for determining whether metals concentrations are of anthropogenic origin. However, it must be recognized that in comparisons with the UTL, which is approximately the 95th percentile of background concentrations, about 5 percent of concentrations can be expected to exceed the UTL within background or other noncontaminated samples. The data from the July 1997 RFI were compared to the UTLs that have been calculated for Kirtland AFB by Sandia National Laboratories (SNL) (SNL/NM, 1996). The maximum-reported concentration of beryllium at WP-58 is less than the SNL-calculated UTL

Table 2-3. Summary of 1995 RFI Reportable Analytical Results,
SWMU WP-58, East Laundry (Building 20451) (WP-58)

Chemical Class	Analyte	HHRB ¹⁾ Screening Level	Borehole Number and Sample Depth Interval (Concentrations in mg/kg)											
			WP58-01				WP58-03			WP58-04	WP58-05			WP58-06
			0-2	15-17	15-17 ²⁾	25-27	0-5	5-7	15-17	0-5	0-5	15-17	25-27	0-5
SVOC	Acenaphthene	360	0.87	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.44	< 0.36	< 0.34	< 0.34	< 0.38
	Anthracene	19.0	1.5	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.82	< 0.36	< 0.34	< 0.34	0.48
	Benzo(a)anthracene	0.60	2.9	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.91	< 0.36	< 0.34	< 0.34	0.60
	Benzo(a)pyrene	0.06	2.6	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.95	< 0.36	< 0.34	< 0.34	0.58
	Benzo(b)fluoranthene	0.60	3.0	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.67	< 0.36	< 0.34	< 0.34	0.53
	Benzo(g,h,i)perylene	N/A	2.6	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.66	< 0.36	< 0.34	< 0.34	0.47
	Benzo(k)fluoranthene	6.1	1.0	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.75	< 0.36	< 0.34	< 0.34	0.46
	Chrysene	24.0	2.9	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.92	< 0.36	< 0.34	< 0.34	0.66
	di-n-Butylphthalate	6,500	< 0.38	< 0.34	< 0.37	< 0.34	0.42	0.54	2.2	< 0.38	2.7	3.6	3.9	< 0.38
	Dibenzofuran	1,300	0.49	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.41	< 0.36	< 0.34	< 0.34	< 0.38
	Fluoranthene	2,600	3.0	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	1.9	< 0.36	< 0.34	< 0.34	1.5
	Fluorene	300	0.75	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.55	< 0.36	< 0.34	< 0.34	< 0.38
	Indeno(1,2,3-c,d)pyrene	0.60	2.1	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.59	< 0.36	< 0.34	< 0.34	0.40
	Naphthalene	800	0.65	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	0.99	< 0.36	< 0.34	< 0.34	< 0.38
	Phenanthrene	N/A	3.0	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	2.2	< 0.36	< 0.34	< 0.34	1.6
	Phenol	39,000	0.48	< 0.34	0.39	0.37	0.41	< 0.38	0.40	< 0.38	< 0.36	< 0.34	< 0.34	< 0.38
	Pyrene	2,000	3.0	< 0.34	< 0.37	< 0.34	< 0.38	< 0.38	< 0.38	1.8	< 0.36	< 0.34	< 0.34	1.3

