Department of Energy
Oak Ridge Operations
Weldon Spring Site
Remedial Action Project Office
Route 2, Highway 94 South
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3589-88-I-DOE-262

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June 15, 1988

ADDRESSEES

PHASE I CHEMICAL SOIL INVESTIGATION DATA REPORT FOR THE WELDON SPRING CHEMICAL PLANT/RAFFINATE PITS

Enclosed is a final copy(s) of the Phase I Chemical Soil Investigation Data Report for the Weldon Spring Chemical Plant/Raffinate Pits for your use. This investigation was designed to supply baseline soil information for the site.

Results from the sampling indicate the presence of elevated levels of nitrate, sulfate, and certain metals in the soils at the Chemical Plant and Raffinate Pit area. The data presented in the report will be used to develop the Chemical Soil Investigation Sampling Plan which will contain the overall soil characterization strategy for the site.

Sincerely,

R. R. Nelson

R. R. Nelson
Project Manager
Weldon Spring Site
Remedial Action Project

Enclosure:
As stated

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United States Department Of Energy

PHASE I CHEMICAL SOIL INVESTIGATION DATA REPORT FOR THE WELDON SPRING CHEMICAL PLANT / RAFFINATE PITS

JUNE, 1988

WELDON SPRING SITE REMEDIAL ACTION PROJECT

ED 234

PHASE I CHEMICAL SOIL INVESTIGATION

DATA REPORT

FOR

THE WELDON SPRING CHEMICAL PLANT/RAFFINATE PITS

PREPARED FOR:

U.S. DEPARTMENT OF ENERGY

OAK RIDGE OPERATIONS OFFICE

UNDER CONTRACT NO. DE-AC05-86OR21548

PREPARED BY:

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JUNE, 1988

PHASE I CHEMICAL SOIL INVESTIGATION

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1.0 INTRODUCTION

This report presents the Phase I Chemical Soil Investigation data for the Weldon Spring Chemical Plant/Raffinate Pits (WSCP/WSRP). Sample collection methods, sampling equipment decontamination techniques, analytical procedures, and analytical results are also presented in this report, as well as limited interpretations of those results. This investigation was not intended to fully characterize chemical soil contamination at the WSCP/WSRP. The objective of this investigation was to supply baseline soil information for development of a detailed Chemical Soil Investigation Sampling Plan that will more fully define the extent and magnitude of chemical soil contamination at the WSCP/WSRP.

The WSCP/WSRP portions of the Weldon Spring Site (WSS) consist of 217 acres located approximately 2 miles southwest of Weldon Spring, Missouri. Uranium ore concentrate was processed at the WSCP from 1957 until 1966 when it was known as the Weldon Spring Uranium Feed Materials Plant (WSUFMP). Process wastes from uranium ore concentrate processing are contained in four raffinate pits located on the site. Prior to 1955, the WSCP/WSRP area was part of the Weldon Spring Ordnance Works (WSOW). The WSOW produced trinitrotoluene (TNT) and dinitrotoluene (DNT) during World War II. Three complete TNT batch plants and portions of a fourth plant existed within the confines of the present WSCP/WSRP 217-acre area.

Prior to this investigation, only limited amounts of chemical data were available for the soils at the WSCP/WSRP. In 1975-76 the Department of Army (DA) documented low levels (ug/Kg) of nitroaromatics in WSCP soils (DACDIR, 1975). This report provided the only documentation of chemical soil contaminants at the WSCP/WSRP. In the spring of 1987, United Nuclear Corporation (UNC) was contracted through the Department of Energy (DOE) to perform a radiological characterization of the WSCP/WSRP soils.

Soil samples were split from selected radiological sampling locations by on-site personnel for chemical analysis. Field work began in May and was completed by mid-July 1987. Analytical results were received in August 1987.

1.1 Purpose

This investigation was designed to provide baseline data regarding chemical soil contamination and to develop on-site background metals concentrations at the WSCP/WSRP. Sampling locations were selected to investigate potential chemical soil contamination source areas from TNT production and/or uranium processing and to provide areal coverage of the site. Samples were collected concurrently with the radiological soils characterization performed by UNC. The results of this investigation and previously collected data have been used to

develop a comprehensive chemical soil characterization sampling plan.

1.2 Scope

This sampling effort consisted of collecting 149 samples from 37 locations. Sampling locations were selected by evaluating WSOW and WSUFMP processes. Potential source areas were identified and targeted for sampling. Additional locations were added to provide areal coverage.

Analytical parameters were selected based on results of the Phase I Water Quality Assessment which detected elevated levels of nitroaromatics, nitrate, sulfate, fluoride and metals in the groundwater beneath the WSCP/WSRP. No organics (except nitroaromatics) were detected, so soil samples were not analyzed for organic compounds.

2.0 SAMPLING

2.1 Sample Collection

Soil samples were collected from 37 locations at or near the WSCP/WSRP. Figure 2-1 shows the sampling locations. Thirty-two locations were within the fenced WSCP/WSRP boundary. Four of the remaining five boreholes were drilled in WSOW Waste Lagoon

