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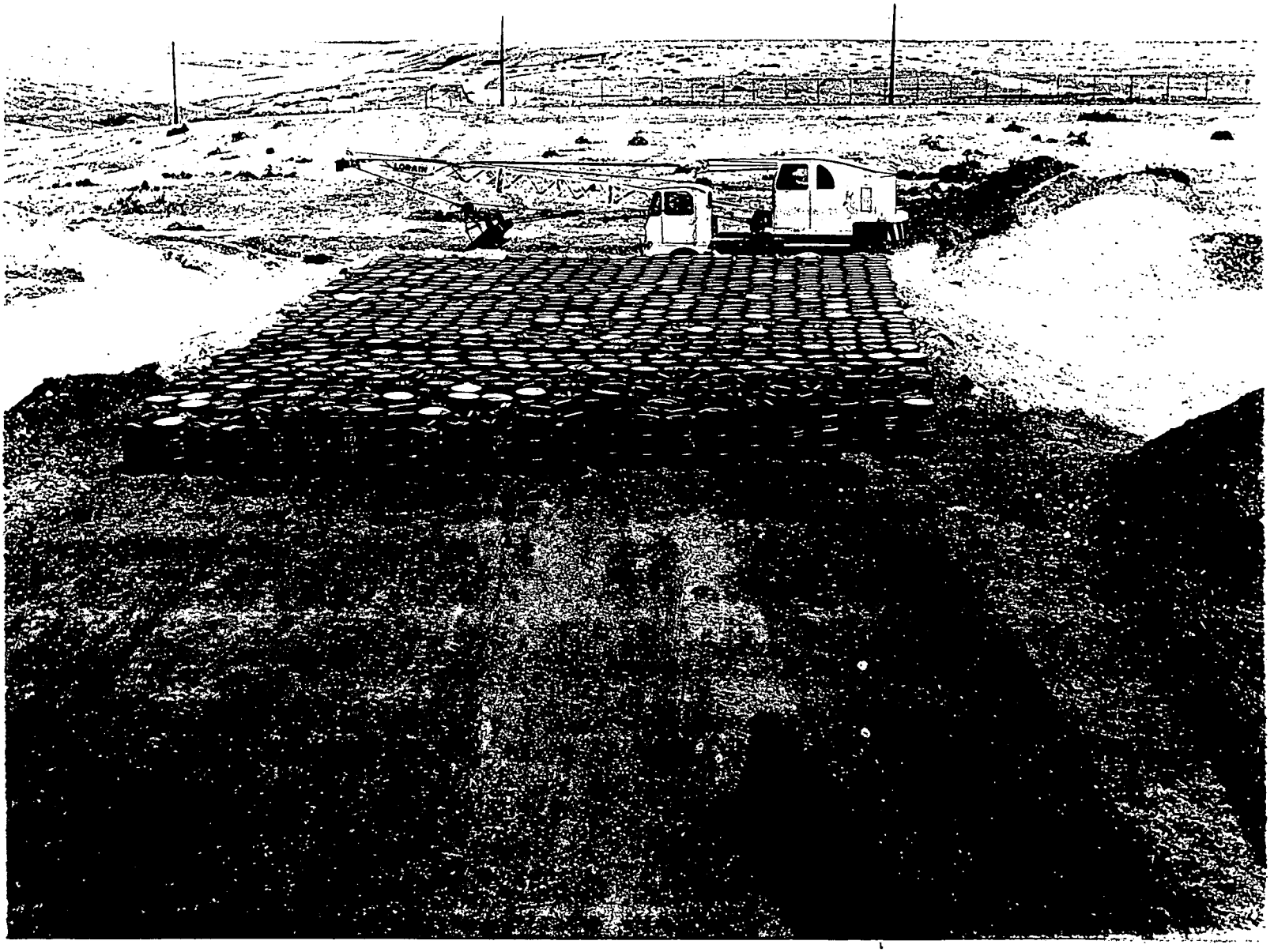

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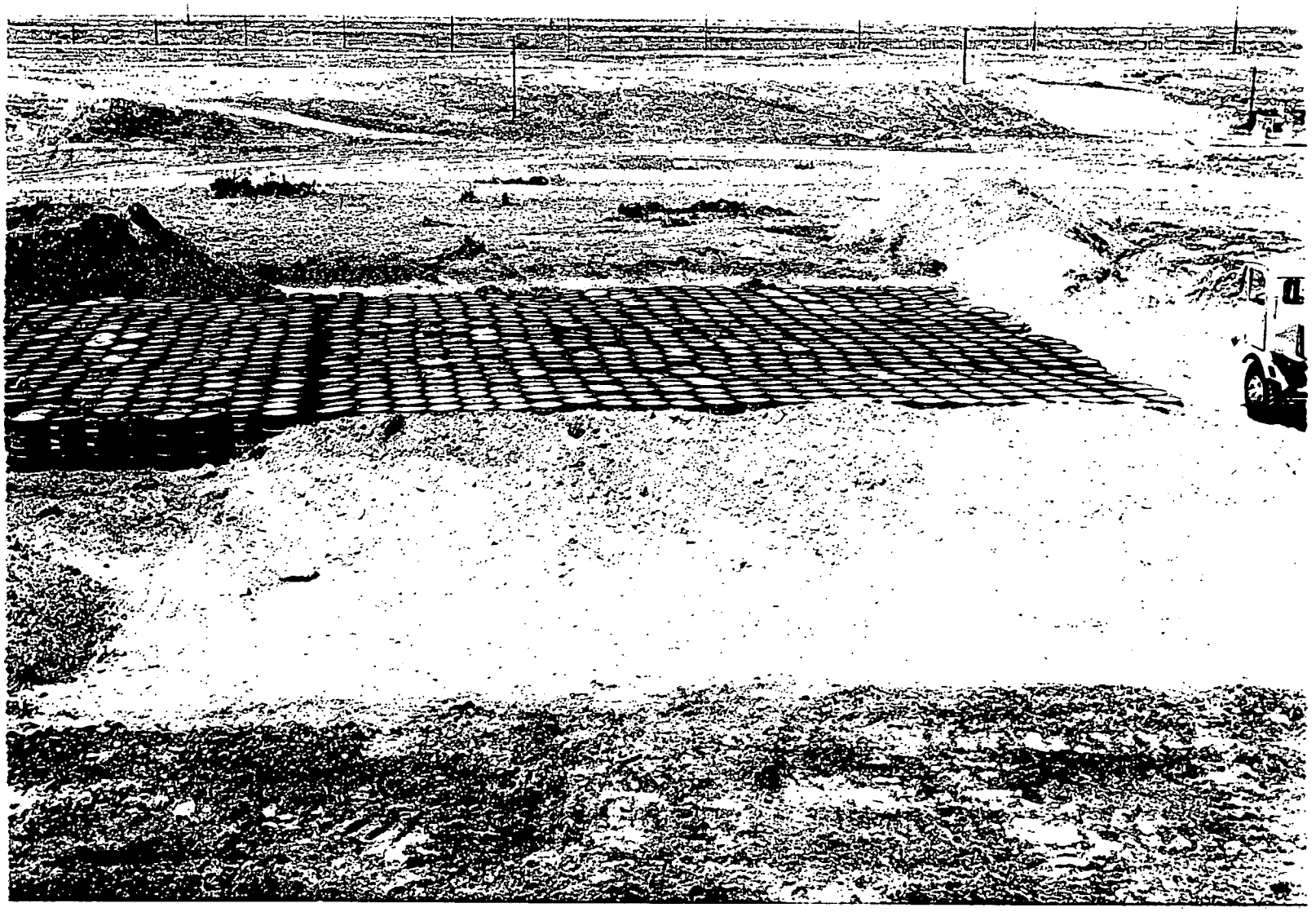

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1.0 INTRODUCTION

Add to the Introduction in the first sentence (words in *italics*):

.... and define the areal extent of the volatile organic compound (VOC) contamination at the Mound Site (IHSS 113) ***and in part establish that the Mound Site is the source of contamination of SW59.***

Section 3.2 Soil Boring Locations

3.2.1 Mound Site

Add the following paragraphs to the bottom of this section:

The intent of the soil borings in the Mound Area was to penetrate through the alluvium into unweathered bedrock which was projected to be 15 to 20 feet BGS. However, adverse field conditions, tight clays and large cobbles, have prohibited the collection of soil samples at depths greater that 11 feet in the first nine borings completed. Because of the inability to completely penetrate the alluvium with the geoprobe, the potential pathway for contamination can not be fully established. To further establish this pathway, a series of boring downgradient from the Mound Area and between the Mound Area and contaminated well at SW59 will be completed. All but two of the remaining proposed boring locations will be reprogrammed. The two exceptions are the borings that are located in the Central Avenue Ditch. These two boring will be completed when the ditch dries out.