Chemical Class	Analyte	HHRB ¹⁾ Screening Level	Borehole Number and Sample Depth Interval (Concentrations in mg/kg)									
			WP58-07			WP58-08	WP58-11	WP58-13	WP58-15	WP58-16		
			0-5	5-10	5-10 ²⁾	0-2	0-5	0-5	0-5	0-5	0-5 ²⁾	
SVOC	Acenaphthene	360	0.37	< 0.37	< 0.38	0.45	< 0.35	< 0.39	< 0.38	< 0.39	< 0.37	
	Anthracene	19.0	0.60	< 0.37	< 0.38	0.76	< 0.35	< 0.39	< 0.38	< 0.39	< 0.37	
	Benzo(a)anthracene	0.60	1.2	< 0.37	< 0.38	1.1	< 0.35	< 0.39	< 0.38	< 0.39	0.60	
	Benzo(a)pyrene	0.06	1.3	< 0.37	< 0.38	0.92	0.35	< 0.39	< 0.38	< 0.39	0.78	
	Benzo(b)fluoranthene	0.60	1.4	< 0.37	< 0.38	1.0	0.42	< 0.39	0.41	< 0.39	0.96	
	Benzo(g,h,i)perylene	N/A	0.97	< 0.37	< 0.38	0.64	< 0.35	< 0.39	< 0.38	< 0.39	0.54	
	Benzo(k)fluoranthene	6.1	0.63	< 0.37	< 0.38	0.40	< 0.35	< 0.39	< 0.38	< 0.39	0.39	
	Chrysene	24.0	1.3	< 0.37	< 0.38	1.0	< 0.35	< 0.39	< 0.38	< 0.39	0.61	
	di-n-Butylphthalate	6,500	< 0.36	< 0.37	< 0.38	< 0.36	< 0.35	0.52	< 0.38	< 0.39	< 0.37	
	Dibenzofuran	1,300	< 0.36	< 0.37	< 0.38	< 0.36	< 0.35	< 0.39	< 0.38	< 0.39	< 0.37	
	Fluoranthene	2,600	2.4	0.78	0.40	2.2	0.77	< 0.39	< 0.38	< 0.39	1.3	
	Fluorene	300	< 0.36	< 0.37	< 0.38	0.46	< 0.35	< 0.39	0.67	< 0.39	< 0.37	
	Indeno(1,2,3-c,d)pyrene	0.60	0.79	< 0.37	< 0.38	0.53	< 0.35	< 0.39	< 0.38	< 0.39	0.46	
	Naphthalene	800	0.48	< 0.37	< 0.38	0.38	< 0.35	< 0.39	< 0.38	< 0.39	< 0.37	
	Phenanthrene	N/A	2.2	0.69	< 0.38	2.1	0.64	< 0.39	0.68	< 0.39	0.79	
	Phenol	39,000	< 0.36	< 0.37	< 0.38	0.60	< 0.35	< 0.39	< 0.38	< 0.39	< 0.37	
	Pyrene	2,000	2.4	0.72	< 0.38	1.9	0.62	< 0.39	0.56	< 0.39	1.1	

FOOTNOTES

- 1 HHRB Screening Level - EPA Region 6 human health risk-based residential screening level
 - 2 Duplicate soil sample
 - 3 Concentrations in excess of HHRB screening levels are shown bold and shaded
-
- HHRB** human health risk-based
 - mg/kg** milligrams per kilogram
 - SVOC** semi-volatile organic compounds

Table 2-4. Summary of July 1997 RFI Reportable Analytical Results that Exceed HHRB Screening Levels, SWMU WP-58, East Laundry, (Building 20451) (WP-58)

Chemical Class	Analyte	HHRB Screening Level ²⁾	Borehole Number and Sample Depth Interval (Concentrations in mg/kg)											
			WP58-17			WP58-18			WP58-19			WP58-20		
			5-7	10-12	10-12	15-17	20-22	25-27	5-7	10-12	10-12	15-17	20-22	25-27
Metals	Arsenic ¹⁾	0.32	10 J ^{3,4)}	7.5 J	5.2 J	3.6 J	1.4 J	3.9 J	7.8 J	4.6 J	2.6	1.1	1.6	2.7
	Beryllium ¹⁾	0.14	0.41 J	ND	0.45 J	0.37 J	ND	ND	0.51 J	0.37 J	ND	ND	ND	ND
	Manganese ¹⁾	380	143 J	166 J	152 J	141 J	181 J	86.4 J	188 J	189 J	184 J	114 J	207 J	126 J

Chemical Class	Analyte	HHRB Screening Level ²⁾	Borehole Number and Sample Depth Interval (Concentrations in mg/kg)											
			WP58-21				WP58-22				WP58-23			
			10-12	15-17	20-22	25-27	10-12	15-17	20-22	25-27	10-12	15-17	20-22	25-27
Metals	Arsenic ¹⁾	0.32	4.4	2.1	1	4.8	1.2	1.1	1.7	3.2	3.5	1.4	1.1	2.1
	Beryllium ¹⁾	0.14	0.5	ND	ND	0.57	ND	ND	ND	ND	ND	ND	ND	ND
	Manganese ¹⁾	380	276 J	246 J	194 J	215 J	123 J	180 J	258 J	149 J	114 J	286 J	284 J	154 J

