

4.0 Nature and Extent of Contamination

This chapter discusses the nature and extent of contamination at Parcel 66(7), including the results of the sampling and analysis activities conducted at the site. In addition, information is provided on potential sources of contamination.

4.1 Sources of Contamination

The primary sources of contamination at Parcel 66(7) were probable releases from operations at the Small Weapons Repair Shop, located in a portion of Building 335. Weapons were disassembled and cleaned using various solutions and solvents. Historically, weapons were brought to the repair shop, degreased with 1,1,1-TCA or TCE and then “stripped” with a caustic solution. Other chlorinated solvents may have been used. According to FTMC (1985), rinse water, possibly with small amounts of TCE, continuously overflowed to the sanitary sewer system during routine operations. Also, the potential existed for the discharge of TCE directly to the ground outside of Building 335. Additional discharges may have occurred from operations conducted in the main part of the building relating to the repair of motorized tanks.

4.2 Summary of Analytical Results

The results of the chemical analysis of samples collected at Parcel 66(7) indicate that metals, VOCs, SVOCs, and pesticides were detected in site media. To evaluate the nature and extent of contamination at the site, the analytical results were compared to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values for FTMC. More rigorous human health and ecological risk assessments are provided in Chapters 6.0 and 7.0, respectively, of this report. The SSSLs and ESVs were developed by IT as part of the human health and ecological risk evaluations associated with site investigations being performed under the BRAC Environmental Restoration Program at FTMC. The SSSLs, ESVs, and polynuclear aromatic hydrocarbon (PAH) background screening values are presented in the *Final Human Health and Ecological Screening Values and PAH Background Summary Report* (IT, 2000c). The PAH background screening values were developed by IT at the direction of the BRAC Cleanup Team to address the occurrence of PAH compounds in surface soils as a result of anthropogenic activities at FTMC. Background metals screening values are presented in the *Final Background Metals Survey Report, Fort McClellan, Alabama* (SAIC, 1998). Summary statistics for background metals samples collected at FTMC are included in Appendix J.

1 An integrated statistical and geochemical evaluation of metals in soil and groundwater was
2 performed for Parcel 66(7) and is included in Appendix K. The evaluation was conducted
3 following methodology outlined in the installation-wide work plan (IT, 2002).

4
5 The following sections and Tables 4-1 through 4-3 summarize the results of the comparison of
6 detected constituents to the SSSLs, ESVs, and background screening values. Complete
7 analytical results are presented in Appendix H.

8 9 **4.2.1 Surface Soil Analytical Results**

10 Three surface soil samples were collected for chemical analysis (as part of the SI at Parcel 75[7])
11 at Parcel 66(7). Surface soil samples were collected from the upper 1 foot of soil at the locations
12 shown on Figure 2-1. Analytical results were compared to residential human health SSSLs,
13 ESVs, and metals background screening values, as presented in Table 4-1.

14
15 **Metals.** Nineteen metals were detected in the surface soil samples collected at the site. The
16 concentrations of three metals (aluminum, arsenic, and iron) exceeded SSSLs but were below
17 their respective background concentrations.

18
19 Eleven metals were detected at concentrations exceeding ESVs: aluminum, beryllium,
20 chromium, cobalt, copper, iron, manganese, nickel, selenium, vanadium, and zinc. Six of these
21 metals results also exceeded their respective background concentrations in one or two samples:
22 beryllium, cobalt, copper, nickel, selenium, and zinc. With the exceptions of the beryllium,
23 copper, and nickel results in one sample (PPMP-75-GP02), and the selenium results in two
24 samples (PPMP-75-GP02 and PPMP-75-GP03), the metals results were within the range of
25 background values (Appendix J). The integrated statistical and geochemical evaluation of metals
26 concentrations in soils concluded that the metals that exceeded ESVs in surface soils are
27 probably naturally occurring. The elevated concentrations are explained as most likely resulting
28 from the preferential enrichment of samples with minerals such as iron oxides and manganese
29 oxides that naturally concentrate specific trace elements.

30
31 **Volatile Organic Compounds.** Six VOCs were detected in surface soil samples collected at
32 Parcel 66(7). The bromomethane results, methylene chloride results, and two acetone results
33 were flagged with a "B" data qualifier, signifying that these compounds were also detected in an
34 associated laboratory or field blank sample. VOC concentrations in the surface soil samples
35 ranged from 0.0017 to 0.15 milligrams per kilogram (mg/kg) and were below SSSLs and ESVs.

Table 4-1

Surface Soil Analytical Results
Small Weapons Repair Shop, Parcel 66(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 2)