The remaining borings will be located in a "fence line" north of the Mound Area within 20 feet and south of the subcrop of the alluvial/bedrock contact. The alluvial/bedrock subcrop contact can be identified in the field by a observable change in slope between the more resistant alluvium versus the less resistant claystones of the bedrock.

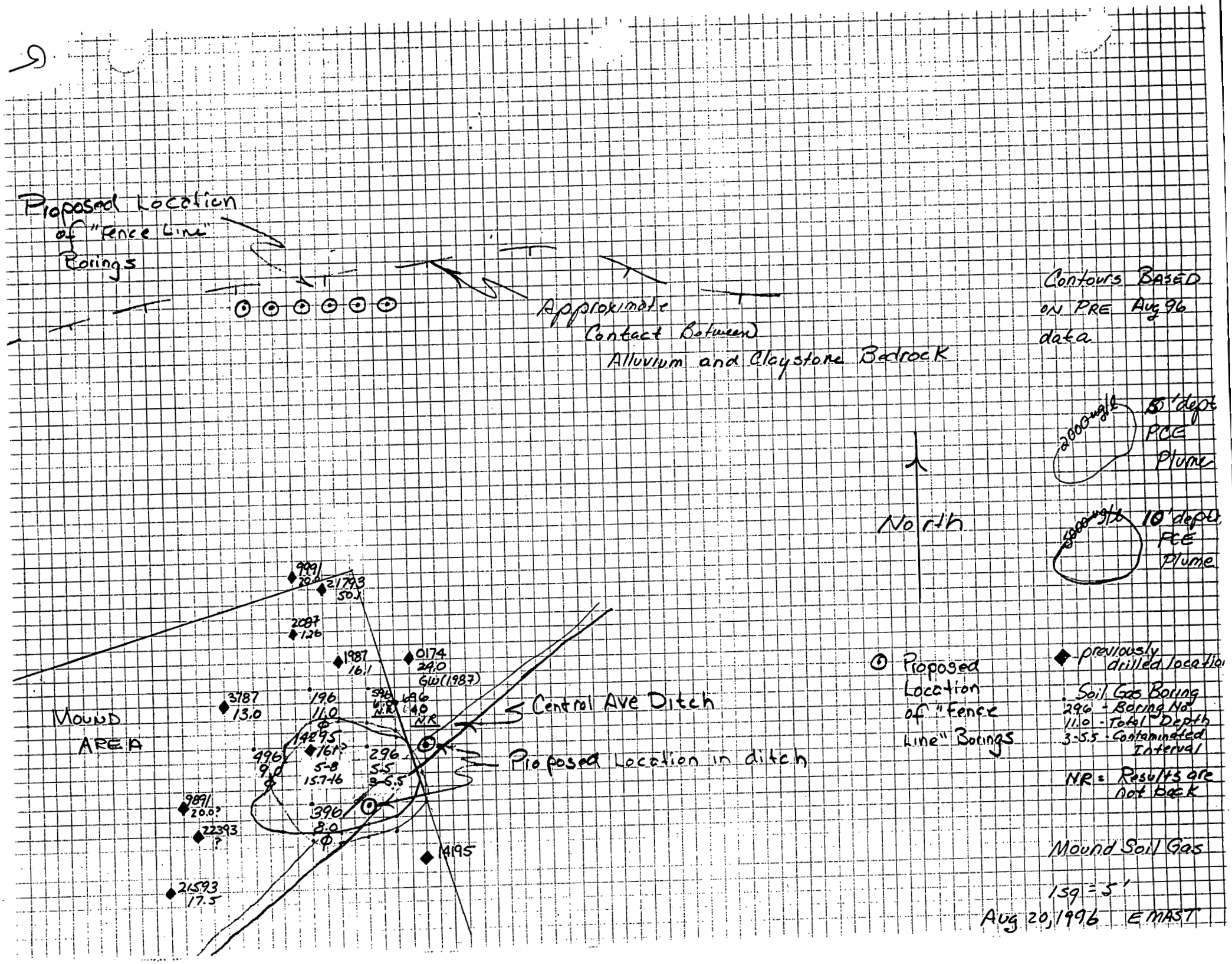
The borings will be spaced approximately 10 feet apart and the initial location will be north of BH14295 with the exact location at the discretion of the project geologist. The depth of these borings is expected to be 10 to 15 feet but will, when possible, be completed into unweathered bedrock (see attached sketch map).

The sampling intervals and analytical suite will be the same as the initial program.

Add to the DQO Table on page 15 of the FSP

Data Quality Objectives

DQO	How Achieved
Determine if the pathway of contaminate flow coming off the Mound Area is to the north from BH14295 and if it is, define the east to west component of contaminate flow.	**Using the geoprobe, collect soil samples for a GC analysis of the soil gas in the head space of the collected sample. If groundwater is present in the borings, samples will be collected. The analytical suite will be consistent with Table 3.2-2 Analytical Protocols for Soils and Soil Gas.** **Collect continuous core soil samples at five foot intervals. If staining or detects from the FID or PID are observed, that interval will be collected. Otherwise collect the sample at the end of the five foot run.**



Proposed Location of "Fence Line" Borings
Approximate Contact Between Alluvium and Claystone Bedrock
Contours BASED ON PRE Aug 96 data
2000 ug/l
5' depth PCE Plume
5000 ug/l
10' depth PCE Plume
North
9991 20.0
21793 50.1
2087 12.6
1987 16.1
0174 24.0 GW(1987)
3787 13.0
196 11.0
596 6.0 N.R.
696 4.0 N.R.
Central Ave Ditch
MOUND AREA
14295 16.1? 5-8 15.7-16
496 9.0
296 5.5 3-5.5
Proposed Location in ditch
9891 20.0?
22393 ?
396 8.0
14195
21593 17.5
Proposed Location of "Fence Line" Borings
previously drilled location
Soil Gas Boring
296 - Boring No.
11.0 - Total Depth
3-5.5 - Contaminated Interval
NR = Results are not back
Mound Soil Gas
1sq = 5'
Aug 20, 1996 EMAST

96-DMR-ERM-0041

1. INTRODUCTION

This Sampling and Analysis Plan (SAP) describes the steps necessary to collect data to characterize Trench T-1 (IHSS 108), and define the areal extent of the volatile organic compound (VOC) contamination at the Mound Site (IHSS 113), and the 903 Pad (IHSS 112) in support of early removal actions. The objective of the SAP is to describe the specific data needs, sampling and analysis requirements, data handling procedures, and associated Quality Assurance/ Quality Control (QA/QC) requirements for the completion of soil gas and subsurface soil sampling. The data gathered from these activities will be used to estimate volumes of soil requiring removal for treatment or disposal.

1.1 Background

Trench T-1 (IHSS 108), is located southeast of the Protected Area fence and north of Central Avenue (Figure 1-1). The trench is roughly 150 feet long by 20 feet wide by 10 feet deep. Approximately 125 drums containing depleted uranium chips, hydraulic oil, carbon tetrachloride (CCl_4), metal turnings, distillation bottoms, copper alloy, and cemented cyanide waste are believed to have been disposed in this trench from 1954 to 1962 (RF/ER-95-0010, DOE 1995a). Previous investigations included soil gas and geoprobe sampling of the area near the trench margins, ground penetrating radar (GPR), and electromagnetic surveys (EM-31 and EM-61) over the trench. The electromagnetic survey results indicate metallic objects are buried within the trench (see Figure 3.2-1).