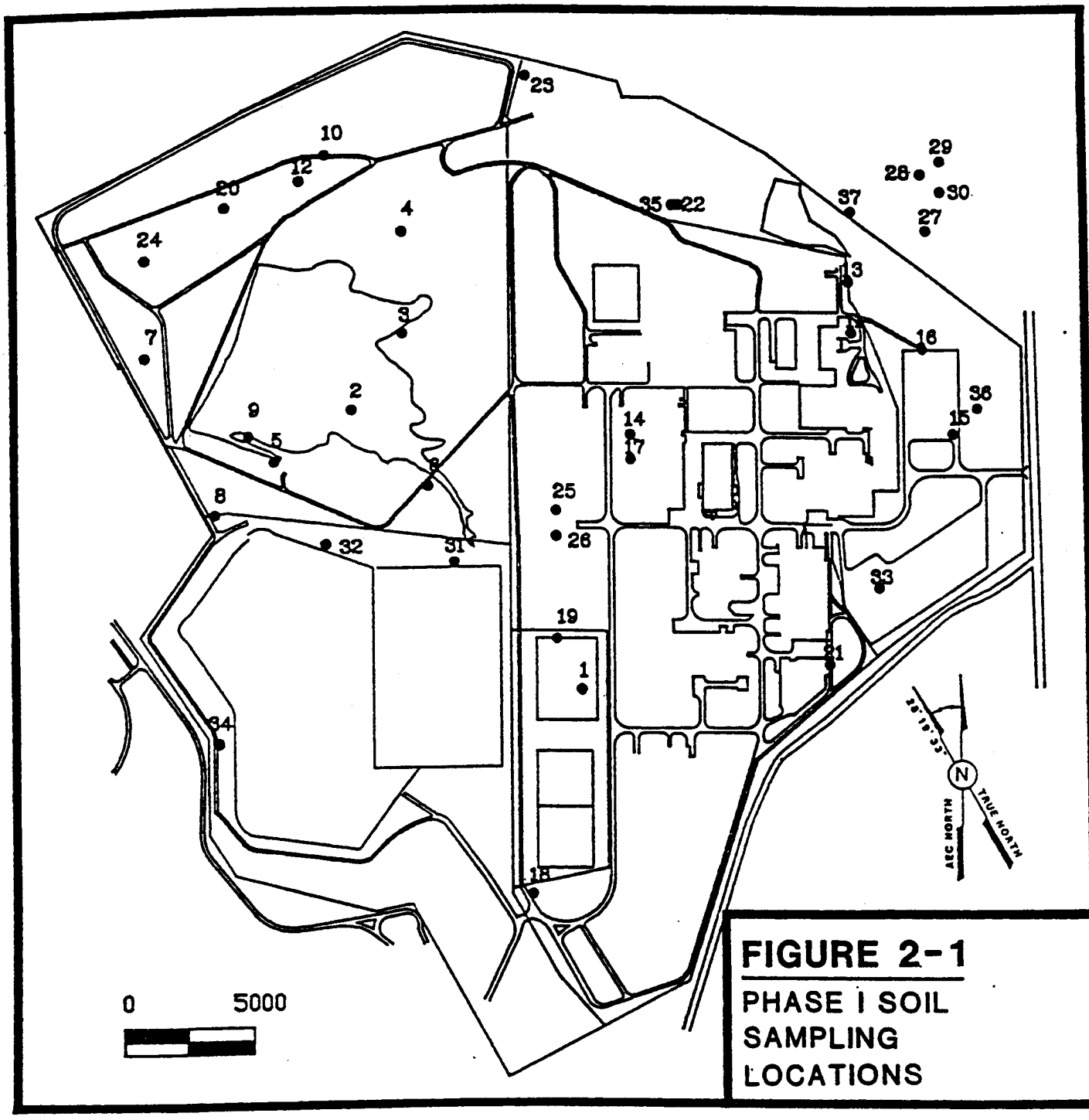

FIGURE 2-1
PHASE I SOIL SAMPLING LOCATIONS

No. 1, located just northeast of Frog Pond to, investigate this potential source area.

The final borehole was located between the WSCP and the WSOW waste lagoon. Table 2-1 details borehole coordinates, numbers, depths and date drilled.

Samples were collected using a truck-mounted CME-55 drill rig employing 6 5/8" outside diameter (O.D.) hollow stem augers for drilling and a 3" O.D. by 24 inch long split tube sampler. Samples were collected continuously by driving the split tube sampler with a 140 lb. drop weight.

After driving the sampler two feet, it was removed from the borehole and taken to a shaded area prior to opening, in order to prevent the photolysis of nitroaromatic residues in the soil. Samples were obtained using a stainless steel spatula to fill the sample containers. Samples were collected in the following increments at most locations:

0 to 6 inches
6 to 24 inches
24 to 48 inches
48 to 72 inches

If the borehole advanced beyond 6 feet, samples were composited over 4- to 10-foot intervals. The 0- to 6-inch interval was

Table 2-1

Boring Locations and Depths

Location No.	Location Coordinates West,North	Date Sampled	Depth of Borehole (ft.)
1	SO-50700,99400	05/29/87	12
2	SO-51600,100500	06/02/87	9
3	SO-51400,100800	06/02/87	6
4	SO-51400,101200	06/02/87	6
5	SO-51900,100300	06/02/87	10
6	SO-51300,100200	06/02/87	6
7	SO-52400,100715	06/02/87	6
8	SO-52131,100094	06/02/87	6
9	SO-52000,100400	06/02/87	15
10	SO-51700,101500	06/03/87	6
11	SO-49600,100800	06/03/87	24
12	SO-51800,101400	06/03/87	6
13	SO-49610,10100	06/03/87	14
14	SO-50500,100395	06/04/87	6
15	SO-49200,100400	06/04/87	6
16	SO-49320,100735	06/04/87	6
17	SO-50500,100300	06/04/87	6
18	SO-50900,98600	06/04/87	6
19	SO-50800,99600	06/04/87	
20	SO-52090,101300	06/09/87	6
21	SO-49700,99500	06/09/87	6
22	SO-50300,101300	06/09/87	6
23	SO-50910,101803	06/09/87	6
24	SO-52400,101100	06/09/87	6
25	SO-50800,100100	06/10/87	20
26	SO-50800,100000	06/10/87	6
27	SO-49300,101200	06/15/87	3
28	S0-49320,101420	06/15/87	4
29	SO-49240,101470	06/15/87	3
30	SO-49240,101350	06/15/87	13
31	SO-51200,99900	06/26/87	16
32	SO-51700,99975	06/29/87	16
33	SO-49500,99800	06/30/87	6
34	SO-52119,99200	06/30/87	16
35	SO-50325,101300	06/30/87	6
36	SO-49100,100500	07/02/87	6
37	SO-49600,101275	07/02/87	6

collected using a post hole digger since the split tube sample did not provide enough soil for both chemical and radiological analyses.

Sample collection information was recorded on field data forms. Sample chain-of-custody was maintained throughout the sample collection and shipping process according to approved WSSRAP procedures.

2.2 Equipment Decontamination

Soil sampling equipment was cleaned using a hybridized decontamination procedure designed to protect against cross-contamination by nitroaromatics and other chemical species. All augers, drill rods, and split tube samplers were washed using a hot water high-pressure washer. Augers and drill rods were cleaned between boreholes while split tube samplers were decontaminated between samples.

After washing with hot, high-pressure water, the split tube samplers were allowed to air dry. They were then rinsed with toluene, followed by acetone and hexane. The toluene rinse was used to dissolve any nitroaromatic residues. Acetone and hexane rinses were employed to remove toluene and other contaminants not removed by the hot water high-pressure wash. The split tube samplers were again allowed to air dry prior to being reassembled. All rinsing solvents were collected.

Stainless steel spatulas and pans and the post hole digger were washed with distilled water, followed by the same solvent rinse sequence as used on the split tube samplers. This procedure was performed before every sample.

Field personnel wore new disposable vinyl gloves when collecting soil samples. Gloves were changed after decontaminating sampling equipment.

2.3 Sample Preservation

After soil samples were collected, the filled sample containers were placed in a cooler with Blue Ice or similar reusable ice product. All samples were chilled to 4 degrees centigrade. This temperature was maintained throughout sample collection and shipment. No other preservation techniques were used.

2.4 Sample Analyses

Soil samples were analyzed by metaTRACE, Inc. of St. Louis, Missouri. Analytical parameters included nitroaromatics, metals, nitrate, sulfate, chloride, fluoride, and percent moisture. Selected surface samples were analyzed for asbestos. Precleaned sample containers were supplied by metaTRACE, Inc.

Analytical parameters were selected based on known or suspected contaminants from the WSOW and WSUFMP.

Nitroaromatic analyses were performed according to the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) High Pressure Liquid Chromatography (HPLC) methodology. Metals analyses were performed to U.S. EPA Contract Laboratory Program (CLP) standards. Nitrate, sulfate, chloride and fluoride analyses were performed according to EPA method 300.0.