Chemical Class	Analyte	HHRB Screening Level ²⁾	Borehole Number and Sample Depth Interval (Concentrations in mg/kg)									
			WP58-24					WP58-25				
			5-7	10-12	15-17	20-22	25-27	5-7	10-12	15-17	20-22	25-27
Metals	Arsenic ¹⁾	0.32	10.1	1.9	1.7	2.1	4	9	3.2	3.4	3.9	4.6
	Beryllium ¹⁾	0.14	0.39	ND	ND	ND	0.36	ND	ND	0.48 J	0.37 J	0.63 J
	Manganese ¹⁾	380	159 J	224 J	273 J	207 J	122 J	29.1 J	401 J	252 J	236 J	253 J

FOOTNOTES

- 1** Although concentrations exceed EPA Region 6 HHRB screening levels, the concentrations are considered to be the result of naturally occurring background concentrations and not attributable to anthropogenic activities. The ICM activities do not address these elevated metals concentrations.
- 2** HHRB Screening Level - EPA Region 6 human health risk-based residential screening level
- 3** Concentrations in excess of HHRB screening levels are shown bold and shaded
- 4** J qualifier indicates estimated concentration.
- HHRB** human health risk-based
- mg/kg** milligrams per kilogram
- ND** not detected above the method detection level

indicating that this constituent is probably not related to anthropogenic activities. A background concentration for manganese has not been established by SNL.

The comparisons for arsenic show that the maximum-reported values for WP-58 do exceed the SNL-calculated UTL background concentrations. However, of the 34 samples collected at the site, only 10 samples contained arsenic concentrations that exceeded the SNL-calculated UTL and of these samples a consistent pattern of UTL exceedances from subsequent depth intervals at a location was not apparent (i.e., 5- to 7-ft sample from a boring location does not exceed UTL, but 10- to 12-ft samples do exceed UTL). The limited occurrence and the randomness of samples with arsenic concentrations exceeding the SNL-calculated UTLs suggest that these levels are the result of naturally occurring background concentrations. Likewise, the site history for the East Laundry does not indicate that these inorganic chemicals were ever used at this facility. Therefore, concentrations of arsenic, beryllium, and manganese in excess of EPA Region 6 HHRB screening levels are considered to be naturally occurring and are not considered to be compounds for which remediation is necessary. They, therefore, will not be addressed by the ICM activities.

2.2 Work Plan and Rationale

Based on the RFI results, an ICM has been recommended for this site. The ICM will consist of excavation, soil characterization, and removal of SVOC-contaminated soil at WP-58. The proposed areas of excavation are shown in Figure 2-1. Soil contaminated with SVOCs at concentrations above the EPA Region 6 residential HHRB screening levels will be removed from discrete locations down to depths of approximately 10 ft below ground surface (bgs) or less. A 10-ft maximum depth of excavation is proposed because this depth should mitigate any potential human exposure to compounds that exceed HHRB screening levels. Representative soil samples will be collected from the bottom and sides of the excavated areas to verify contaminant removal.

At SWMU WP-58 soils with SVOC concentrations in excess of HHRB screening levels do not encompass one contiguous area, but rather occur in isolated areas of soil that have been fairly well delineated by the extensive soil sampling that has been conducted in the relatively small area. Therefore, in consideration for minimizing the impact to the operations of the nearby building, parking lot, and landscaping, soil excavation will be conducted as small, discrete removals as opposed to a large, continuous excavation. ICM activities are described below:

- Excavate an approximately 30-ft x 8-ft area of soil adjacent to the east wall of Building 20451 to address SVOC exceedances found in four soil borings (20451-2, SB-01, SB-07, SB-11). SVOC exceedances occurred in these four borings at sample intervals ranging from 0- to 2-ft to 9- to 10-ft bgs. Soil excavation will extend no more than 10-ft bgs, and due to the adjacent building foundation, a depth of 10 ft may not even be achievable. To protect the integrity of the adjacent building, soil will not be excavated closer than 2 ft from the building wall. Furthermore, the excavation wall closest to the building will be excavated maintaining a slope of two vertical units for each one horizontal unit.
- Excavate an approximately 10-ft x 5-ft area, extending eastward from Building 20451, located approximately 14 ft north of the southeast corner of Building 20451. This excavation will address high concentrations of SVOCs observed in one soil boring (SB-08). The SVOC compounds at concentrations above the HHRB residential screening levels occurred in the 0- to 2-ft interval of boring SB-08. A sample collected from the 7- to 9-ft interval of SB-08 did not contain any SVOCs at concentrations in excess of the HHRB screening levels. Therefore, the depth of this excavation is anticipated to be approximately 5-ft bgs.