Due to concern about the suspected presence of pyrophoric uranium in some of the drums disposed of in Trench T-1, no intrusive activities have occurred within the trench boundaries. Groundwater contamination is found in wells down gradient from the trench, however, these wells are subject to influence from other IHSSs and do not provide sufficient information to determine if Trench T-1 is the source. Samples from within the trench are required to determine the nature of contaminants in the trench and whether these are a potential source of contamination to surface water through a groundwater pathway.

The Mound Site is located north of Trench T-1 and east of the Protected Area fence (Figure 1-1). Between 1954 and 1958, drums containing hydraulic oil and carbon tetrachloride (CCl_4) contaminated with depleted uranium and beryllium were buried at this site. Additionally, historical records show some of the buried drums contained tetrachloroethene (PCE),

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DQO	How Achieved
Acquire adequate analytical data to characterize the contaminants within Trench T-1.	Collect subsurface soil samples from eight borehole locations within Trench T-1. Continually monitor and examine core for high VOCs, Rads, NAPL, and visible staining. Collect samples at five and ten foot depths and if NAPL or visible staining is found, analyze for VOCs, SVOCs, Radionuclides, Metals, and TPH using Level III analytical methods.
Define the areal extent of contaminated soils at the Mound Site to sufficiently support planning of remedial activities.	Perform Soil Gas Surveys within and surrounding the Mound Site. Continually monitor and examine core for high VOCs, Rads, NAPL, and visible staining. Collect soil gas samples at five foot intervals. Monitor soil gas for total VOCs using a GC. Collect 2 soil samples (1 within an area of high VOCs or if NAPL or visible staining is found) for laboratory analysis to confirm field observations.
Define the areal extent of contaminated soils at the 903 Pad to sufficiently support planning of remedial activities.	Perform Soil Gas Surveys within and surrounding the 903 Pad. Continually monitor and examine core for high VOCs, Rads, NAPL, and visible staining. Collect soil gas samples at five foot intervals. Monitor soil gas for total VOCs using a GC. Collect 10 % of samples within areas of high VOCs or if NAPL or visible staining is found for laboratory analysis to confirm field observations.

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2.2 Historical Data Summary

Subsurface soil samples and soil gas samples have been collected at the Mound Site during earlier investigations. The existing data confirms the presence of VOC and radionuclide concentrations within the IHSS which are above cleanup levels. However, available data is not adequate for determining the lateral or vertical extent of contamination above the cleanup levels. Additional data is necessary to determine the volume of contaminated material to be excavated and treated.

- Field work will be performed primarily in modified-Level D Personal Protective Equipment (PPE), except where otherwise indicated by the HASP.
- Soil core sampling will be performed in compliance with the Health and Safety Plan if high VOC readings occur during monitoring.

3.2 Soil Boring Locations

3.2.1 Trench T-1

Eight geoprobe soil borings will be located within Trench T-1 near areas believed to contain buried drums located during electromagnetic surveys. These areas were identified during the 1995 Trenches Area and Mound Site Characterization activities by electromagnetic surveys. Boreholes will be located close to the areas believed to contain drums, but far enough away to avoid inadvertently puncturing any drums. Prior to intrusive activities, the proposed areas will be cleared using magnetometer surveys. Figure 3.2.1-1 shows the location of Trench T-1 and the proposed borehole locations based upon the results of the electromagnetic survey. These locations may be modified pending the results of magnetometer surveys prior to drilling. Depth of borings will not exceed 10 feet in Trench T-1 to avoid penetrating the bottom of the trench and creating a potential pathway for contaminant migration. Soil samples will be collected at depths of five and ten feet intervals below ground surface (BGS) unless examination of the core indicates staining or the presence of NAPL is detected. In these instances, samples will be collected from the appropriate segments of the core sample.

3.2.2 Mound Site

Geoprobe borings for soil gas and subsurface soils at the Mound will be located in the area of previously detected high soil gas readings, per the diagram in Figure 3.2.2-1. These locations are based upon previous sampling activities and will concentrate around the area of borehole 14295 which exhibited the highest levels of VOCs found at the Mound Site. Soil gas sample locations will be located twenty feet to the north, south, east and west of location BH14295. Samples will be collected at five feet intervals BGS to a depth of one or two feet below bedrock. If total VOCs are detected above ten ppm, then the sampling grid will be extended an additional twenty feet to the north, south, east, and west of that location and additional samples will be taken.

If NAPL is encountered, the step out will be reduced to 10 feet. This process will continue until the area of contamination above 10 PPM is defined. Soil samples (approximately 10%) will be collected from the areas of the highest Total VOC concentrations as confirmation samples. Geoprobe locations will be modified in

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Sampling And Analysis Plan for the Pre-Remediation Investigation of the Mound, 903 Pad and Trench T-1

JULY 25, 1996
Revision. 0

DOCUMENT CLASSIFICATION REVIEW WAIVER
BY R.B. HOFFMAN, CLASSIFICATION OFFICER
JUNE 11, 1991

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LIST OF ACRONYMS

BSL	Background screening level
BGS	Below Ground Surface
CDPHE	Colorado Department of Public Health and Environment
CLP	Contract Laboratory Program
COC	Chemical-of-Concern
COC	Chain of Custody
DCE	Dichloroethene
DOE	Department of Energy
DMP	Data Management Plan
DQO	Data Quality Objective
EPA	Environmental Protection Agency
EQS	Environmental Quality Support
ER	Environmental Restoration a.k.a. ERM, Environmental Restoration Management
FID	Flame-ionization Detector
GC	Gas Chromatography
GRRASP	General Radiochemistry and Routine Analytical Service Protocol
IHSS	Individual Hazardous Substance Site
OU	Operable Unit
PAM	Proposed Action Memorandum
PCE	Tetrachloroethylene
PID	Photoionization Detector
PPRG	Programmatic Preliminary Risk -Based Remediation Goal
QAA	Quality Assurance Addendum
QAPjP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RFETS	Rocky Flats Environmental Technology Site
RFEDS	Rocky Flats Environmental Database System
SAP	Sampling and Analysis Plan
SQL	Sample quantitation limit
SVOCs	Semi-volatile organic compounds
TCE	Trichloroethylene
TCL-VOA	Target Compound List-Volatile Organic Analysis
USEPA	United States Environmental Protection Agency
VOCs	Volatile organic compounds
1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCE	1,2-Dichloroethene
1,1,1-TCA	1,1,1-Trichloroethane