3.0 RESULTS

Analytical results are presented in Appendix A of this report. Each group of analytical parameters is discussed in detail in the following sections. All interpretations made in this report are based on analytical results, field observations, past waste management practices, aerial photography, and the draft UNC report "Radiological Characterization of the Weldon Spring, Missouri Remedial Action Site", October 1987.

3.1 Nitroaromatics

All soil samples were analyzed for nitroaromatics using HPLC according to USATHAMA methodology. No detectable levels of nitroaromatics were present in any samples collected on-site. Detectable levels were measured in soil samples taken from the waste lagoon used in WSOW production located off-site, just north of the WSCP (Figure 2-1). Table 3-1 presents nitroaromatics results from soil samples collected in WSOW Waste Lagoon No. 1.

TABLE 3-1

Nitroaromatics Results for the WSOW Waste Lagoon No. 1

Soil Location Number	Coordinates	Depth Interval	Date Sampled	Concentration UG/G 2,4,6-TNT	2,4-DNT	2,6-DNT	Nitro-Benzene	1,3,5-Trinitro-Benzene	1,3-Dinitro-Benzene
27	SO-49300,101200	1.5,2.5	06/15/87	.93	<1.02	1.4	<1.96	<0.77	<1.23
	SO-49300,101200	2.5,3	06/15/87	1.1	2.3	<1.78	<1.82	<0.72	<1.14
28	SO-49320,101420	1,1.5	06/15/87	52.4	7.6	<1.82	<1.86	4.0	0.63
	SO-49320,101420	2,4	06/15/87	*	*	*	*	*	*
29	SO-49240,101470	1,2	06/15/87	17.2	3.0	<1.78	<1.82	2.2	<1.13
	SO-49240,101470	2,3	06/15/87	13.7	2.2	<1.76	<1.80	3.7	<1.12
30	SO-49240,101350	0,3	06/15/87	307	13.8	<1.77	2.3	2.8	0.67
	SO-49240,101350	3,5	06/15/87	<1.52	0.56	<1.79	<1.83	1.9	<1.14
	SO-49240,101350	5,8	06/15/87	<1.48	<0.92	<1.74	<1.77	1.2	<1.11
	SO-49240,101350	8,13	06/15/87	<1.55	<0.97	<1.82	<1.86	0.48	<1.16

Source: WSSRAP, 1987

Soil sampling locations were not chosen to confirm previous positive results for nitroaromatics as reported in the 1976 Department of Army Report "Assessment of Weldon Spring Chemical Plant in St. Charles Missouri--Final". The validity of this previously collected data and the need for additional sampling will be discussed in the Chemical Soil Investigation Sampling Plan.

3.2 Metals

All soil samples were analyzed for CLP metals and lithium. Lithium was used in pilot studies at the WSCP and is present in the WSRP and groundwater. Acid usage in both explosives production and uranium processing make metal contamination of the soil a distinct possibility. Metal contamination of the soil has been documented at other ordnance works such as the West Virginia Ordnance Works and Alabama Army Ammunition Plant (ESE, 1986).

3.2.1 Elevated Concentrations Detected

Several metals were detected in elevated concentrations in several soil samples. Lead, barium and zinc were present in concentrations above background and appear to be related to WSOW sources. Based on the sampling effort, there appears to be a relationship between elevated levels of lead and zinc.

Sample-specific analytical results are presented in Appendix A of this report.

The use of lead in explosive production equipment has been documented at other ordnance works (ESE, 1986) and is the primary non-nitroaromatic soil contaminant.

Lead was used in WSOW process buildings and as flooring to minimize static electricity. Acidic spills could have dissolved lead and other metals. Spill control probably consisted of neutralization with lime or soda ash and/or dilution followed by washing.

Lead concentrations in the soil at the WSCP ranged from <0.6 ug/Kg to 43,000 ug/Kg. The highest value was observed at Location No. 3 (Figure 2-1) north of Ash Pond in the 2- to 4-foot interval downslope from the final production area of TNT Line No. 2.

Elevated zinc levels were present with elevated lead levels in numerous samples. Zinc concentrations were much lower, however, only ranging up to 820 ug/Kg. The source of the zinc contamination is not known at this time.

Barium was also present in elevated concentrations in select samples. Up to 4,000 ug/Kg of barium were detected in soils

from the Ash Pond area. The source and/or reason for barium contamination is not known at this time.

3.2.2 Background Metals Determinations

Another purpose of this investigation was to establish background metals concentrations in on-site soils. On-site background concentrations were determined statistically. Concentrations for each metal were analyzed statistically to determine average background concentrations and ranges. Frequency histograms were plotted for each metal. These histograms were evaluated to detect concentrations outside of the normal distribution of the population. These elevated values were removed from the background data set prior to calculating the arithmetic mean, arithmetic standard deviation and the geometric mean. This data is presented on Table 3-2 with the background ranges.

Several metals appear to be present as low-level contamination throughout soils at the WSCP/WSRP. These metals include: aluminum, antimony, barium, iron, lead, magnesium, manganese, nickel, vanadium and zinc. Background samples will be collected from off-site locations during the overall soil characterization as described in the Chemical Soil Investigation Sampling Plan. These "on-site" background values will be compared to background

TABLE 3-2

Statistical Data for Background Metals
Concentrations in Soils at the WSCP/WSRP

Compound	Sample Size	Arithmetic Mean mg/Kg	Geometric Mean mg/Kg	Arithmetic Standard Deviation mg/Kg	Onsite Background Ranges	
					Low mg/Kg	High mg/Kg
Al	142	12,536	11,350	4,902	1250	27,700
Sb	98	29	25	8	2	40
As	114	6	6	4	2	15
Ba	140	161	145	70	25	390
Be	129	1	1	1	< DL	6
Cd	125	3	3	1	< DL	7
Ca	114	3,495	3,044	1,839	190	9,300
Cr	144	24	23	6	2	42
Co	144	16	14	7	6	40
Cu	143	15	14	6	3	34
Fe	139	18,636	17,914	5,306	8,500	35,400
Pb	127	29	25	16	7	84
Li	92	10	9	3	< DL	17
Mg	133	2,437	2,256	956	417	5,900
Mn	127	495	370	334	49	1,400
Hg	Background less than the detection limit of 0.1 mg/Kg					
Ni	138	19	18	7	7	43
K	145	757	698	311	255	1,701
Se	Background less than the detection limit of 0.5 mg/Kg					
Ag	96	3	2	2	1	13
Na	136	486	437	202	49	982
Tl	Background less than the detection limit of 1.0 mg/Kg					
V	141	35	34	7	6	54
Zn	141	45	39	29	6	220

< DL - Less than detection limit

Source: WSSRAP, 1987

samples collected as described in the Chemical Soil Investigation Sampling Plan.

3.3 Inorganic Anions

Soil samples collected during this investigation were also analyzed for nitrate, sulfate, fluoride and chloride. Elevated levels of nitrate and sulfate were observed at numerous locations, most commonly in surficial soil samples. This is to be expected since the nitrates probably originated from neutralized nitric acid. Nitric acid was used both at the WSOW and the WSUFMP. The highest concentration of nitrate (868 mg/Kg) was detected in a ditch carrying waste from a WSOW process building at Location 36. Elevated nitrates and sulfates were also observed in WSOW Waste Lagoon No. 1 north of the WSCP.