Sample Location Sample Number Sample Date Sample Depth (Feet)						PPMP-75-GP01 KJ0001 18-Jan-99 0-1					PPMP-75-GP02 KJ0005 18-Jan-99 0-1					PPMP-75-GP03 KJ0007 18-Jan-99 0-1							
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	ESV ^c	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																							
Aluminum	mg/kg	3.99E+04	1.63E+04	7.80E+03	5.00E+01	6.34E+03					YES	1.17E+04				YES	YES	1.18E+04				YES	YES
Arsenic	mg/kg	4.90E+01	1.37E+01	4.26E-01	1.00E+01	1.30E+00	B			YES		6.30E+00				YES		5.00E+00				YES	
Barium	mg/kg	2.88E+02	1.24E+02	5.47E+02	1.65E+02	4.65E+01						1.01E+02						6.53E+01					
Beryllium	mg/kg	8.70E-01	8.00E-01	9.60E+00	1.10E+00	8.10E-01			YES			1.20E+00		YES	YES		YES	4.60E-01	J				
Calcium	mg/kg	1.79E+04	1.72E+03	NA	NA	2.46E+04	J	YES	YES			3.19E+03	J		YES			3.71E+02	J				
Chromium	mg/kg	1.34E+02	3.70E+01	2.32E+01	4.00E-01	7.60E+00	J			YES		1.71E+01	J				YES	1.67E+01	J				YES
Cobalt	mg/kg	7.10E+01	1.52E+01	4.68E+02	2.00E+01	1.30E+00	J					2.39E+01			YES		YES	3.80E+00	J				
Copper	mg/kg	2.40E+01	1.27E+01	3.13E+02	4.00E+01	6.50E+00						4.51E+01		YES	YES		YES	2.08E+01			YES		
Iron	mg/kg	5.63E+04	3.42E+04	2.34E+03	2.00E+02	4.37E+03				YES	YES	3.05E+04				YES	YES	2.75E+04				YES	YES
Lead	mg/kg	8.30E+01	4.01E+01	4.00E+02	5.00E+01	1.08E+01						2.60E+01						1.15E+01					
Magnesium	mg/kg	9.60E+03	1.03E+03	NA	4.40E+05	7.90E+03	J		YES			6.03E+03	J		YES			1.13E+03	J		YES		
Manganese	mg/kg	6.85E+03	1.58E+03	3.63E+02	1.00E+02	2.09E+02				YES		3.63E+02					YES	1.54E+01					
Mercury	mg/kg	3.20E-01	8.00E-02	2.33E+00	1.00E-01	2.60E-02	J					4.10E-02	J					1.70E-02	J				
Nickel	mg/kg	2.20E+01	1.03E+01	1.54E+02	3.00E+01	3.30E+00	J					4.58E+01		YES	YES		YES	8.00E+00					
Potassium	mg/kg	6.01E+03	8.00E+02	NA	NA	5.31E+02	J					4.57E+02	J					4.04E+02	J				
Selenium	mg/kg	1.30E+00	4.80E-01	3.91E+01	8.10E-01	ND						1.60E+00		YES	YES		YES	1.40E+00		YES	YES		YES
Sodium	mg/kg	5.63E+02	6.34E+02	NA	NA	1.40E+02	B					8.37E+01	B					1.23E+02	B				
Vanadium	mg/kg	1.58E+02	5.88E+01	5.31E+01	2.00E+00	9.40E+00				YES		2.45E+01					YES	2.87E+01					YES
Zinc	mg/kg	2.09E+02	4.06E+01	2.34E+03	5.00E+01	1.61E+01						1.00E+02			YES		YES	2.16E+01					
VOLATILE ORGANIC COMPOUNDS																							
2-Butanone	mg/kg	NA	NA	4.66E+03	8.96E+01	5.80E-03	J					ND						ND					
Acetone	mg/kg	NA	NA	7.76E+02	2.50E+00	4.60E-02	B					1.50E-01	J					2.50E-02	B				
Bromomethane	mg/kg	NA	NA	1.09E+01	NA	3.00E-03	B					3.10E-03	B					3.20E-03	B				
Carbon disulfide	mg/kg	NA	NA	7.77E+02	9.00E-02	1.70E-03	J					ND						ND					
Methylene chloride	mg/kg	NA	NA	8.41E+01	2.00E+00	3.30E-03	B					2.80E-03	B					3.40E-03	B				
Toluene	mg/kg	NA	NA	1.55E+03	5.00E-02	2.00E-03	J					ND						ND					

Table 4-1

Surface Soil Analytical Results
 Small Weapons Repair Shop, Parcel 66(7)
 Fort McClellan, Calhoun County, Alabama

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Sample Location						PPMP-75-GP01						PPMP-75-GP02						PPMP-75-GP03						
Sample Number						KJ0001						KJ0005						KJ0007						
Sample Date						18-Jan-99						18-Jan-99						18-Jan-99						
Sample Depth (Feet)						0-1						0-1						0-1						
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	ESV ^c	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	
SEMIVOLATILE ORGANIC COMPOUNDS																								
Anthracene	mg/kg	NA	9.35E-01	2.33E+03	1.00E-01	7.90E-02	J					ND						ND						
Benzo(a)anthracene	mg/kg	NA	1.19E+00	8.51E-01	5.21E+00	7.30E-01						4.10E-02	J					ND						
Benzo(a)pyrene	mg/kg	NA	1.42E+00	8.51E-02	1.00E-01	1.60E+00			YES	YES	YES	ND						ND						
Benzo(b)fluoranthene	mg/kg	NA	1.66E+00	8.51E-01	5.98E+01	2.10E+00			YES	YES		6.70E-02	J					ND						
Benzo(ghi)perylene	mg/kg	NA	9.55E-01	2.32E+02	1.19E+02	1.10E+00			YES			ND						ND						
Benzo(k)fluoranthene	mg/kg	NA	1.45E+00	8.51E+00	1.48E+02	6.10E-01						ND						ND						
Chrysene	mg/kg	NA	1.40E+00	8.61E+01	4.73E+00	9.40E-01						4.00E-02	J					ND						
Dibenz(a,h)anthracene	mg/kg	NA	7.20E-01	8.61E-02	1.84E+01	2.70E-01	J			YES		ND						ND						
Fluoranthene	mg/kg	NA	2.03E+00	3.09E+02	1.00E-01	1.10E+00					YES	8.10E-02	J					ND						
Indeno(1,2,3-cd)pyrene	mg/kg	NA	9.37E-01	8.51E-01	1.09E+02	1.20E+00	J		YES	YES		ND						ND						
Phenanthrene	mg/kg	NA	1.08E+00	2.32E+03	1.00E-01	1.80E-01	J				YES	ND						ND						
Pyrene	mg/kg	NA	1.63E+00	2.33E+02	1.00E-01	1.10E+00					YES	6.50E-02	J					ND						
PESTICIDES																								
Aldrin	mg/kg	NA	NA	3.65E-02	2.50E-03	ND						ND						1.00E-03	J					
Endrin	mg/kg	NA	NA	2.32E+00	1.00E-03	5.20E-03	J				YES	ND						ND						
Methoxychlor	mg/kg	NA	NA	3.89E+01	1.99E-02	1.20E-02	J					ND						ND						

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

^a UBR - Upper background range as given in Science Applications International Corporation (SAIC), 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

^b BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998. For SVOCs, concentration listed is the background screening value for soils adjacent to asphalt as given in IT Corporation (IT), 2000.

Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July.

^c Residential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT, 2000.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 4-2