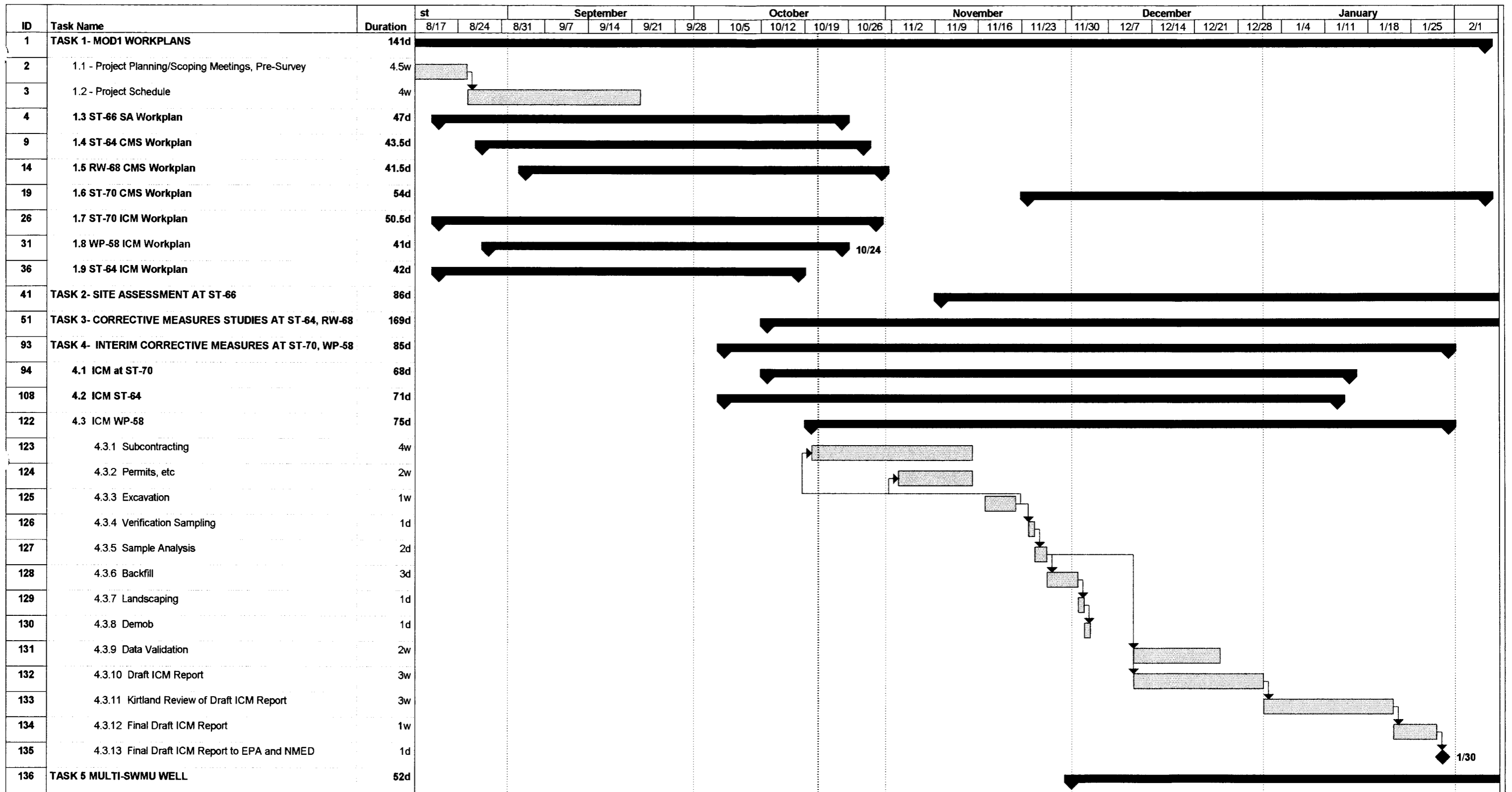
- Excavate an approximately 8-ft x 8-ft area centered around a point approximately 50 ft north of the southeast corner of Building 20451 and 12 ft east of Building 20451. This excavation will address high concentrations of SVOCs observed in one soil boring (SB-04). The SVOC compounds at concentrations above the HHRB residential screening levels occurred in the 0- to 5-ft interval of boring SB-04. The depth of this excavation will extend to approximately 10-ft bgs.
- Excavate an approximately 8-ft x 8-ft area centered around a point approximately 50 ft north of the southeast corner of Building 20451 and 25 ft east of Building 20451. This excavation will address high concentrations of SVOCs observed in two soil borings (20451-1, SB-06). The SVOC compounds at concentrations above the HHRB residential screening levels occurred in the 9- to 10- ft and 0- to 5-ft intervals of borings 20451-1 and SB-06, respectively. The depth of this excavation will extend to approximately 10-ft bgs. The area of the excavation may be slightly modified in the field in order to avoid disturbing the sidewalk and curb at the site, if possible.
- Excavate an approximately 8-ft x 8-ft area centered around a point approximately 50 ft north of the southeast corner of Building 20451 and 31 ft east of Building 20451. This excavation will address high concentrations of SVOCs observed in one soil boring (SB-16). The SVOC compounds at concentrations above the HHRB residential screening levels occurred in the 0- to 5-ft interval of boring SB-16. The depth of this excavation will extend to approximately 10-ft bgs. The area of the excavation may be slightly modified in the field in order to avoid disturbing the sidewalk and curb at the site, if possible.
- Bottom and sidewall post-excavation samples will be collected from all excavation areas to determine whether or not all soil with SVOC concentrations in excess of HHRB screening levels has been removed. If analytical results indicate soils with SVOC concentrations in excess of HHRB screening levels remain, additional excavation and post-excavation sampling will be conducted.
- Stockpile the excavated soil on plastic sheeting adjacent to the excavation. One stockpile will be designated for uncontaminated soils and another stockpile for contaminated soils if practical considering the minimal soil removal volumes and limited space at the site. The stockpiled soil will be covered to prevent wind erosion.
- Field-screen samples from the excavation bottom and sides using a photoionization detector (PID). Concentrate the excavation on the most contaminated zone(s) within the excavation based on field-screening.
- Sample soil stockpile(s) for SVOCs.
- Secure the excavation with t-posts and caution tape.
- Based on analytical results, dispose of the stockpiled soil at the Kirtland AFB landfill or permitted treatment facility as appropriate.
- Backfill the excavated area with clean fill available from Kirtland.
- Grade the backfilled excavation area, replace landscaping, repair any damage to sidewalks, curbs, or driveways.