Elevated sulfate levels were occasionally associated with elevated nitrate levels, especially in the WSOW Waste Lagoon. This would be expected due to the use of mixed nitric and sulfuric acid in TNT production. Other areas of sulfate contamination are also probably related to WSOW production due to the use of sulfuric acid as a catalyst. Additional investigations are required to determine the source and extent of this contamination.

Some slightly elevated chloride and fluoride levels are present

Some slightly elevated chloride and fluoride levels are present in WSCP/WSRP soils. The source of these species is not known at this time.

Selected surface soil samples were analyzed for asbestos based on the usage of asbestos in WSOW process buildings. All submitted samples contained less than 1 percent asbestos and no elevated levels were observed.

4.0 CONCLUSIONS

This investigation was designed to supply baseline soil information and establish on-site background metal concentrations. This investigation indicates the presence of elevated levels of nitrate, sulfate and certain metals in the soils at the WSCP/WSRP. Limited conclusions regarding the extent and magnitude of contamination can be made based on the data collected. The data presented in this report will be used in developing the Chemical Soil Investigation Sampling Plan, which details the overall soil characterization strategy for the Weldon Spring Site.

Several preliminary conclusions can be made from the data presented in this report. These conclusions are:

1. Nitroaromatic compounds were not detected in the on-site soil samples collected in this investigation. Additional

sampling is required for WSOW sources, particluarly in production areas, surface drainages and the burning ground area.

2. Nitroaromatics bind tightly to soil particles at the WSCP/WSRP. This was evidenced by the soil samples collected from the WSOW wastewater lagoon located just north of the WSCP. Nitroaromatic concentrations decreased from percent levels (0.3%) to less than the detection limits through eight feet of soil. This information will be used when designing the overall chemical soil characterization sampling plan.

3. Areas of nitrate and sulfate contamination appear to be related to WSOW processes and sources.

4. There appears to be low-level contamination by several metals including aluminum, antimony, barium, iron, lead, magnesium, manganese, nickel, vanadium and zinc. Isolated undetected areas of higher concentration may exist for these metals. Additional investigations are required to determine true background conditions and assess contaminant extent.

5. There do not appear to be any elevated concentrations of beryllium, cadmium, mercury, selenium or thallium in soils at the WSCP/WSRP.

6. Elevated asbestos levels are not present in surficial soils as a result of WSOW building demolition. Elevated levels of asbestos may be present near overhead piping in the WSCP.

7. There do not appear to be any significant on-site soil contamination areas contributing to groundwater contamination.

These conclusions will be used to guide further soil investigations as detailed in the Chemical Soil Investigation Sampling Plan. The data in this report will be factored into the overall soil contamination assessment and used in the Remedial Investigation Report.

5.0 REFERENCES

Department of Army, 1976. Assessment of Weldon Spring Chemical Plant in St. Charles, Missouri - Final.

Environmental Science and Engineering (ESE), 1986. West Virginia Ordnance Works: Endangerment Assessment for Sewerlines, the TNT Manufacturing Area, and the Burning Grounds, Final Report. June, 1986.

MK-Ferguson, 1987. Phase I Water Quality Assessment. Prepared for Department of Energy - Oak Ridge Operation Office.

United Nuclear Corporation, 1987. Radiological Characterization of the Weldon Spring, Missouri Remedial Action Site. October, 1987.

APPENDIX A

APPENDIX A

Phase I Soil Metals Results

Location No.	Soil Sample Coordinates and Depths	Date Sampled	Concentration MG/KG																						
			Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn
1	SO-50700,99400-0,4-0587	05/29/87	16000	U		113			3190	30	6	10	15400		U	2100	187	0.2	11	655	U		451	U	25	34
	SO-50700,99400-4,8-0587	05/29/87	2760	18		288	1.2		3900	41	30	20.4	26200	36	U	3500	3400	0.2	24	1300	U		408	U	48	60
	SO-50700,99400-8,12-0587	05/29/87	2100	U		252			3550	31	16	24	35400		U	3420	420	U	28	1020	U		516	U	40	84
2	SO-51600,100500-0,0.5-0687	06/02/87	4915	U	2.8	59	1.3	4.2	7520	17	8	27	14100	39	U	890	650N	U	22	725	U		335	U	29	220
	SO-51600,100500-0,5.2-0687	06/02/87	8400	9	11	78	2.6	3.9	6400	31	16	46	30000	23	9	1050	210N	U	36	860	U	1.3	460	1.8	48	178
	SO-51600,100500-2,4-0687	06/02/87	7900	U	U	99	0.7	1.3	1300	13	9	7	10100	8	U	850	442N	U	8	543	U	U	286	U	22	22
	SO-51600,100500-4,6-0687	06/02/87	11000	U	3	96	0.8	2.6	1015	16	16	8	18400	20	U	1250	560N	U	10	630	U	U	98	U	36	25
	SO-51600,100500-6,9-0687	06/02/87	8350	U	5.8	86	0.9	0.3	1220	37	14	8	32200	26	U	850	130N	U	14	292	U	U	128	U	63	20
3	SO-51400,100800-0,0.5-0687	06/02/87	3850	U	2.1	39	0.9	2	4240	12	7	22	14930	12	U	427	113	U	14	331	U	U	275	U	22	177
	SO-51400,100800-0.5,2-0687	06/02/87	6000	7	1.5	71	1	3.5	12800	17	10	30	20500	45	U	1700	280	U	22	530	U	1.1	415	U	28	12
	SO-51400,100800-2,4-0687	06/02/87	5900	20	4.2	99	U	10.5	9300	42	35	34	82500	43000	U	2900	457	U	20	1400	U	4.7	650	U	25	337
	SO-51400,100800-4,6-0687	06/02/87	11300	10	4.4	208	1.2	3.8	20600	24	14	19	20400	29	8	3900	1400	U	19	813	U	2.5	119	U	38	83
4	SO-51400,101200-0,0.5-0687	06/02/87	10120	9	4.6	111	0.7	2.3	37400	18	11	14	15900	28	7	2210	665	U	12	1076	U	2.3	233	U	37	45
	SO-51400,101200-0.5,2-0687	06/02/87	24100	11	7.3	172	0.9	3.4	3500	32	13	21	30800	15	14	3400	140	U	18	1600	U	1.1	96	U	59	49
	SO-51400,101200-2,4-0687	06/02/87	10900	6	2.5	215	0.7	2.4	2200	20	12	12	16900	11	10	2600	550	U	20	740	U	1.2U	437	U	31	35
	SO-51400,101200-4,6-0687	06/02/87	8150	7	U	270	0.8	2.3	1710	15	29	7	16300	21	U	1660	2550	U	16.4	317	U	1.2	425	U	35	20
5	SO-51900,100300-0,0.5-0687	06/02/87	11655	7.8	U	167	0.9	2.6	6600	20	11	17	18300	28	7	2300	500	U	20	1040	U	1.2	280	U	32	53
	SO-51900,100300-0.5,2-0687	06/02/87	18800	13	U	360	1.1	3.5	4700	29	11	21	22000	15	12	3500	280	U	28	1015	U	1.2	440	U	43	53
	SO-51900,100300-2,4-0687	06/02/87	16800	10	U	133	0.7	1.6	2700	22	7	6	9800	15	8	1950	60	U	10	1250	U	U	715	U	23	22
	SO-51900,100300-4,6-0687	06/02/87	18100	U	3	43	0.9	2.5	3050	22	12	9	16600	13.6	7	1800	53	U	11	506	U	U	780	U	40	19
	SO-51900,100300-6,8-0687	06/02/87	14500	U	2.5	68	0.6	2.5	3300	15	12	10	16500	9	U	1900	105	U	14	634	U	U	520	U	26	21
6	SO-51300,100200-0,0.5-0687	06/02/87	6700	6.7	2.4	73	0.8	2.2	34400	17	7	16	12000	16	U	2500	355	U	11	832	U	1.7	400	U	26	47
	SO-51300,100200-0.5,2-0687	06/02/87	12600	7	2.3	187	0.9	3.5	29000	21	19	16	21700	23	7	3920	1030	U	18	529	U	U	270	U	41	7
	SO-51300,100200-2,4-0687	06/02/87	10300	7	2.7	152	0.8	2.3	35000	18	13	21	16400	15	U	2350	750	U	15	520	U	U	280	U	35	32
	SO-51300,100200-4,6-0687	06/02/87	14500	U	2.4	204	0.7	2.4	34900	20	12	12	16600	14	8	2040	540	U	14	1090	U	U	312	U	36	36