**Subsurface Soil Analytical Results
Small Weapons Repair Shop, Parcel 66(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location					PPMP-75-GP01					PPMP-75-GP02					PPMP-75-GP03				
Sample Number					KJ0004					KJ0006					KJ0008				
Sample Date					18-Jan-99					18-Jan-99					18-Jan-99				
Sample Depth (Feet)					5 - 7					3 - 5					3 - 5				
Parameter	Units	UBR ^a	BKG ^b	SSSL ^c	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																			
Aluminum	mg/kg	2.46E+04	1.36E+04	7.80E+03	1.31E+04				YES	1.30E+04				YES	1.49E+04			YES	YES
Arsenic	mg/kg	3.80E+01	1.83E+01	4.26E-01	2.60E+00				YES	4.40E+00				YES	4.90E+00				YES
Barium	mg/kg	4.50E+03	2.34E+02	5.47E+02	1.73E+02					8.57E+01					8.54E+01				
Beryllium	mg/kg	2.00E+00	8.60E-01	9.60E+00	1.30E+00		YES			1.80E+00		YES			2.00E+00	YES	YES		
Calcium	mg/kg	3.65E+03	6.37E+02	NA	1.45E+03	J		YES		1.02E+03	J		YES		8.94E+02	J		YES	
Chromium	mg/kg	5.50E+01	3.83E+01	2.32E+01	1.67E+01	J				1.81E+01	J				1.94E+01	J			
Cobalt	mg/kg	9.60E+01	1.75E+01	4.68E+02	1.11E+01					3.18E+01		YES			3.74E+01			YES	
Copper	mg/kg	6.10E+01	1.94E+01	3.13E+02	1.76E+01					3.77E+01		YES			3.90E+01			YES	
Iron	mg/kg	4.80E+04	4.48E+04	2.34E+03	2.36E+04			YES		3.06E+04			YES		3.46E+04				YES
Lead	mg/kg	5.00E+02	3.85E+01	4.00E+02	1.18E+01					1.61E+01					1.89E+01				
Magnesium	mg/kg	5.94E+03	7.66E+02	NA	3.33E+03	J		YES		6.72E+03	J	YES	YES		7.50E+03	J	YES	YES	
Manganese	mg/kg	1.90E+04	1.36E+03	3.63E+02	1.32E+02					3.12E+02					1.79E+02				
Mercury	mg/kg	1.20E-01	7.00E-02	2.33E+00	1.90E-02	J				5.40E-02	J				3.20E-02	J			
Nickel	mg/kg	3.80E+01	1.29E+01	1.54E+02	2.18E+01			YES		7.18E+01		YES	YES		6.99E+01		YES	YES	
Potassium	mg/kg	6.15E+03	7.11E+02	NA	4.93E+02	J				4.20E+02	J				3.80E+02	J			
Selenium	mg/kg	5.50E-01	4.70E-01	3.91E+01	1.00E+00		YES	YES		1.50E+00		YES	YES		1.60E+00		YES	YES	
Sodium	mg/kg	6.43E+02	7.02E+02	NA	1.95E+02	B				9.23E+01	B				1.25E+02	B			
Thallium	mg/kg	2.40E+01	1.40E+00	5.08E-01	4.30E-01	J				6.10E-01	J			YES	ND				
Vanadium	mg/kg	9.90E+01	6.49E+01	5.31E+01	2.10E+01					1.83E+01					1.84E+01				
Zinc	mg/kg	8.90E+01	3.49E+01	2.34E+03	4.11E+01			YES		1.04E+02		YES	YES		1.11E+02		YES	YES	
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	NA	4.66E+03	3.80E-03	J				ND					ND				
Acetone	mg/kg	NA	NA	7.76E+02	2.70E-01	J				4.90E-02	B				1.90E-02	B			
Bromomethane	mg/kg	NA	NA	1.09E+01	3.00E-03	B				3.10E-03	B				2.90E-03	B			
Methylene chloride	mg/kg	NA	NA	8.41E+01	2.90E-03	B				2.50E-03	B				3.00E-03	B			
cis-1,2-Dichloroethene	mg/kg	NA	NA	7.77E+01	1.80E-02					ND					ND				
trans-1,2-Dichloroethene	mg/kg	NA	NA	1.55E+02	3.20E-03	J				ND					ND				
SEMIVOLATILE ORGANIC COMPOUNDS																			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	NA	4.52E+01	ND					ND					5.10E-02	B			

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

^a UBR - Upper background range as given in Science Applications International Corporation (SAIC), 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

^b BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998.

^c Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama*, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 4-3

Groundwater Analytical Results
Small Weapons Repair Shop, Parcel 66(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 7)

Sample Location Sample Number Sample Date					PPMP-75-GP01 KJ3001 24-Feb-99					PPMP-75-GP02 KJ3002 24-Feb-99					PPMP-75-GP03 KJ3003 24-Feb-99				
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																			
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	1.02E-01	J				7.57E-02	J				1.39E+00				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	8.02E-02	J				2.10E-02	J				3.15E-02	J			
Calcium	mg/L	4.52E+02	5.65E+01	NA	1.21E+02			YES		3.24E+01					2.71E+02			YES	
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	1.22E+00				YES	ND					1.83E+00				YES
Magnesium	mg/L	1.49E+02	2.13E+01	NA	6.81E+01			YES		2.19E+01			YES		1.54E+02		YES	YES	
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	1.15E+00			YES	YES	5.46E-02					3.95E-01				YES
Nickel	mg/L	NA	NA	3.13E-02	ND					ND					1.25E-02	J			
Potassium	mg/L	6.85E+01	7.20E+00	NA	3.81E+00	J				2.42E+00	J				1.23E+01			YES	
Sodium	mg/L	6.47E+01	1.48E+01	NA	1.09E+02			YES	YES	2.65E+01			YES		1.67E+02		YES	YES	
VOLATILE ORGANIC COMPOUNDS																			
1,1,1-Trichloroethane	mg/L	NA	NA	3.05E-01	5.00E-04	J				ND					ND				
1,1-Dichloroethane	mg/L	NA	NA	1.54E-01	6.90E-03					ND					ND				
1,1-Dichloroethene	mg/L	NA	NA	9.30E-05	1.80E-03				YES	ND					ND				
1,2-Dichloroethane	mg/L	NA	NA	4.48E-04	ND					ND					ND				
Acetone	mg/L	NA	NA	1.56E-01	ND					ND					ND				
Chloroform	mg/L	NA	NA	1.15E-03	ND					ND					ND				
Methylene chloride	mg/L	NA	NA	7.85E-03	ND					ND					ND				
Toluene	mg/L	NA	NA	2.59E-01	ND					ND					ND				
Trichloroethene	mg/L	NA	NA	4.51E-03	4.40E-03					ND					ND				
Vinyl chloride	mg/L	NA	NA	3.20E-05	3.70E-02				YES	ND					ND				
cis-1,2-Dichloroethene	mg/L	NA	NA	1.55E-02	2.10E-02				YES	ND					ND				
trans-1,2-Dichloroethene	mg/L	NA	NA	3.07E-02	1.50E-02					ND					ND				

Table 4-3

Groundwater Analytical Results
Small Weapons Repair Shop, Parcel 66(7)
Fort McClellan, Calhoun County, Alabama