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1. INTRODUCTION

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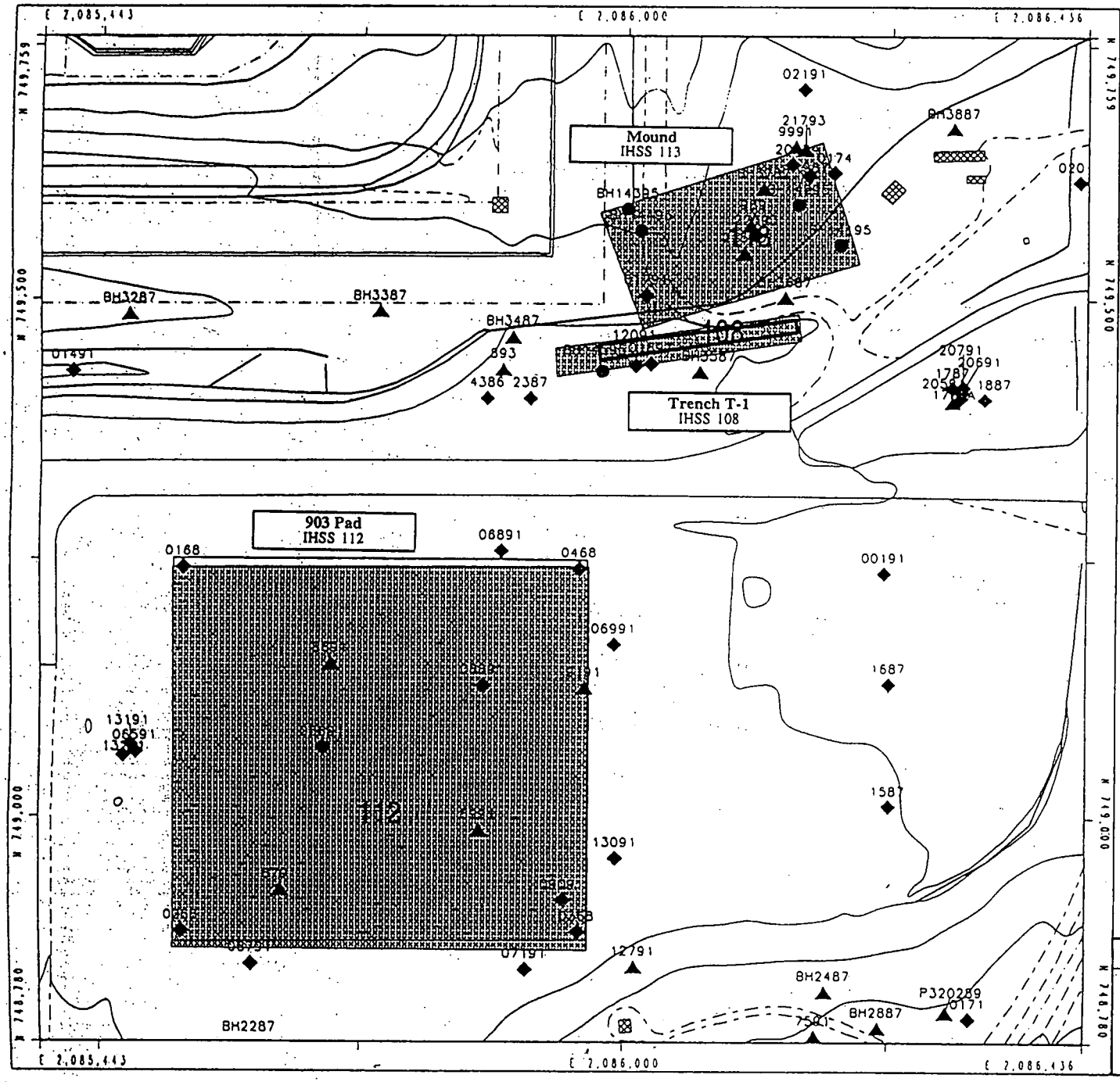

Mound, Trench T-1 and the 903 Pad

EXPLANATION

- Characterization Boreholes
- Boreholes
- Groundwater Wells
- Paved Roads
- Unpaved Roads
- Streams, Ditches, or other Drainage Features
- Contours (10' Intervals)
- Trench Boundaries
- Buildings and other Structures
- Individual Hazardous Substance Sites (IHSS)

N

Scale = 1 : 1700
1 inch represents approximately 141.66 feet

50 0 100 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Figure 1-1
Map of OU 2 IHSSs

July 15, 1996

enriched uranium, and plutonium (DOE 1991, *Final Phase II RFI/RI Work Plan TM 1, RFP 903 Pad, Mound and East Trenches Areas,* DOE 1992, *Final Historical Release Report for the Rocky Flats Plant*).

In 1970, after it was discovered the integrity of the drums was failing and leakage was detected, all the drums and the associated radionuclide contaminated soils were removed from the Mound Site. Later investigations have found levels of volatile organic compounds (VOCs) in groundwater samples down gradient from the site which exceed the Action Levels and Standards Framework for Subsurface Soils as established in Attachment 5 of the Draft Rocky Flats Cleanup Agreement (March 14, 1996). Initial characterization results indicate increasing concentrations of PCE and trichloroethene (TCE) to a depth of 20 feet and decreasing concentrations below that depth. A more detailed account of contamination at this site is available in the *Phase II RFI/RI Report for Operable Unit No. 2 903 Pad, Mound, and East Trenches Area.* Additional sampling is required to identify the amount and extent of material which will require removal and or treatment.

The 903 Pad (IHSS 112) is located south of Central Avenue at the western edge of the eastern buffer zone (Figure 1-1). The site was previously used for storage of drums containing cutting fluids contaminated with plutonium. Leakage from the drums contaminated the area, most of which is presently sealed under an asphalt cap. Previous investigations which included soil gas surveys, soil sampling, and groundwater monitoring have shown VOC constituents present within the IHSS include TCE, PCE and CCl_4. Additional sampling beneath the asphalt cap and the area surrounding the cap is necessary to adequately identify the area of VOC contamination exceeding the proposed RFETS Action Levels for subsurface soils. Additional investigations, using a High Purity Germanium (HPGe) Radiation Survey, are anticipated to determine the extent of radiological contamination.

1.2 Data Summary

Previous investigations within OU 2 have included soil gas sampling, surface and subsurface soil sampling, as well as groundwater monitoring. Tables 1.2-1 through 1.2-3 show the maximum concentrations detected for the Chemicals-of-Concern (COC) within and near the Mound Site, Trench T-1, and the 903 Pad. The COCs for OU 2 were agreed to by the Department of Energy (DOE), the Environmental Protection Agency (EPA), and the Colorado Department of Public Health and Environment (CDPHE) in Technical Memorandum No. 9 Chemicals of Concern, Human Health Risk Assessment 903 Pad, Mound, and East Trenches Areas Operable Unit No. 2, August 1994.

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TABLE 1.2-1 MAXIMUM CONCENTRATIONS OF CHEMICALS OF CONCERN DETECTS FOR GROUNDWATER AND SUBSURFACE SOILS NEAR IHSS 113 (MOUND SITE)

*LOCATION CODE	SAMPLE NUMBER	SAMPLE TYPE	DEPTH (Ft)	ANALYTE	RESULT	**LAB QUAL	SAMPLE DATE
174	1-74-07-23-87	GW		1,1-Dichloroethene	90 µg/l		23-Jul-87
14495	BH20855WC	BH	12.5 - 15.0	Carbon Tetrachloride	5 µg/kg	J	19-May-95
21593	BH20197WC	BH	24	Chloroform	66 µg/kg		10-May-93
174	1-74-05-22-87	GW		Chloroform	38 µg/l		22-May-87
14295	BH20840WC	BH	5 - 8	Methylene chloride	44,000 µg/kg	B	18-May-95
174	GW00639IT	GW		Methylene chloride	4,100 µg/l	B	15-Nov-90
14295	BH20840WC	BH	5 - 8	Tetrachloroethene (PCE)	800,000 µg/kg		18-May-95
174	1-74-05-22-87	GW		Tetrachloroethene	500,000 µg/l		22-May-87
174	1-74-05-22-87	GW		Trichloroethene	18,000 µg/l		22-May-87
14295	BH20857WC	BH	15.7 - 16	Trichloroethene	8,600 µg/kg	DJ	18-May-95
3787	BH378700005	BH	0.0 - 5.0	Arsenic	20 mg/kg		16-Jul-87
22393	GW02095GA	GW		Arsenic	8.3 µg/l	B	13-Feb-95
1791	GW02598IT	GW		Cadmium	4.8 µg/l	B	17-Mar-92
3787	BH378725BR	BH	25.0 - 26.2	Cadmium	3.3 mg/kg		17-Jul-87
1791	GW02173IT	GW		Mercury	0.27µg/l		19-Dec-91
21793	BH20321WC	BH	31.9 - 37.4	Mercury	0.15 mg/kg		3-Jun-93
22393	GW02407GA	GW		Nitrate	2,920 µg/l		16-May-95
3787	BH37870005	BH	0.0 - 5.0	Americium-241	0.48 pCi/g		16-Jul-87
174	1-74-07-23-87	GW		Americium-241	0.16 pCi/l		23-Jul-87
14295	BH20837WC	BH	0.0 - 3.5	Plutonium-239/240	0.0316 pCi/g		18-May-95
174	GW00639IT	GW		Plutonium-239/240	0.0027pCi/l		15-Nov-90
14295	BH20837WC	BH	0.0 - 3.5	Uranium-233/234	19.28 pCi/g		15-May-95
22393	GW02407GA	GW		Uranium-233/234	8.8591 pCi/l		16-May-95
14295	BH20837WC	BH	0.0 - 3.5	Uranium-235	1.535 pCi/g		15-May-95
1791	GW01753GA	GW		Uranium-235	0.8015 pCi/l		17-Nov-94
14295	BH20837WC	BH	0.0 - 3.5	Uranium-238	101.1 pCi/g		15-May-95
1791	GW0287IT	GW		Uranium-238	4.087 pCi/l		14-May-92