APPENDIX A

Phase I Soil Metals Results

No.	Coordinates and Depths	Sampled	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn
			Concentration MG/KG Location Soil Sample																							Date
7	SO-52400,100715-0,0.5-0687	06/02/87	11000	U	U	130	0.6	2.4	6100	19	11	48	17100	1100	71	1770	520	U	14	1110	U	U	250	U	31	54
	SO-52400,100715-0.5,2-0687	06/02/87	8120	U	4	207	0.9	2.3	7000	23	16	16	20500	590	9	2933	782	U	18	950	U	U	58	U	38	48
	SO-52400,100715-2,4-0687	06/02/87	15200	9	2.9	194	0.9	3.4	13300	27	19	14	20500	285	10	2350	1014	U	17	990	U	1.1	250	U	43	55
	SO-52400,100715-4,6-0687	06/02/87	8200	U	4	209	0.8	2.3	10500	20	17	10	15700	128	U	1800	880	U	15	481	3.8	1.2	49	U	30	30
8	SO-52131,100094-0,2-0687	06/02/87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SO-52131,100094-2,4-0687	06/02/87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SO-52131,100094-4,6-0687	06/02/87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	SO-52000,100400-0,0.5-0687	06/02/87	12000	7	1.1	4000	1	3.3	6200	31	13	17	21900	34	9	1900	285	U	25	1340	U	1.1	360	U	34	48
	SO-52000,100400-0.5,2-0687	06/02/87	21250	12	3.4	1560	1.1	3.6	2600	36	18	22	28600	17	16	3132	564	U	29	1650	U	1.2	433	U	54	48
	SO-52000,100400-2,4-0687	06/02/87	12000	U	2.5	179	0.8	2.4	2011	23	29	11	16800	17	7	1800	1780	U	18	466	U	U	720	U	35	23
	SO-52000,100400-4,6-0687	06/02/87	19440	7	1.6	120	0.7	2.4	2904	23	8	8	16000	10	7	2124	96	U	11	475	U	U	600	U	30	23
	SO-52000,100400-6,10-0687	06/02/87	20000	8	2.6	117	1.2	2.6	2720	23	12	13	23000	16	U	2400	65	U	16	728	U	U	663	U	42	26
	SO-52000,100400-13,15-0687	06/02/87	27700	12	U	286	3.9	3.9	5000	39	39	13	30700	16	33	3350	1008	U	83	990	U	1.3	554	U	46	100
10	SO-51700,101500-0,0.5-0687	06/03/87	10074	U	5.5	153	0.8	2.2	6406	18.4	10	13	16044	23	5.6	2046	475	U	16.2	880	U	1.0	341	U	28	44
	SO-51700,101500-0.5,2-0687	06/03/87	12364	3.5	6.5	233	0.9	3	5762	24	22	12	22361	32	6	1891	2014	U	16	723	U	2.1	399	1.2	40	38
	SO-51700,101500-2,4-0687	06/03/87	15023	16	8.8	222	1.2	3.8	1925	27	34	20	25437	42	11	2799	1557	U	24	856	U	4	428	U	45	57
	SO-51700,101500-4,6-0687	06/03/87	9278	13	4.2	178	1.0	2.7	1772	21	16	9.1	15912	28	9	1848	1045	U	19	333	U	3.4	579	U	35	26
11	SO-49600,100800-0,0.5-0687	06/03/87	4341	36	3.1	51	0.9	5.9	48240	28	12	15.0	862	57.1	7.3	194032	328	U	18.7	573	U	9.6	591	U	31	47
	SO-49600,100800-0.5,2-0687	06/03/87	9397	31	3.7	104	1.1	6.6	87084	28	16	15	13776	43	8	24354	631	U	25	705	U	8.2	567	U	37	60
	SO-49600,100800-2,4-0687	06/03/87	124230	13	6.0	149	1.1	2.4	3653	21	17	13	15904	29.8	7.3	2183	448	U	17.2	548	U	3.2	206	U	33	32
	SO-49600,100800-4,6-0687	06/03/87	11725	U	6.6	145	0.8	2.4	3750	19	10	12.5	16600	15.2	U	2206	387	U	14	472	U	1.5	172	U	30	27
	SO-49600,100800-6,10-0687	06/03/87	14987	6	5.3	163	0.8	4	6924	21	12	12	17177	28	8.4	2588	378	U	22	696	U	1.2	682	U	28	83
	SO-49600,100800-10,20-0687	06/03/87	14049	9.1	3.3	97.5	1.7	2.2	3921	20	11	17	13530	26	7	1864	52	U	23	738	U	2.3	387	U	25	55
	SO-49600,100800-20,24-0687	06/03/87	12649	13	5.7	117	1.8	2.8	3818	21	21	14	19740	38	U	1805	227	U	34	554	U	3.9	400	U	25	35