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Sample Location Sample Number Sample Date					PPMP-66-MW01 HN3001 8-Mar-01					PPMP-66-MW02 HN3002 6-Mar-01					PPMP-66-MW03 HN3005 7-Mar-01				
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																			
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	NR					NR					NR				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	NR					NR					NR				
Calcium	mg/L	4.52E+02	5.65E+01	NA	NR					NR					NR				
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	NR					NR					NR				
Magnesium	mg/L	1.49E+02	2.13E+01	NA	NR					NR					NR				
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	NR					NR					NR				
Nickel	mg/L	NA	NA	3.13E-02	NR					NR					NR				
Potassium	mg/L	6.85E+01	7.20E+00	NA	NR					NR					NR				
Sodium	mg/L	6.47E+01	1.48E+01	NA	NR					NR					NR				
VOLATILE ORGANIC COMPOUNDS																			
1,1,1-Trichloroethane	mg/L	NA	NA	3.05E-01	ND					ND					ND				
1,1-Dichloroethane	mg/L	NA	NA	1.54E-01	ND					4.60E-03	J				ND				
1,1-Dichloroethene	mg/L	NA	NA	9.30E-05	ND					9.20E-03				YES	ND				
1,2-Dichloroethane	mg/L	NA	NA	4.48E-04	ND					ND					ND				
Acetone	mg/L	NA	NA	1.56E-01	ND					ND					ND				
Chloroform	mg/L	NA	NA	1.15E-03	ND					ND					ND				
Methylene chloride	mg/L	NA	NA	7.85E-03	ND					ND					ND				
Toluene	mg/L	NA	NA	2.59E-01	ND					ND					ND				
Trichloroethene	mg/L	NA	NA	4.51E-03	ND					4.00E-02				YES	ND				
Vinyl chloride	mg/L	NA	NA	3.20E-05	ND					6.00E-02				YES	ND				
cis-1,2-Dichloroethene	mg/L	NA	NA	1.55E-02	ND					7.50E-03					ND				
trans-1,2-Dichloroethene	mg/L	NA	NA	3.07E-02	ND					6.40E-03					ND				

Table 4-3

**Groundwater Analytical Results
Small Weapons Repair Shop, Parcel 66(7)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 7)

Sample Location					PPMP-66-MW04					PPMP-66-MW05					PPMP-66-MW06				
Sample Number					HN3006					HN3007					HN3008				
Sample Date					5-Mar-01					8-Mar-01					14-Mar-01				
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																			
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	NR					NR					NR				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	NR					NR					NR				
Calcium	mg/L	4.52E+02	5.65E+01	NA	NR					NR					NR				
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	NR					NR					NR				
Magnesium	mg/L	1.49E+02	2.13E+01	NA	NR					NR					NR				
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	NR					NR					NR				
Nickel	mg/L	NA	NA	3.13E-02	NR					NR					NR				
Potassium	mg/L	6.85E+01	7.20E+00	NA	NR					NR					NR				
Sodium	mg/L	6.47E+01	1.48E+01	NA	NR					NR					NR				
VOLATILE ORGANIC COMPOUNDS																			
1,1,1-Trichloroethane	mg/L	NA	NA	3.05E-01	ND					ND					3.60E-02				
1,1-Dichloroethane	mg/L	NA	NA	1.54E-01	ND					ND					8.80E-02				
1,1-Dichloroethene	mg/L	NA	NA	9.30E-05	ND					ND					3.10E-01				YES
1,2-Dichloroethane	mg/L	NA	NA	4.48E-04	ND					ND					1.10E-03 J				YES
Acetone	mg/L	NA	NA	1.56E-01	ND					ND					ND				
Chloroform	mg/L	NA	NA	1.15E-03	ND					ND					ND				
Methylene chloride	mg/L	NA	NA	7.85E-03	ND					1.40E-03 B					ND				
Toluene	mg/L	NA	NA	2.59E-01	ND					ND					2.60E-03 J				
Trichloroethene	mg/L	NA	NA	4.51E-03	ND					ND					9.20E+00				YES
Vinyl chloride	mg/L	NA	NA	3.20E-05	ND					ND					ND				
cis-1,2-Dichloroethene	mg/L	NA	NA	1.55E-02	ND					ND					5.00E-01				YES
trans-1,2-Dichloroethene	mg/L	NA	NA	3.07E-02	ND					ND					1.70E-02				

Table 4-3

**Groundwater Analytical Results
Small Weapons Repair Shop, Parcel 66(7)
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 7)

Sample Location Sample Number Sample Date					PPMP-66-MW07 HN3009 5-Mar-01					PPMP-66-MW08 HN3010 6-Mar-01					PPMP-66-MW09 HN3011 7-Mar-01				
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																			
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	NR					NR					NR				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	NR					NR					NR				
Calcium	mg/L	4.52E+02	5.65E+01	NA	NR					NR					NR				
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	NR					NR					NR				
Magnesium	mg/L	1.49E+02	2.13E+01	NA	NR					NR					NR				
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	NR					NR					NR				
Nickel	mg/L	NA	NA	3.13E-02	NR					NR					NR				
Potassium	mg/L	6.85E+01	7.20E+00	NA	NR					NR					NR				
Sodium	mg/L	6.47E+01	1.48E+01	NA	NR					NR					NR				
VOLATILE ORGANIC COMPOUNDS																			
1,1,1-Trichloroethane	mg/L	NA	NA	3.05E-01	ND					ND					ND				
1,1-Dichloroethane	mg/L	NA	NA	1.54E-01	ND					ND					ND				
1,1-Dichloroethene	mg/L	NA	NA	9.30E-05	ND					ND					ND				
1,2-Dichloroethane	mg/L	NA	NA	4.48E-04	ND					ND					ND				
Acetone	mg/L	NA	NA	1.56E-01	ND					ND					ND				
Chloroform	mg/L	NA	NA	1.15E-03	ND					9.90E-04	B				ND				
Methylene chloride	mg/L	NA	NA	7.85E-03	ND					ND					ND				
Toluene	mg/L	NA	NA	2.59E-01	ND					1.40E-03	J				ND				
Trichloroethene	mg/L	NA	NA	4.51E-03	ND					ND					ND				
Vinyl chloride	mg/L	NA	NA	3.20E-05	ND					ND					ND				
cis-1,2-Dichloroethene	mg/L	NA	NA	1.55E-02	ND					ND					ND				
trans-1,2-Dichloroethene	mg/L	NA	NA	3.07E-02	ND					ND					ND				

Table 4-3

**Groundwater Analytical Results
Small Weapons Repair Shop, Parcel 66(7)
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 7)