* Location Code - See Figure 1-1 for location of sample points

** Lab Qualifier

B - Detected concentration was less than contact required detection limits (CRDL) and above instrument detection limits (IDL), or activity exceeded minimal detectable activity

D - Organics analysis performed at a dilution

J - Positively identified below Sample Quantitation Limits (SQL) - result is estimated

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TABLE 1.2-2 MAXIMUM CONCENTRATIONS OF CHEMICALS OF CONCERN DETECTS FOR GROUNDWATER AND SUBSURFACE SOILS NEAR IHSS108 (TRENCH T-1)

*LOCATION CODE	SAMPLE NUMBER	SAMPLE TYPE	DEPTH (Ft)	ANALYTE	RESULT	**LAB QUAL	SAMPLE DATE
4386	43-86-03-11-87	GW		Carbon Tetrachloride	6 µg/l		11-Mar-87
2387	23-87-02-07-89	GW		Chloroform	2 µg/l	J	7-Feb-89
1891	BH00126WCU2	BH	13.2 - 13.4	Methylene chloride	30 µg/kg	B	13-Nov-91
12091	GW02876IT	GW		Methylene chloride	16 µg/l	B	13-May-92
2387	23-87-05-03-89	GW		Tetrachloroethene	74 µg/l		3-May-89
4386	43-86-03-11-87	GW		Trichloroethene	8 µg/l		11-Mar-87
3587	BH358718BR	BH	18.4 - 19.5	Arsenic	14 mg/kg		28-Jul-87
12091	GW02876IT	GW		Arsenic	2.1 µg/l	BN	13-May-92
3587	BH358718BR	BH	18.4 - 19.5	Cadmium	3.3 mg/kg		28-Jul-87
2387	GW02032IT	GW		Cadmium	2.6 µg/l		23-Nov-91
2387	GW03256IT	GW		Mercury	0.33 µg/l		30-Jul-92
12091	GW02638GA	GW		Nitrate	5,190 µg/l		31-May-95
12091	GW02514IT	GW		Americium-241	1.09 pCi/l		27-Feb-92
3587	BH35870012	BH	0.0 - 12.3	Americium-241	0.4 pCi/g		27-Jul-87
12091	GW02116IT	GW		Plutonium-239/240	0.012 pCi/l		19-Dec-91
4386	GW01670IT	GW		Uranium-233/234	9.858 pCi/l		20-Aug-91
3587	BH358718BR	BH	18.4 - 19.5	Uranium-233/234	0.97 pCi/g		28-Jul-87
1891	GW01281GA	GW		Uranium-235	0.579 pCi/l		25-Aug-94
4386	GW01670IT	GW		Uranium-238	7.629 pCi/l		20-Aug-91
3587	BH358718BR	BH	18.4 - 19.5	Uranium-238	0.91 pCi/g		28-Jul-87

* Location Code - See Figure 1-1 for location of sample points
** Lab Qualifier
B - Detected concentration was less than CRDL and above IDL, or activity exceeded minimal detectable activity
J - Positively identified below SQL - result is estimated
N - Metals spike recoveries in the matrix spike sample did not meet advisory limits

TABLE 1.2-3 MAXIMUM CONCENTRATIONS OF CHEMICALS OF CONCERN DETECTS FOR GROUNDWATER AND SUBSURFACE SOILS NEAR IHSS112 (903 PAD)

*LOCATION CODE	SAMPLE NUMBER	SAMPLE TYPE	DEPTH (Ft)	ANALYTE	RESULT	**LAB QUAL	SAMPLE DATE
6691	GW03428IT	GW		1,1-Dichloroethene	150 µg/l	E	28-Aug-92
6591	BH01256WCU2	BH	21.1 - 21.3	1,1-Dichloroethene	3 µg/kg	J	3-Mar-92
6691	GW00384WC	GW		Carbon Tetrachloride	58,000 µg/l	E	19-Mar-93
6591	BH01256WCU2	BH	21.1 - 21.3	Carbon Tetrachloride	330 µg/kg	E	3-Mar-92
6691	GW00384WC	GW		Chloroform	64,000 µg/l	E	19-Mar-93
6591	BH01256WCU2	BH	21.1 - 21.3	Chloroform	240 µg/kg	E	3-Mar-92
6691	GW03848IT	GW		Methylene chloride	25,000 µg/l	E	17-Nov-92
6591	BH01264WCU2	BH	43.5 - 43.7	Methylene chloride	66 µg/kg	B	3-Mar-92
8891	GW01764GA	GW		Tetrachloroethene	20,000 µg/l		28-Nov-94
8891	BH00954WCU2	BH	22.4 - 22.6	Tetrachloroethene	110 µg/kg		3-Mar-92
8891	GW00385WC	GW		Trichloroethene	4,600 µg/l	E	12-Mar-93
8891	BH00954WCU2	BH	22.4 - 22.6	Trichloroethene	27 µg/kg		3-Mar-92
6691	GW03428IT	GW		Vinyl chloride	40 µg/l	E	28-Aug-92
8991	BH00752WCU2	BH	28.0 - 32.0	Arsenic	9.8 mg/kg	B	11-Mar-92
8891	GW03065IT	GW		Cadmium	21.7 µg/l		23-Jun-92
9091	GW02903IT	GW		Mercury	0.95 µg/l		20-May-92
8891	GW02647GA	GW		Nitrate	32,200 µg/l		19-Jun-95
9091	GW03432IT	GW		Americium-241	30.03 pCi/l		31-Aug-92
6691	BH00518WCU2	BH	2.0 - 8.0	Americium-241	7.2 pCi/g		25-Feb-92
9091	GW00388WC	GW		Plutonium-239/240	218.4 pCi/l		19-Mar-93
6691	BH00518WCU2	BH	2.0 - 8.0	Plutonium-239/240	68.0 pCi/g		25-Feb-92
8891	GW01247WC	GW		Uranium-233/234	18.7 pCi/l		10-Sep-93
6591	BH01268WCU2	BH	44.0 - 50.0	Uranium-233/234	1.4 pCi/g		4-Mar-92
8891	GW03849IT	GW		Uranium-235	1 pCi/l		17-Nov-92
6991	BH00706WCU2	BH	14.0 - 20.0	Uranium-235	0.118 pCi/g		26-Feb-92
8891	GW01247WC	GW		Uranium-238	38.6 pCi/l		10-Sep-93
8891	BH00550WCU2	BH	2.0 - 8.0	Uranium-238	2.1 pCi/g	B	3-Mar-92

* Location Code - See Figure 1-1 for location of sample points
** Lab Qualifier
B - Detected concentration was less than CRDL and above IDL, or activity exceeded minimal detectable activity
E - Exceeds calibration range of instrument, or value is estimated due to interference
J - Positively identified below SQL - result is estimated

Table 1.2-4 lists the proposed RFETS Action Levels for the VOC Chemicals of Concern within OU 2. These Action Levels will provide a basis for accelerated source removal actions within the Mound Site, Trench T-1, and the 903 Pad.