APPENDIX A

Phase I Soil Metals Results

No.	Coordinates and Depths	Sampled	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn
			Concentration MG/KG Location Soil Sample																						Date	
12	SO-51800,101400-0,0.5-0687	06/03/87	8600	10	2.8	79	1.3	3.4	8400	22	13	19	22000	34	9	1300	252	U	23	940	U	2.4	502	U	101	9
	SO-51800,101400-0.5,2-0687	06/03/87	14000	16	9	529	0.9	4.9	36000	26	16	470	18250	1710	13	5900	682	U	20	480	U	3	405	U	43	575
	SO-51800,101400-2,4-0687	06/03/87	22000	13	9	162	1.4	4.8	2800	36	28	28	31500	34.8	15	4500	665	U	30	1150	U	4	314	U	52	66
	SO-51800,101400-4,6-0687	06/03/87	12700	13	6	111	1.1	3.8	2600	27	16	17	23700	29	15	3200	803	U	27	895	U	3.4	430	U	48	44
13	SO-49610,10100-0,0.5-0687	06/03/87	2350	19	4.6	145	0.8	3.6	21400	26	13	17	16600	60	11	5000	406	U	18	1300	U	4	430	U	34	490
	SO-49610,10100-0.5,2-0687	06/03/87	165000	6	5	188	1.0	2.9	6400	27	15	12	20500	18	9	2850	554	U	19	475	U	2	166	U	36	35
	SO-49610,10100-2,4-0687	06/03/87	147000	4	13	117	1.1	2.7	4350	24	14	13	21000	16	7	1820	740	U	20	700	U	1.7	174	U	36	42
	SO-49610,10100-4,6-0687	06/03/87	8800	6.3	4.5	143	0.9	2.0	2500	18	23	10	15400	25	U	11000	1550	U	14	440	U	1.5	407	U	30	21
	SO-49610,10100-6,10-0687	06/03/87	8300	11	10	125	3.1	6.4	2250	55	20	21	55000	44	U	9800	3750	U	34	255	U	3.2	240	U	89	40
	SO-49610,10100-10,14-0687	06/03/87	161500	11	8	430	2.5	4.5	6300	28	21	22	26500	31	8	2500	2600	U	80	760	U	3.4	435	U	34	80
14	SO-50500,100395-0,0.5-0687	06/04/87	6400	40	9	88	U	U	127000	74	10	25	12000	34	U	45300	285	U	23	1560	U	U	1620	U	35	65
	SO-50500,100395-0.5,2-0687	06/04/87	15500	18	U	83	U	U	5650	23	6	18	15500	U	U	3200	134	U	11	720	U	U	508	U	29	39
	SO-50500,100395-2,4-0687	06/04/87	15500	U	U	72	U	U	4400	11	U	11.5	14100	U	U	2664	139	U	5U	732	U	U	684	U	15	36
	SO-50500,100395-4,6-0687	06/04/87	15400	16	U	720	U	U	3780	24	388	13	16400	84	U	2400	6100	U	42	726	U	U	600	1.2	42	36
15	SO-49200,100400-0,0.5-0687	06/04/87	14000	24	U	162	U	U	15400	28	10	28	17700	48	U	4900	360	U	14	1400	U	U	420	U	36	66
	SO-49200,100400-0.5,2-0687	06/04/87	9400	28	U	52	U	U	188000	36	8	20	14300	U	U	16000	210	U	18	810	U	U	1620	U	50	48
	SO-49200,100400-2,4-0687	06/04/87	18900	7U	U	124	U	U	31000	21	11	9	11500	U	U	4300	124	U	8	825	U	U	750	U	19	31
	SO-49200,100400-4,6-0687	06/04/87	16080	7U	U	144	U	U	3500	20	6U	10	17000	U	U	2000	60	0	8.4	576	U	U	1350	U	29	32
16	SO-49320,100735-0,0.5-0687	06/04/87	4600	30	U	85	1.3	7	130000	29	9	18	11600	59	U	28000	460	U	21	1040	U	5	2000	U	35	61
	SO-49320,100735-0.5,2-0687	06/04/87	12500	U	U	180	U	U	6000	25	14	25	26000	U	U	4030	450	U	33	1100	U	1.20	800	U	37	820
	SO-49320,100735-2,4-0687	06/04/87	10100	25	U	138	U	6	128000	33	20	20	14500	U	U	25000	450	U	19	960	U	5	525	U	50	44
	SO-49320,100735-4,6-0687	06/04/87	15900	U	U	220	U	U	27000	29	14	21	22300	U	U	3000	806	U	19	1150	U	U	434	U	43	56

APPENDIX A

Phase I Soil Metals Results

No.	Coordinates and Depths	Sampled	Concentration MG/KG Location Soil Sample Date																						
			Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn
17	SO-50500,100300-0,0.5-0687	06/04/87	11000	U	U	146	U	U	15600	26	9	13	13800	29	U	4500	415	U	12	1024	U	U	1460	U	29	59
	SO-50500,100300-0.5,2-0687	06/04/87	17500	18.6	U	188	1.1	U	6100	35	28	13	21000	29	U	2800	1300	U	23	684	U	3.4	310	U	45	51
	SO-50500,100300-2,4-0687	06/04/87	24600	22	U	124	1.3	U	4600	39	13	17	23200	33	U	3300	90	0.7	20	780	U	4	1150	U	39	46
	SO-50500,100300-4,6-0687	06/04/87	13900	17	U	220	1.2	U	2900	25	12	12	14200	23	U	2200	91	U	18	421	U	2.9	573	U	29	44
18	SO-50900,98600-0,0.5-0687	06/04/87	6500	28	U	72	U	U	180000	30	24	27	9550	42	U	5700	522	U	18	850	U	7	1400	U	37	84
	SO-50900,98600-0.5,2-0687	06/04/87	5900	30	U	70	1.2	U	185000	35	10	20	8500	38	U	2400	660	U	12	550	U	9	477	U	40	48
	SO-50900,98600-2,4-0687	06/04/87	14488	21	13.2	390	1	4	3339	28	14	22	21801	36	10	3388	705	U	42	896	U	4.7	517	U	34	70
	SO-50900,98600-4,6-0687	06/04/87	14149	18	15.1	229	0.9	3.6	3607	27	17	19	20404	39.6	8	3043	4546	U	22	699	U	5.4	718	U	33	68
19	SO-50800,99600-8,9-0687	06/04/87	13299	17	5.7	103	1.1	3.2	2121	29	16	11	20763	44.7	8	1398	4559	U	14	499	U	5.1	710	U	40	25
20	SO-52090,101300-0,0.5-0687	06/09/87	10116	20	10.6	138	0.9	3.2	14603	24	19	18	17578	55	8	1831	741	U	19	845	U	5.7	366	U	35	55
	SO-52090,101300-0.5,2-0687	06/09/87	13392	22	10.8	161	1.1	4.0	3087	29	29	14.0	24242	58	10	1843	1865	U	23	726	U	5.5	383	U	48	63
	SO-52090,101300-2,4-0687	06/09/87	15240	24	5.0	193	1.3	4.4	2686	31	23	24.0	25431	48	13	3798	810	U	31	1181	U	6.5	849	U	45	45
	SO-52090,101300-4,6-0687	06/09/87	9822	U	2.9	185	0.3	2	2335	18	11	11.5	16062	7.7	9.7	2419	464	U	20	608	U	U	700	U	29	39
21	SO-49700,99500-0,0.5-0687	06/09/87	5982	38	2.8	77	1.2	7.0	53586	41	15	27	11451	132	9	13014	291	U	50	853	U	13	525	U	37	139
	SO-49700,99500-0.5,2-0687	06/09/87	15470	118	9.7	140	5.5	2.9	2934	21	10	16.7	21462	13.1	7.7	2571	416	U	18	741	U	1.0	377	U	30	38
	SO-49700,99500-2,4-0687	06/09/87	14925	U	3.3	282	1.9	4.1	16812	27	27	18.5	21778	29.0	14.3	4085	2464	U	59	929	U	4.3	712	U	40	55
	SO-49700,99500-4,6-0687	06/09/87	13038	U	4.9	236	1.1	2.6	2472	2	15	9.1	16415	22.2	9	2002	862	U	11.0	300	U	2.0	617	1.2	34	26
22	SO-50300,101300-0,0.5-0687	06/09/87	8114	U	2.0	172	0.6	2.1	2996	16	14	8.0	11480	26.9	6.0	1349	1300	U	17.5	700	U	1.5	310	U	25	41
	SO-50300,101300-0.5,2-0687	06/09/87	14391	U	8.7	266	0.8	2.8	2426	20	12	7.9	16908	25	7.8	1859	385	U	9.0	348	U	2	235	U	34	19.2
	SO-50300,101300-2,4-0687	06/09/87	10382	U	7	76	0.6	2.2	3470	15	6	9.7	13658	14.7	U	1935	49	U	10.6	342	U	2.1	458	U	23	16
	SO-50300,101300-4,6-0687	06/09/87	7552	U	4.0	142	1.6	2.4	2423	18.4	15	16	15856	22	U	1627	175	U	26	509	U	2.8	308	U	25	35
23	SO-50910,101803-0,0.5-0687	06/09/87	7943	U	4.3	255	5.2	3.4	4914	20	15	13	12699	33	7	1549	1574	U	15	934	U	U	410	U	26	70
	SO-50910,101803-0.5,2-0687	06/09/87	19171	U	4.1	117	0.4	3.4	1369	22	11	21.1	26763	24.4	12.2	3136	253	U	21	1113	U	1.2	379	U	40	55
	SO-50910,101803-2,4-0687	06/09/87	13161	U	4	251	0.7	2.4	2218	22	9	16	19571	10	11	2823	322	U	20	774	U	U	363	U	31	40
	SO-50910,101803-4,6-0687	06/09/87	10755	U	3	217	.4	2.5	2487	17	20	9	18338	115	7	1876	767	U	10	390	U	U	440	U	35	23