This removal action should eliminate potential exposure to SVOC-contaminated soil and effectively reduce the risk to human health and the environment. It is not intended to remove this site from the corrective action schedule of the RCRA Part B Permit and may not be the final corrective measure for this site.

2.3 ICM Schedule

A summary of the expected schedule for conducting ICM activities and providing deliverable reports is presented below. A more detailed graphic schedule also is attached (Figure 2-2).

Submittal of Final Draft ICM Work Plan	October 22, 1997
ICM Field Activities	November 17 through December 3, 1997
Submittal of Draft ICM Report	January 2, 1997
Submittal of Final Draft ICM Report	One week after receipt of Kirtland AFB comments on Draft ICM Report
Submittal of Final ICM Report	60 days after receipt of comments on Final Draft Report from EPA, New Mexico Environment Department, and the public



Kirtland AFCEE DO 92 MOD1 Project Schedule
Revised 10/21/97



REFERENCES

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- USAF, 1995. *Kirtland Air Force Base Base-Wide Plans for the Installation Restoration Program*, Kirtland Air Force Base, Albuquerque, New Mexico.
- USAF, 1994. *SWMU Assessment Report for WP-58, Building 20451, East Laundry*.
- USAF, 1983. Albuquerque Testing Laboratory, Inc., *Soil Classification and Analysis - Landscaping for Building 20451*.