TABLE 1.2-4 RFETS ACTION LEVELS [1]

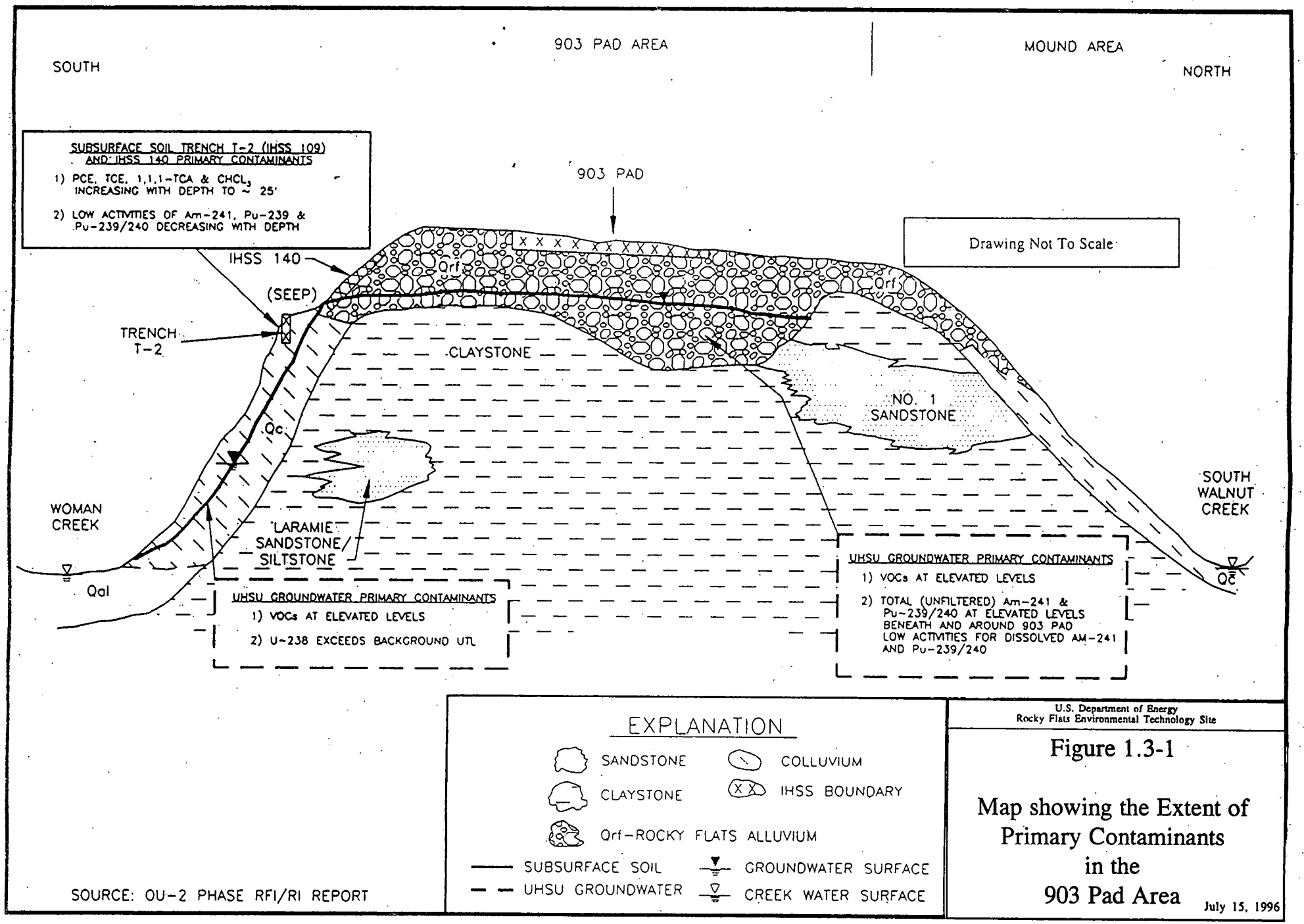
Chemical of Concern	Action Levels (mg/kg)
Trichloroethene (TCE)	9.27
Tetrachloroethene (PCE)	11.5
Carbon Tetrachloride (CCl4)	11.0
Total Petroleum Hydrocarbons (TPH), fuel constituents (benzene)	8.08

[1] Action Levels and Standards Framework for Subsurface Soils as established in Attachment 5 of the Draft Rocky Flats Cleanup Agreement (March 14, 1996).

1.3 Conceptual Site Model

The surficial geology in this area consists of Quaternary alluvium and colluvium, along with artificial fill, soil and debris deposits, and disturbed soil. The surficial deposits overlie bedrock consisting of weathered claystone and minor bedrock sandstones of Cretaceous Arapahoe and Laramie Formations. Surficial deposits consist of sandy clay and clayey gravel.

The primary contaminant sources are located at the 903 Pad, Mound and East Trenches areas. Potential release mechanisms from contaminated soil to the environment include storm water runoff, volatilization, wind suspension, infiltration and percolation to groundwater, direct contact, root uptake, and radioactive decay. Transport media include groundwater, surface water, soil gas, and air. These release and transport mechanisms and affected media are illustrated in the Conceptual Site Model (CSM) presented in Appendix B, Figure 10.1 Conceptual Site Model for Human Exposure Pathways. Primary subsurface soil contaminants and Upper Hydrostratigraphic Unit (UHSU) groundwater contaminants for each IHSS are shown on Figures 1.3-1 and 1.3-2.



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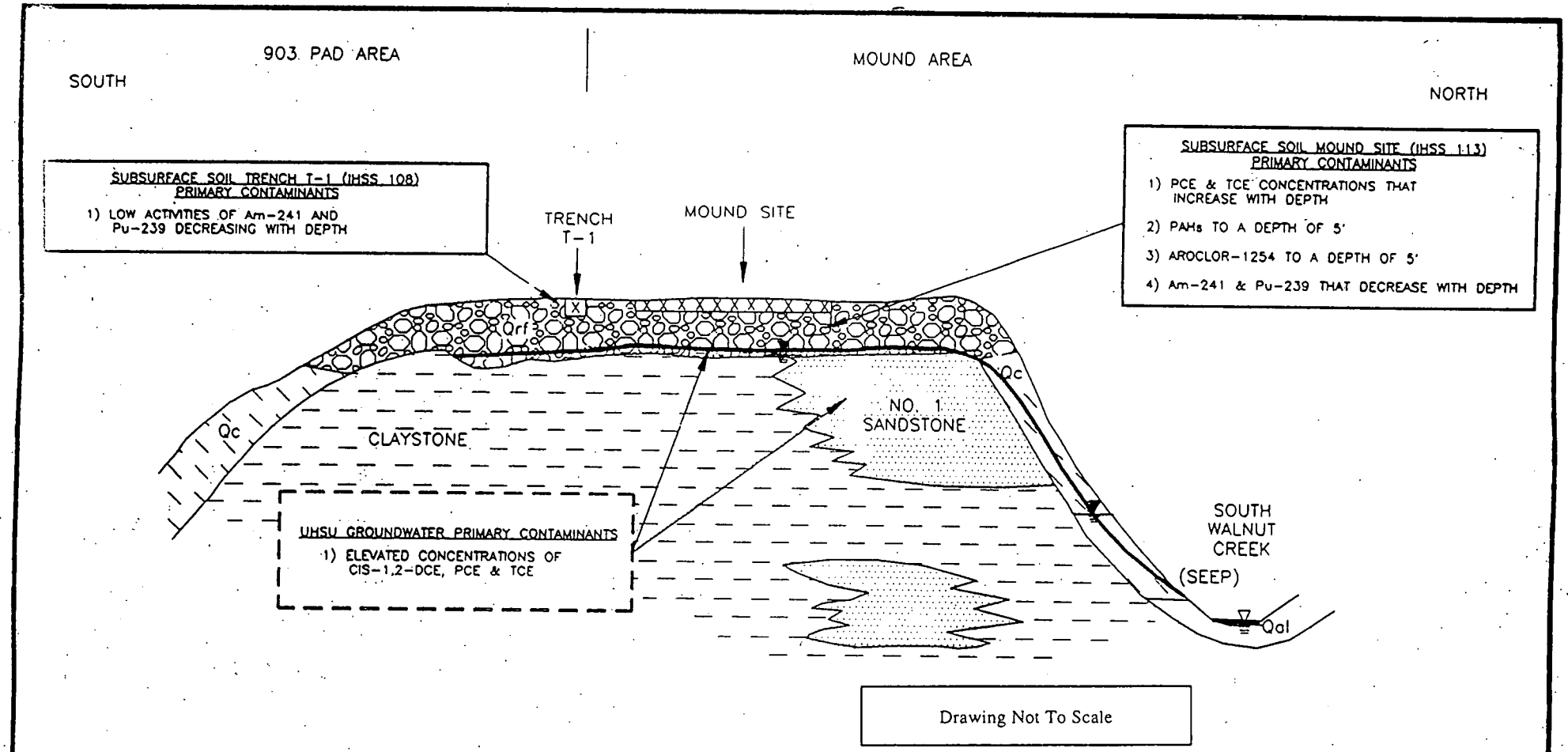
Rocky Flats Environmental Technology Site