APPENDIX A

Phase I Soil Metals Results

No.	Coordinates and Depths	Sampled	Concentration MG/KG Location Soil Sample Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	Date V	Zn
24	SO-52400,101100-0,0.5-0687	06/09/87	9057	U	4.1	278	0.5	2.4	3445	14	12	9	14270	31	7.7	1585	1763	U	15	982	U	U	344	U	28	58
	SO-52400,101100-0.5,2-0687	06/09/87	8552	U	5.7	244	0.7	2.6	5876	16	27	10	15878	31.0	6	1378	2936	U	16	788	U	1.4	302	U	33	29
	SO-52400,101100-2,4-0687	06/09/87	15264	U	7.6	151	0.8	2.7	1381	22.7	26.5	13.2	18985	29.5	11.7	2561	1232	U	23	940	U	2.3	383	U	36	39
	SO-52400,101100-4,6-0687	06/09/87	11615	U	4.4	162	0.8	1.9	1782	18	7	8	13095	13	7	1608	268	U	11	450	U	U	511	1.2	27	22
25	SO-50800,100100-0,0.5-0687	06/10/87	11376	2.6	21	145	1.0	2.5	9175	26	12	14	16796	39	6	2842	691	U	14	839	U	1.0	456	u	32	339
	SO-50800,100100-0.5,2-0687	06/10/87	12580	17	6.5	149	1.2	3.9	30511	30	16	17	18042	53	13	3522	471	0.1	17	650	U	11	525	U	42	38
	SO-50800,100100-2,4-0687	06/10/87	10811	14	21.2	116	0.9	2.7	3131	19	9	12	13313	41.3	8	1677	437	U	12	382	U	6	424	U	35	13
	SO-50800,100100-4,6-0687	06/10/87	17912	13	21	228	1.7	3.9	3057	32	106	16	22507	71	12	2021	1237	U	39	519	U	6.1	435	U	45	23
	SO-50800,100100-6,10-0687	06/10/87	7911	17	11	83	1.0	2.1	3102	15	10	8.5	9332	39	7	1433	68	U	13	325	U	5.4	344	U	23	12
	SO-50800,100100-10,20-0687	06/10/87	24321	11	5.8	224	2.8	4.1	5351	32	31	16	25043	53	17	3233	711	U	62	979	U	6	428	U	41	66
26	SO-50800,100000-0,0.5-0687	06/10/87	1250	18.7	2.5	117	0.9	3.2	17779	26	14	15	15300	57	14	3002	348	U	19	1682	U	6.2	542	U	34	56
	SO-50800,100000-0.5,2-0687	06/10/87	16019	11	7.2	267	1.0	2.6	7505	29	15	15	16309	50	14	2367	331	U	15	597	U	7.4	901	U	39	29
	SO-50800,100000-2,4-0687	06/10/87	11258	20	8.8	153	1.0	3.6	2511	26.3	29	13	19474	68	12	1603	1678	U	16	840	U	7	596	U	41	30
	SO-50800,100000-4,6-0687	06/10/87	1500	U	U	25	U	U	190	10	U	U	2130	U	U	190	139	U	U	U	U	U	240	U	U	6
27	SO-49300,101200-1.5,2.5-0687	06/15/87	12612	U	10	192	1.0	2.6	1313	24	16	10	20316	27	U	1680	1057	U	13	618	U	0.5	980	U	37	30
	SO-49300,101200-2.5,3-0687	06/15/87	22811	U	9.5	176	1.1	4.2	1768	34	18	23	2993	32	15	3456	526	U	23	1237	U	3.0	964	U	52	54
28	SO-49320,101420-1,1.5-0687	06/15/87	15933	U	9.7	189	0.8	3	1336	27	15	19	23316	53	12	2536	478	U	16	1245	U	2.7	1178	U	48	42
	SO-49320,101420-2,4-0687	06/15/87	11686	U	7	151	0.7	2.7	1992	22	15	14	16277	26	11	2761	441	U	20	878	U	2.5	823	U	29	34
29	SO-49240,101470-1.2-0687	06/15/87	21441	U	14	136	1	3	1038	28	15	20	26852	39	13	2630	375	U	21	975	U	3	967	U	45	49
	SO-49240,101470-2.3-0687	06/15/87	14275	U	10	144	0.8	3	1928	24	21	24	21287	43	9	2917	414	U	17	751	U	3.8	1410	U	29	51
30	SO-49240,101350-0,3-0687	06/15/87	13171	U	8	183	0.8	2.9	1469	22	14	15	19985	68	10	1934	418	U	14	813	U	4.3	982	U	41	34
	SO-49240,101350-3,5-0687	06/15/87	11528	4	5	310	0.8	3.4	2407	27	15	18	18915	43	14	3067	666	U	24	1063	U	6	1008	U	34	43
	SO-49240,101350-5,8-0687	06/15/87	9399	6	6	117	0.5	2.3	1617	21	15	7	11787	42	11	1487	321	U	11	1701	U	6	707	U	30	21
	SO-49240,101350-8,13-0687	06/15/87	16445	14	12	90	0.9	3	2906	30	15	13	176	66	14	1805	83	0.1	14	590	U	10	527	U	39	18