Sample Location					PPMP-66-MW10					PPMP-66-MW11					PPMP-66-MW12				
Sample Number					HN3012					HN3013					HN3014				
Sample Date					6-Mar-01					16-Mar-01					21-Mar-01				
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																			
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	NR					NR					NR				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	NR					NR					NR				
Calcium	mg/L	4.52E+02	5.65E+01	NA	NR					NR					NR				
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	NR					NR					NR				
Magnesium	mg/L	1.49E+02	2.13E+01	NA	NR					NR					NR				
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	NR					NR					NR				
Nickel	mg/L	NA	NA	3.13E-02	NR					NR					NR				
Potassium	mg/L	6.85E+01	7.20E+00	NA	NR					NR					NR				
Sodium	mg/L	6.47E+01	1.48E+01	NA	NR					NR					NR				
VOLATILE ORGANIC COMPOUNDS																			
1,1,1-Trichloroethane	mg/L	NA	NA	3.05E-01	ND					ND					ND				
1,1-Dichloroethane	mg/L	NA	NA	1.54E-01	ND					ND					ND				
1,1-Dichloroethene	mg/L	NA	NA	9.30E-05	ND					ND					ND				
1,2-Dichloroethane	mg/L	NA	NA	4.48E-04	ND					ND					ND				
Acetone	mg/L	NA	NA	1.56E-01	8.40E-02					ND					ND				
Chloroform	mg/L	NA	NA	1.15E-03	ND					ND					ND				
Methylene chloride	mg/L	NA	NA	7.85E-03	ND					ND					1.50E-03 J				
Toluene	mg/L	NA	NA	2.59E-01	ND					ND					ND				
Trichloroethene	mg/L	NA	NA	4.51E-03	ND					ND					ND				
Vinyl chloride	mg/L	NA	NA	3.20E-05	ND					ND					ND				
cis-1,2-Dichloroethene	mg/L	NA	NA	1.55E-02	ND					ND					ND				
trans-1,2-Dichloroethene	mg/L	NA	NA	3.07E-02	ND					ND					ND				

Table 4-3

Groundwater Analytical Results
 Small Weapons Repair Shop, Parcel 66(7)
 Fort McClellan, Calhoun County, Alabama

(Page 6 of 7)

Sample Location Sample Number Sample Date					PPMP-66-MW13 HN3015 14-Mar-01					PPMP-66-MW14 HN3016 18-Oct-01				
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS														
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	NR					NR				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	NR					NR				
Calcium	mg/L	4.52E+02	5.65E+01	NA	NR					NR				
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	NR					NR				
Magnesium	mg/L	1.49E+02	2.13E+01	NA	NR					NR				
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	NR					NR				
Nickel	mg/L	NA	NA	3.13E-02	NR					NR				
Potassium	mg/L	6.85E+01	7.20E+00	NA	NR					NR				
Sodium	mg/L	6.47E+01	1.48E+01	NA	NR					NR				
VOLATILE ORGANIC COMPOUNDS														
1,1,1-Trichloroethane	mg/L	NA	NA	3.05E-01	ND					ND				
1,1-Dichloroethane	mg/L	NA	NA	1.54E-01	ND					ND				
1,1-Dichloroethene	mg/L	NA	NA	9.30E-05	ND					ND				
1,2-Dichloroethane	mg/L	NA	NA	4.48E-04	ND					ND				
Acetone	mg/L	NA	NA	1.56E-01	ND					ND				
Chloroform	mg/L	NA	NA	1.15E-03	ND					ND				
Methylene chloride	mg/L	NA	NA	7.85E-03	ND					3.40E-04 B				
Toluene	mg/L	NA	NA	2.59E-01	ND					ND				
Trichloroethene	mg/L	NA	NA	4.51E-03	2.30E-03 J					ND				
Vinyl chloride	mg/L	NA	NA	3.20E-05	ND					ND				
cis-1,2-Dichloroethene	mg/L	NA	NA	1.55E-02	ND					ND				
trans-1,2-Dichloroethene	mg/L	NA	NA	3.07E-02	ND					ND				

Table 4-3

**Groundwater Analytical Results
Small Weapons Repair Shop, Parcel 66(7)
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 7)

Sample Location Sample Number Sample Date					PPMP-66-MW15 HN3018 17-Oct-01					PPMP-66-MW16 HN3019 17-Oct-01				
Parameter	Units	UBR ^a	BKG ^b	SSSL ^b	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS														
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	NR					NR				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	NR					NR				
Calcium	mg/L	4.52E+02	5.65E+01	NA	NR					NR				
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	NR					NR				
Magnesium	mg/L	1.49E+02	2.13E+01	NA	NR					NR				
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	NR					NR				
Nickel	mg/L	NA	NA	3.13E-02	NR					NR				
Potassium	mg/L	6.85E+01	7.20E+00	NA	NR					NR				
Sodium	mg/L	6.47E+01	1.48E+01	NA	NR					NR				
VOLATILE ORGANIC COMPOUNDS														
1,1,1-Trichloroethane	mg/L	NA	NA	3.05E-01	ND					ND				
1,1-Dichloroethane	mg/L	NA	NA	1.54E-01	ND					ND				
1,1-Dichloroethene	mg/L	NA	NA	9.30E-05	ND					ND				
1,2-Dichloroethane	mg/L	NA	NA	4.48E-04	ND					ND				
Acetone	mg/L	NA	NA	1.56E-01	ND					ND				
Chloroform	mg/L	NA	NA	1.15E-03	ND					ND				
Methylene chloride	mg/L	NA	NA	7.85E-03	3.30E-04	B				ND				
Toluene	mg/L	NA	NA	2.59E-01	ND					ND				
Trichloroethene	mg/L	NA	NA	4.51E-03	ND					ND				
Vinyl chloride	mg/L	NA	NA	3.20E-05	ND					ND				
cis-1,2-Dichloroethene	mg/L	NA	NA	1.55E-02	ND					ND				
trans-1,2-Dichloroethene	mg/L	NA	NA	3.07E-02	ND					ND				

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

^a UBR - Upper background range as given in Science Applications International Corporation (SAIC), 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama, July*.

^b BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998

^c Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July*.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/L - Milligrams per liter.

NA - Not available.

ND - Not detected.

NR - Not requested.

Qual - Data validation qualifier.

1
2 **Semivolatile Organic Compounds.** Twelve SVOCs (all PAH compounds) were detected in
3 surface soil samples collected at Parcel 66(7). PAH concentrations in the samples ranged from
4 0.04 to 2.1 mg/kg. The concentrations of four PAH compounds (benzo[a]pyrene,
5 benzo[b]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) exceeded SSSLs in
6 one sample (PPMP-75-GP01). With the exception of the dibenz(a,h)anthracene result, the
7 concentrations of the PAH compounds that exceeded SSSLs also exceeded their respective
8 background concentrations.