Figure 1.3-1

Map showing the Extent of Primary Contaminants in the 903 Pad Area

July 15, 1996



EXPLANATION

- SANDSTONE
- COLLUVIUM
- CLAYSTONE
- IHSS BOUNDARY
- Orf-ROCKY FLATS ALLUVIUM
- SUBSURFACE SOIL
- GROUNDWATER SURFACE
- UHSU GROUNDWATER
- CREEK WATER SURFACE

SOURCE: OU-2 PHASE RFI/RI REPORT

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Figure 1.3-2

Map showing the Extent of Primary Contaminants in the Mound Area

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2. SAMPLING AND DATA QUALITY OBJECTIVES

The primary objective of this SAP is to support the selection of remediation alternatives and accelerated source removal activities currently being planned for the Mound Site, Trench T-1, and the 903 Pad. The data collected under this SAP will characterize contaminants contained within Trench T-1 as well as identify and delineate contaminated soil within the Mound Site, Trench T-1 and the 903 Pad. Identifying and delineating the areal extent of the contamination will allow for a determination of the excavation areas and the volume of contaminated media to be treated, mitigating the impact to the environment and costs associated with the selected remediation alternatives.

2.1 Data Quality Objectives

Data quality objectives (DQO) are set forth to optimize sample collection with respect to accomplishing the ultimate remediation objectives. The DQO methodology will ensure collection of as few samples as possible (to minimize cost), while collecting enough samples to determine with a stated level of scientific confidence whether the project objectives have been accomplished. The method is consistent with the latest EPA guidance (EPA, 1994, "EOA QA/G-4"). For this project, the DQO is to acquire adequate data to characterize the contaminants within Trench T-1, and approximately define the three-dimensional extent of VOC contaminated soils exceeding the RFETS Action Levels for subsurface soils within the Mound and the 903 Pad, for the ultimate purpose of excavation and treatment.

The tentative plan for excavation, removal and remediation of the contaminated soil is to use the sampling data results to identify and extend the remediation excavation past the contaminated sampling points into clean soil.

Given the spacing strategy, of a 20 foot grid, there is a ninety-five percent confidence of detecting contamianted soils within a 23 foot diameter or an ellipse with 36 foot and 18 foot axis (Figure 10.3, Gilbert, 1987).

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DQO	How Achieved
Acquire adequate analytical data to characterize the contaminants within Trench T-1.	Collect subsurface soil samples from eight borehole locations within Trench T-1. Continually monitor and examine core for high VOCs, Rads, NAPL, and visible staining. Collect samples at five and ten foot depths and if NAPL or visible staining is found, analyze for VOCs, SVOCs, Radionuclides, Metals, and TPH using Level III analytical methods.
Define the areal extent of contaminated soils at the Mound Site to sufficiently support planning of remedial activities.	Perform Soil Gas Surveys within and surrounding the Mound Site. Continually monitor and examine core for high VOCs, Rads, NAPL, and visible staining. Collect soil gas samples at five foot intervals. Monitor soil gas for total VOCs using a GC. Collect 2 soil samples (1 within an area of high VOCs or if NAPL or visible staining is found) for laboratory analysis to confirm field observations.
Define the areal extent of contaminated soils at the 903 Pad to sufficiently support planning of remedial activities.	Perform Soil Gas Surveys within and surrounding the 903 Pad. Continually monitor and examine core for high VOCs, Rads, NAPL, and visible staining. Collect soil gas samples at five foot intervals. Monitor soil gas for total VOCs using a GC. Collect 10 % of samples within areas of high VOCs or if NAPL or visible staining is found for laboratory analysis to confirm field observations.

2.2 Historical Data Summary

Subsurface soil samples and soil gas samples have been collected at the Mound Site during earlier investigations. The existing data confirms the presence of VOC and radionuclide concentrations within the IHSS which are above cleanup levels. However, available data is not adequate for determining the lateral or vertical extent of contamination above the cleanup levels. Additional data is necessary to determine the volume of contaminated material to be excavated and treated.

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Previous investigations in Trench T-1 avoided the interior of the trench. Therefore the available data is not suitable for characterizing suspected VOC and radiological contaminants. The current data confirms that there are low levels of contamination in the vicinity of Trench T-1. However, since there are no samples from within this trench, it is not clear if this contamination is due to Trench T-1, or is related to other nearby IHSSs. Samples from within the trench are necessary to determine the radiological and VOC contaminants present. This information is crucial in determining the final disposition of the trench and selecting a remediation method.

Previous investigations and existing groundwater wells in the 903 Pad area confirm the presence of a VOC plume emanating from this area. General knowledge of the releases and types of contaminants is available, but specific data necessary to determine the concentrations and extent of VOC contamination beneath the asphalt cap and soil is not available. Previous investigations were broad in scope and were not focused on locating subsurface source areas, or provide sufficient information to develop an accurate volume estimate of contaminated soil.

2.3 Data Analytical Levels

The level of analytical data appropriate for this investigation is as follows:

- Laboratory analysis of VOCs in subsurface samples will be performed in accordance with Level III analytical procedures and reporting requirements.
- Laboratory analysis of NAPLs, if performed, will be in accordance with Level III analytical procedures and reporting requirements.
- Laboratory analysis of soil gas samples will be conducted using gas chromatography (GC) methods in accordance with Level II analytical requirements.
- Analytical results will be compared with field screening results as a check for field instrument accuracy.

3. SAMPLE COLLECTION AND ANALYSES

In order to ensure adequate data is collected to characterize Trench T-1 and derive the necessary volume estimates of contaminated soil at the Mound Site, Trench T-1 and the 903 Pad a combination of soil gas and subsurface soil samples will be collected.

3.1 Sampling and Analyses

All boreholes will be drilled with a hydraulic push drill rig one to two feet into bedrock or to a sufficient depth to confirm weathered bedrock. Depths are estimated to be between fifteen and twenty feet below ground surface. The exception to this will be boreholes located within Trench T-1. Boreholes within the trench will extend only to the trench bottom which is estimated to be between nine and ten feet below ground surface. This will mitigate the possibility of creating new or additional pathways for contaminant migration from the trench to groundwater.

Core samples will be collected continuously in five foot intervals from the surface to approximately two feet into bedrock or the bottom of the trench. Five foot long core runs will be pushed using a hydraulic sampling tool (Geoprobe). Sampling intervals are detailed in sections 3.2.1, 3.2.2 and 3.2.3. Core samples will first be subjected to radiological field screening, then inspected visually under natural light for signs of NAPLs or staining, visually logged by the field geologist, and finally screened for VOCs as detailed below.

Subsurface soil samples will be collected for laboratory analysis to characterize contaminants within Trench T-1 and to verify results of soil gas analyses. Soil samples will be handled in accordance with Rocky Flats SOPs:

- FO.10, Receiving, Labeling, and Handling Environmental Material Containers, and

- FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples. Depths of sampling may be altered if the field screening or visual inspection indicates the presence of contamination at depths other than those specified in sections 3.2.1, 3.2.2 and 3.2.3.