APPENDIX A

Phase I Soil Metals Results

No.	Coordinates and Depths	Sampled	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn
			Concentration MG/KG Location Soil Sample																						Date	
31	SO-51200,99900-0.5,2-0687	06/26/87	12020	9	8	242	1	2.8	2648	22	19	12	20850	27	6	1940	1250	0.4	18	645	U	0.9	560	U	39	39
	SO-51200,99900-2,4-0687	06/26/87	12621	5	5	259	0.8	2.3	2798	21	14	13	17035	22	6	2154	714	0.4	16	681	U	0.7	635	U	36	39
	SO-51200,99900-4,6-0687	06/26/87	13575	9	3	270	0.9	2.9	10198	23	16	15	21126	19	8	2722	1007	U	26	688	U	1.4	763	U	35	47
	SO-51200,99900-6,10-0687	06/26/87	18798	9	8	241	1.2	3.8	4081	27	18	22	28105	21	9	3170	1166	0.1	30	953	U	1.5	842	U	42	60
	SO-51200,99900-10,14-0687	06/26/87	6545	4	2	128	0.6	1.6	1145	13.5	8.6	7	12795	11	U	814	995	1.4	7.4	378	U	U	486	U	26	20
	SO-51200,99900-14.3,16-0687	06/26/87	13398	7	1.6	103	1.1	3.7	2026	21	31	8	324	16.3	U	1185	1098	1.4	27	507	U	1.0	573	U	33	29
32	SO-51700,99975-0.5,2-0687	06/29/87	19543	9	14	239	1.3	4	2337	26	40	24	27275	32	9.4	3134	1677	U	25	1026	U	1.0	549	U	40	57
	SO-51700,99975-2,4-0687	06/29/87	13993	8	13.1	242	1	3	2570	23	15	18	22085	17	9	2886	563	U	26	719	U	1.0	772	U	36	51
	SO-51700,99975-4,6-0687	06/29/87	12880	6	8.6	277	1	2	2598	25	11	9	17350	17	7	2044	388	U	14	367	U	U	739	U	36	30
	SO-51700,99975-6,8-0687	06/29/87	13898	6	8.5	230	1	2	2588	20	10	9	16421	11	10	2178	258	U	12	306	U	0.5	785	U	32	35
	SO-51700,99975-8,12-0687	06/29/87	15018	3.6	11.1	209	1.1	2.4	3757	24	12	12	18388	14	U	2176	117	U	22	444	U	0.5	616	U	34	25
	SO-51700,99975-12,16-0687	06/29/87	9179	8	3.6	484	2	4	3577	19	38	24	25820	31	U	2050	1907	U	82	474	U	1.2	404	U	43	55
33	SO-49500,99800-0.5,2-0687	06/30/87	10945	11	12.1	182	0.8	3.5	37006	20	12	17	14560	19	6	8796	246	U	19	670	U	2.1	542	U	33	46
	SO-49500,99800-2,4-0687	06/30/87	23501	6	13.7	289	0.7	4.1	3556	34	29	26	30363	20	12	3359	1018	U	25	924	U	0.8	722	U	45	59
	SO-49500,99800-4,6-0687	06/30/87	10486	4	5.5	146	0.6	2.1	3165	18	9	17.6	12694	9.6	8	2349	155	U	22	596	U	U	544	U	26	41
34	SO-52119,99200-5,6-0687	06/30/87	10168	12	4.1	140	0.9	3.6	36371	23	15	12.5	14725	19.2	U	8624	465	U	16	552	U	2.1	563	U	32	34
	SO-52119,99200-6,8-0687	06/30/87	9585	2.4	6.6	129	0.7	2	2160	17	19	8.7	15415	22.3	U	1194	792	U	11	424	U	U	455	U	31	44
	SO-52119,99200-8,10-0687	06/30/87	15587	5	5.5	130	0.9	2.7	1855	22	23	9.7	21688	30	8	1480	1216	U	13	663	U	U	552	U	40	30
	SO-52119,99200-10,12-0687	06/30/87	14044	U	9.4	151	0.6	3	3138	25	14	12.4	23720	15	U	1738	294	U	14	434	U	U	687	U	39	24
	SO-52119,99200-12,16-0687	06/30/87	11324	6	12.2	187	2.2	3.1	3405	29	14	20	24284	20	7	2244	499	U	43	526	U	0.6	641	U	35	54
35	SO-50325,101300-1,2-0687	06/30/87	8446	18	13.6	156	0.7	5	37139	22	14	11	13562	29	U	13741	712	U	19	591	U	3.2	569	U	31	79
	SO-50325,101300-2,4-0687	06/30/87	14275	2	12.0	55	0.7	2.0	3602	16	8	9.5	12687	8	U	2076	54	U	12	525	U	U	447	U	24	21
	SO-50325,101300-4,6-0687	06/30/87	16996	3.7	13.0	103	0.7	2.2	7070	19	12	10	14910	9.2	U	2824	123	U	12	552	U	U	463	U	27	22

APPENDIX A

Phase I Soil Metals Results

			Concentration MG/KG Location Soil Sample																					Date
No.	Coordinates and Depths	Sampled	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn
36	SO-49100,100500-0,2-0787	07/02/87	12209	3.3	4.2	181	0.7	2.2	3102	20	10	11	15683	10	13.3	2442	370	U	17.8	665	U	U	449	U	33	38
	SO-49100,100500-2,4-0787	07/02/87	15396	7.2	9.2	99	0.7	2.5	2818	25	13	7	17314	34	8	2230	476	U	12	385	U	0.5	631	U	36	32
	SO-49100,100500-4,6-0787	07/02/87	18516	5	11.0	70	0.7	2.2	3585	20	8.7	10	17132	7	6	2282	62	U	10	520	U	U	495	U	32	24
37	SO-49600,101275-0,2-0787	07/02/87	13958	5.5	9.2	205	0.9	2.7	2505	22	11	14	18348	15	12	2511	410	U	21	676	U	0.8	440	U	35	44
	SO-49600,101275-2,4-0787	07/02/87	15120	3	4.7	271	1.3	2.9	2657	22	15	11	23012	17	8	1712	374	U	13	482	U	U	772	U	41	27
	SO-49600,101275-4,6-0787	07/02/87	13146	U	5.4	80	0.6	1.5	2220	19	6	6.3	10051	11.2	8	1373	80	U	13	421	U	U	710	U	19	21

APPENDIX B

DATA QUALITY

Throughout this sampling effort, analytical data quality was assessed through the use of duplicates and spikes. These additional analyses were performed for all analytical parameters.

All Quality Control Data is presented at the end of this appendix. Overall, no holding times were exceeded and the Quality Control Data is acceptable. Therefore, the analytical data presented in this report conforms to applicable standards of accuracy and precision and is representative of sample conditions at the time of collection.

All data presented in this report will be validated according to the procedures to be presented in the forthcoming Quality Assurance Project Plan (QAPP). This data will then be used to assess overall soil contamination.

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