9
10 Four PAH compounds were detected in the surface soil sample from PPMP-75-GP01 at
11 concentrations exceeding ESVs: benzo(a)pyrene, fluoranthene, phenanthrene, and pyrene. Of
12 these PAH compounds, only benzo(a)pyrene (1.6 mg/kg) exceeded its background concentration
13 (1.42 mg/kg).

14
15 **Pesticides.** A total of three pesticides (aldrin, endrin, and methoxychlor) were detected in two
16 of the surface soil samples collected at the site. The pesticide results were flagged with a “J”
17 data qualifier, indicating that the compounds were positively identified but the concentrations
18 were estimated. Pesticide concentrations in the samples ranged from 0.001 to 0.012 mg/kg and
19 were below SSSLs. However, the endrin result (0.0052 mg/kg) at PPMP-75-GP01 exceeded its
20 ESV (0.001 mg/kg).

21
22 **Herbicides.** Herbicides were not detected in the surface soil samples collected at the site.

23
24 **PCBs.** PCBs were not detected in the surface soil samples collected at the site

25 26 **4.2.2 Subsurface Soil Analytical Results**

27 Three subsurface soil samples were collected for chemical analysis at Parcel 66(7). Subsurface
28 soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure
29 2-1. Analytical results were compared to residential human health SSSLs and metals background
30 screening values, as presented in Table 4-2.

31
32 **Metals.** Twenty metals were detected in subsurface soil samples collected at the site. Four
33 metals were detected at concentrations exceeding SSSLs: aluminum (all three locations), arsenic
34 (all three locations), iron (all three locations), and thallium (PPMP-75-GP02). With the
35 exception of one aluminum result, these metals concentrations were below the respective

1 background concentrations. However, the aluminum result was within the range of background
2 values (Appendix J).

3
4 The subsurface soil metals data were evaluated using the integrated statistical and geochemical
5 approach previously discussed (Appendix K). The evaluation concluded that the metals that
6 exceeded SSSLs in subsurface soils are probably naturally occurring. The elevated
7 concentrations are explained as most likely resulting from the preferential enrichment of samples
8 with minerals such as iron oxides and manganese oxides that naturally concentrate specific trace
9 elements.

10
11 **Volatile Organic Compounds.** Six VOCs (2-butanone, acetone, bromomethane, cis-1,2-
12 dichloroethene [DCE], methylene chloride, and trans-1,2-DCE) were detected in subsurface soil
13 samples collected at the site. The bromomethane results, methylene chloride results, and two of
14 the acetone results were flagged with a “B” data qualifier, signifying that these compounds were
15 also detected in an associated laboratory or field blank. Excluding common laboratory
16 contaminants, the remaining VOCs (cis-1,2-DCE and trans-1,2-DCE) were detected in only one
17 sample (PPMP-75-GP01). The VOC concentrations in subsurface soil were below SSSLs.

18
19 **Semivolatile Organic Compounds.** One SVOC (bis[2-ethylhexyl]phthalate) was detected
20 in one subsurface soil sample location (PPMP-75-GP03). The bis(2-ethylhexyl)phthalate result
21 was below its SSSL.

22
23 **Pesticides.** Pesticides were not detected in the subsurface soil samples collected at the site.

24
25 **Herbicides.** Herbicides were not detected in the subsurface soil samples collected at the site.

26
27 **PCBs.** PCBs were not detected in the subsurface soil samples collected at the site.

28 29 **4.2.3 Groundwater Analytical Results**

30 Nineteen groundwater samples were collected for chemical analysis at Parcel 66(7). Three
31 groundwater samples (locations PPMP-75-GP01, PPMP-75-GP02, and PPMP-75-GP03) were
32 collected during the SI, and the remaining sixteen samples were collected during the RI. The
33 three groundwater samples collected during the SI were analyzed for metals, VOCs, SVOCs,
34 pesticides, herbicides, and PCBs. The sixteen groundwater samples collected during the RI were
35 analyzed for VOCs only. The sample locations are shown on Figure 2-1. Analytical results were

1 compared to residential human health SSSLs and metals background screening values, as
2 presented in Table 4-3.

3
4 **Metals.** Three groundwater samples collected during the SI were analyzed for metals. A total
5 of nine metals were detected in the samples. The concentrations of two metals (iron and
6 manganese) exceeded their respective SSSLs in two samples each. With the exception of
7 manganese in one sample (PPMP-75-GP01), the iron and manganese concentrations were below
8 their respective background concentrations. However, the manganese result was within the range
9 of background values (Appendix J).

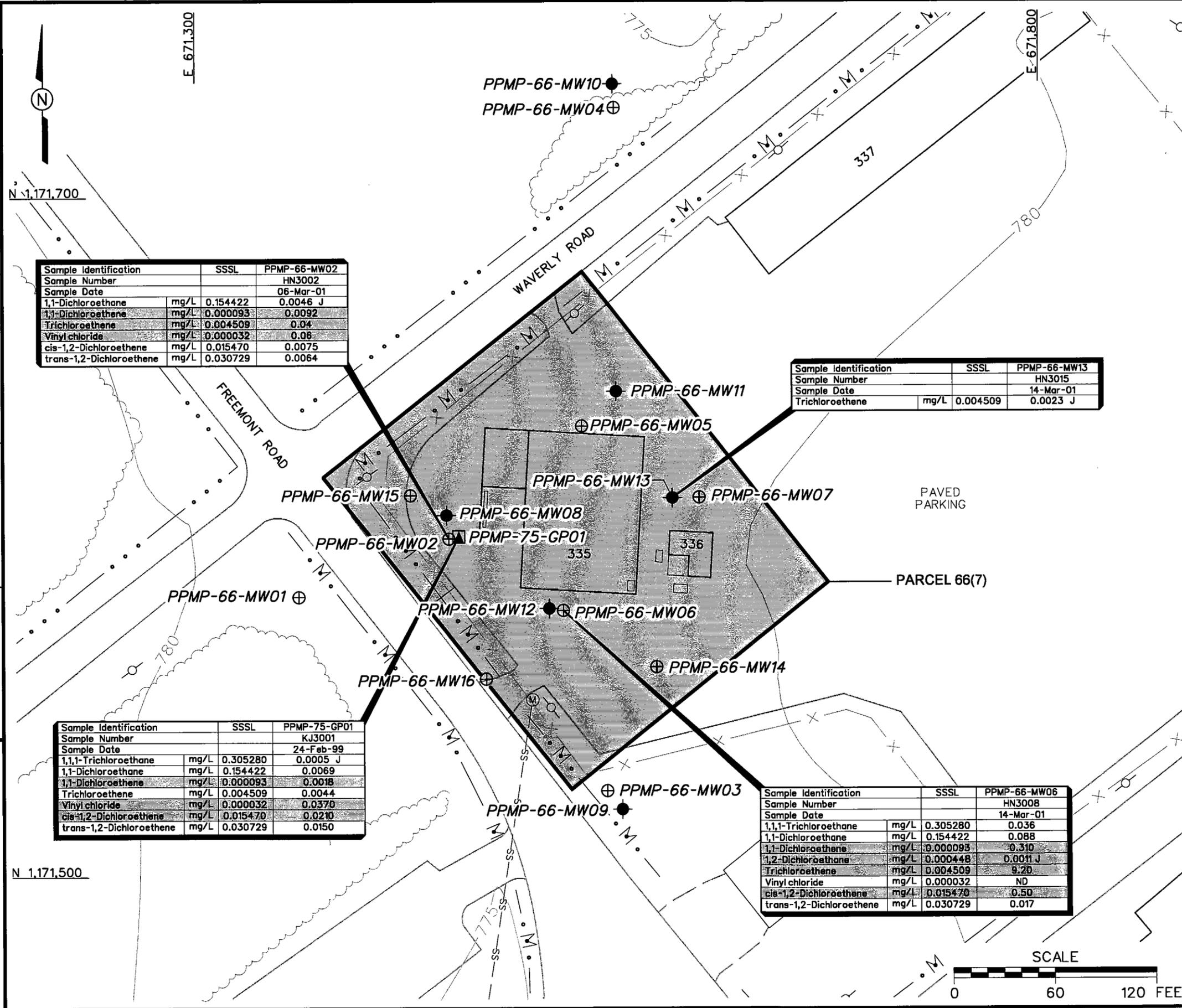
10
11 **Volatile Organic Compounds.** All nineteen groundwater samples were analyzed for VOCs.
12 A total of twelve VOCs were detected in ten of the samples. VOCs were not detected at the
13 remaining sample locations. The chloroform result and three of the four methylene chloride
14 results were flagged with a “B” data qualifier, signifying that these chemicals were also detected
15 in an associated laboratory or field blank sample. VOC concentrations in the groundwater
16 samples ranged from 0.00033 to 9.2 milligrams per liter (mg/L).

17
18 The concentrations of five VOCs exceeded their respective SSSLs:

- 19
20 • 1,1-DCE (0.0018 to 0.31 mg/L) in three wells (PPMP-66-MW02, PPMP-66-
21 MW06, and PPMP-75-GP01)
- 22
23 • 1,2-Dichloroethane (DCA) (0.0011 mg/L) in one well (PPMP-66-MW06)
- 24
25 • cis-1,2-DCE (0.05 and 0.021 mg/L) in two wells (PPMP-66-MW06 and PPMP-75-
26 GP01)
- 27
28 • TCE (0.04 and 9.2 mg/L) in two wells (PPMP-66-MW02 and PPMP-66-MW06)
- 29
30 • Vinyl chloride (0.06 and 0.037 mg/L) in two wells (PPMP-66-MW02 and PPMP-
31 75-GP01).

32
33 Figure 4-1 shows the location and concentration of chlorinated VOCs detected in groundwater at
34 Parcel 66(7). Although not included on the figure, two non-chlorinated VOCs (acetone and
35 toluene) were detected in one or two samples each at concentrations below SSSLs (Table 4-3).
36 Figure 4-2 is an isopleth map showing the horizontal extent of total chlorinated VOCs in the
37 residuum groundwater zone.

DWG. NO.: ...796887es.424
 PROJ. NO.: 796887
 INITIATOR: J. REMO
 PROJ. MGR.: J. YACOUB
 DRAFT. CHCK. BY: S. MORAN
 ENGR. CHCK. BY: S. MORAN
 DATE LAST REV.:
 DRAWN BY:
 STARTING DATE: 03/26/02
 DRAWN BY: D. BOMAR
 05/16/02
 10:28:35 AM
 DBLLNG
 c:\cadd\design\796887es.424



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
- TREES / TREELINE
- PARCEL BOUNDARY
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE
- FENCE
- UTILITY POLE
- SANITARY SEWER LINE
- MANHOLE
- BEDROCK MONITORING WELL LOCATION
- RESIDUUM MONITORING WELL LOCATION
- GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION
- ESTIMATED CONCENTRATION
- SSSL
- VOC
- mg/L
- ND
- CONCENTRATION EXCEEDS SSSL

NOTE:
 1. EXCLUDES COMMON LABORATORY CONTAMINANTS CHLOROFORM AND METHYLENE CHLORIDE.

FIGURE 4-1
CHLORINATED VOCs
IN GROUNDWATER
SMALL WEAPONS REPAIR SHOP
PARCEL 66(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018

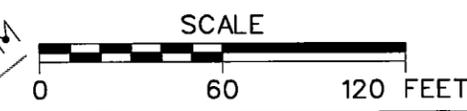


Sample Identification	SSSL	PPMP-66-MW02
Sample Number		HN3002
Sample Date		06-Mar-01
1,1-Dichloroethane	mg/L 0.154422	0.0046 J
1,1,1-Trichloroethane	mg/L 0.000093	0.0092
Trichloroethene	mg/L 0.004509	0.04
Vinyl chloride	mg/L 0.000032	0.06
cis-1,2-Dichloroethene	mg/L 0.015470	0.0075
trans-1,2-Dichloroethene	mg/L 0.030729	0.0064

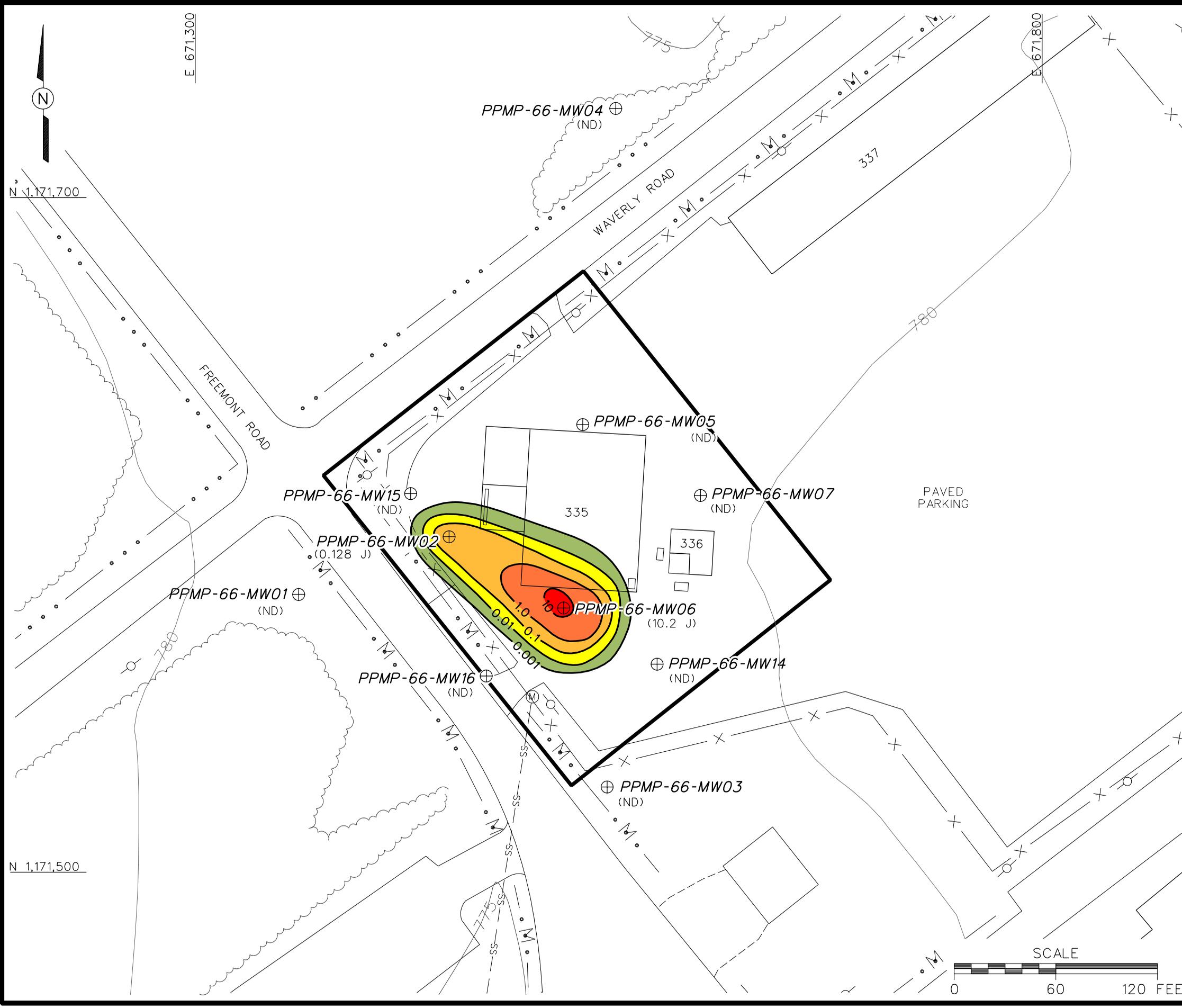
Sample Identification	SSSL	PPMP-66-MW13
Sample Number		HN3015
Sample Date		14-Mar-01
Trichloroethene	mg/L 0.004509	0.0023 J

Sample Identification	SSSL	PPMP-75-GP01
Sample Number		KJ3001
Sample Date		24-Feb-99
1,1,1-Trichloroethane	mg/L 0.305280	0.0005 J
1,1-Dichloroethane	mg/L 0.154422	0.0069
1,1-Dichloroethene	mg/L 0.000093	0.0018
Trichloroethene	mg/L 0.004509	0.0044
Vinyl chloride	mg/L 0.000032	0.0370
cis-1,2-Dichloroethene	mg/L 0.015470	0.0210
trans-1,2-Dichloroethene	mg/L 0.030729	0.0150

Sample Identification	SSSL	PPMP-66-MW06
Sample Number		HN3008
Sample Date		14-Mar-01
1,1,1-Trichloroethane	mg/L 0.305280	0.036
1,1-Dichloroethane	mg/L 0.154422	0.088
1,1-Dichloroethene	mg/L 0.000093	0.310
1,2-Dichloroethane	mg/L 0.000448	0.0011 J
Trichloroethene	mg/L 0.004509	9.20
Vinyl chloride	mg/L 0.000032	ND
cis-1,2-Dichloroethene	mg/L 0.015470	0.50
trans-1,2-Dichloroethene	mg/L 0.030729	0.017



DWG. NO.: 796887es.4.25
 PROJ. NO.: 796887
 INITIATOR: J. REMO
 PROJ. MGR.: J. YACOB
 DRAFT. CHK. BY:
 ENGR. CHK. BY: S. MORAN
 DATE LAST REV.:
 DRAWN BY:
 05/16/02
 10:35:55 AM
 c:\cadd\design\796887es.4.25



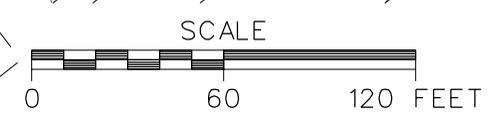
- ### LEGEND
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - UTILITY POLE
 - SANITARY SEWER LINE
 - MANHOLE
 - RESIDUUM MONITORING WELL LOCATION
 - TOTAL CHLORINATED VOC CONCENTRATION (mg/L)
 - CONCENTRATION IN MILLIGRAMS PER LITER (mg/L)
 - NOT DETECTED
 - ESTIMATED CONCENTRATION

NOTE:

- TOTAL CHLORINATED VOC CONCENTRATION EXCLUDES COMMON LABORATORY CONTAMINANTS CHLOROFORM AND METHYLENE CHLORIDE.

FIGURE 4-2
TOTAL CHLORINATED VOCs
IN RESIDUUM GROUNDWATER ZONE
SMALL WEAPONS REPAIR SHOP
PARCEL 66(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



1 **Semivolatile Organic Compounds.** Three groundwater samples were analyzed for SVOCs.
2 SVOCs were not detected in the samples.

3
4 **Pesticides.** Three groundwater samples were analyzed for pesticides. Pesticides were not
5 detected in the samples.

6
7 **Herbicides.** Three groundwater samples were analyzed for herbicides. Herbicides were not
8 detected in the samples.

9
10 **PCBs.** Three groundwater samples were analyzed for PCBs. PCBs were not detected in the
11 samples.

12