All laboratory work will be done according to the US Environmental Protection Agency's (USEPA's) Contract Lab Program (CLP) standards. The CLP-type analysis is outlined in the document entitled "EG&G Rocky Flats, General Radiochemistry and Routine Analytical Service Protocol (GRRASP) version 3.0, 1994."

Field conditions expected during the investigation:

- Background levels of radionuclides are expected to be encountered, during most operations but soil cores will be field screened upon retrieval. At the 903 Pad higher levels are expected and no activities will be conducted prior to a full radiological screening of the soil gas monitoring locations. Continuous radiological monitoring will occur during intrusive activities.

- Field work will be performed primarily in modified-Level D Personal Protective Equipment (PPE), except where otherwise indicated by the HASP.
- Soil core sampling will be performed in compliance with the Health and Safety Plan if high VOC readings occur during monitoring.

3.2 Soil Boring Locations

3.2.1 Trench T-1

Eight geoprobe soil borings will be located within Trench T-1 near areas believed to contain buried drums located during electromagnetic surveys. These areas were identified during the 1995 Trenches Area and Mound Site Characterization activities by electromagnetic surveys. Boreholes will be located close to the areas believed to contain drums, but far enough away to avoid inadvertently puncturing any drums. Prior to intrusive activities, the proposed areas will be cleared using magnetometer surveys. Figure 3.2.1-1 shows the location of Trench T-1 and the proposed borehole locations based upon the results of the electromagnetic survey. These locations may be modified pending the results of magnetometer surveys prior to drilling. Depth of borings will not exceed 10 feet in Trench T-1 to avoid penetrating the bottom of the trench and creating a potential pathway for contaminant migration. Soil samples will be collected at depths of five and ten feet intervals below ground surface (BGS) unless examination of the core indicates staining or the presence of NAPL is detected. In these instances, samples will be collected from the appropriate segments of the core sample.

3.2.2 Mound Site

Geoprobe borings for soil gas and subsurface soils at the Mound will be located in the area of previously detected high soil gas readings, per the diagram in Figure 3.2.2-1. These locations are based upon previous sampling activities and will concentrate around the area of borehole 14295 which exhibited the highest levels of VOCs found at the Mound Site. Soil gas sample locations will be located twenty feet to the north, south, east and west of location BH14295. Samples will be collected at five feet intervals BGS to a depth of one or two feet below bedrock. If total VOCs are detected above ten ppm, then the sampling grid will be extended an additional twenty feet to the north, south, east, and west of that location and additional samples will be taken.

If NAPL is encountered, the step out will be reduced to 10 feet. This process will continue until the area of contamination above 10 PPM is defined. Soil samples (approximately 10%) will be collected from the areas of the highest Total VOC concentrations as confirmation samples. Geoprobe locations will be modified in

the field on the basis of the field results as obtained (i.e. if areas of high VOC contamination are found, additional locations for soil gas sampling may be required to further delineate the extent of contamination).

3.2.3 903 Pad

Geoprobe soil gas and subsurface soil sampling at the 903 Pad will be implemented near wells 08891, 06691, and 09091 using the same sampling grid as the Mound Site. Geoprobe holes will be located 20 feet apart per Figure 3.2.3-1. Soil gas sample locations will be spotted twenty feet to the north, south, east and west of locations 08891, 06691, and 09091. Samples will be collected at five feet intervals BGS to a depth of one or two feet below bedrock. If total VOCs are detected above ten ppm, then the sampling grid will be extended an additional twenty feet to the north, south, east, and west of that location and additional samples will be taken.

If NAPL is encountered, the step out will be reduced to 10 feet. This process will continue until the area of contamination above 10 PPM is defined. Soil samples (approximately 10%) will be collected from the areas of the highest Total VOC concentrations as confirmation samples. Geoprobe locations will be modified in the field on the basis of the field results as obtained (i.e. if areas of high VOC contamination are found, additional locations for soil gas sampling may be required to further delineate the extent of contamination).

Table 3.2-1 presents a summary of the investigative methods to be used at each site.

TABLE 3.2-1 INVESTIGATIVE METHODOLOGY BY LOCATION

Location	Method
Trench T-1 IHSS 108	Geoprobe soil core sampling (8 subsurface soil sampling locations with samples collected at 5 and ten foot intervals BGS), and geophysical (magnetometer) survey to clear the area prior to any intrusive activities to ensure buried drums will not be punctured during soil sampling activities.
Mound Site IHSS 113	Geoprobe soil core sampling (2 locations with samples collected at five foot intervals BGS based upon field observations and detected areas of high total VOC concentrations), and soil gas sampling (approximately 15 sampling locations with samples collected at five foot intervals BGS to bedrock) along a twenty foot sampling grid based around location BH14295
903 Pad IHSS 112	Soil gas (approximately 30 sampling locations with samples collected at five foot intervals BGS to bedrock) along a twenty foot sampling grid based around locations 08891, 06691 and 09091, and soil core [1] sampling (four minimum locations with samples collected at five foot intervals BGS based upon field observations and detected areas of high total VOC concentrations).

[1]Approximately three samples per borehole, dependent on soil gas results with a minimum of four locations at the discretion of the field geologist.

This SAP will be conducted under the Environmental Restoration (ER) Sitewide Quality Assurance Project Plan (QAPjP). Table 3.2-2 summarizes the analytical protocols for subsurface soils and soil gas analyses. Table 3.2-3 summarizes the analytical protocols to be used for liquids.

TABLE 3.2-2 ANALYTICAL PROTOCOLS FOR SOILS AND SOIL GAS

Soils and Soil Gas Analysis				
Analysis Method	***No. of Samples**	**QC Samples**	**Total Samples**	**Container/ Preservatives/ Holding Time**
Soils				
Volatile Organics/TCL-VOA Modified Method 8210	60	1 duplicate per 20	63	4 oz.glass w/Teflon liner/4°C/ 7 days
		1 field blank	1	4 oz. glass w/ Teflon liner/4°C/ 7 days
Radionuclides/ Am241, Pu239/240, U, Alpha Spec.	64	1 duplicate per 20	67	500 ml glass jars/NA/61 days
		1 field blank	1	500 ml glass jars/NA/61 days
Soil Gas Analysis				
GC [1]	90	9 duplicates	99	500 ml glass jars /NA/14

* The number of samples collected will be determined by field observations and by results from field instrumentation.

[1] The same methodology that was used for volatile screening on the remediation of Trench T 3/4 will be used in this investigation. The procedures from which this method was derived are described in detail in SW-846 Methods 8240 and 8260, and the CLP SOW. Due to the rapid time constraints for screening samples, laboratory control samples and full CLP data packages are not required for this project. Data Quality Objectives allow samples to be analyzed at levels comparable to the action levels required for this project. Low detection limits are not required for this project, and would prohibit the rapid analysis required to carry out the program.

TABLE 3.2-3 ANALYTICAL PROTOCOLS FOR LIQUIDS

Liquids Analysis				
Analyte Method	***Samples**	**QC Samples**	**Total Samples**	**Containers/ Preservative/ Holding Time**
Groundwater	(if present)			
Volatile Organics/TCL-VOA Modified Method 8210	3	1 duplicate	4	2-40 ml VOA vials/ 4°C/7 days
		1 rinsate	1	2-40 ml VOA vials/ 4°C/7 days
		1 trip blank per cooler		2-40 ml VOA vials/ 4°C/7 days (containers filled by laboratory)
Pu239/240 Am241 U Alpha Spec.	3	1 duplicate	4	1 gal. poly//HNO_3/61 days
		1 rinsate		1 gal poly/HNO_3/61 days
NAPL	(if present)			
Volatile Organics/TCL-VOA Modified Method 8210	3	1 duplicate	4	2-40 ml VOA vials/ /4°C/7 days
		1 rinsate		4 oz glass w/ Teflon liner/4°C/7 days
Pu239/240 Am241 U Alpha Spec.	3	1 duplicate	4	1 gal poly/HNO_3/61 days

* The number of samples collected will be determined by field observations made by the geologist and by results from field instrumentation.

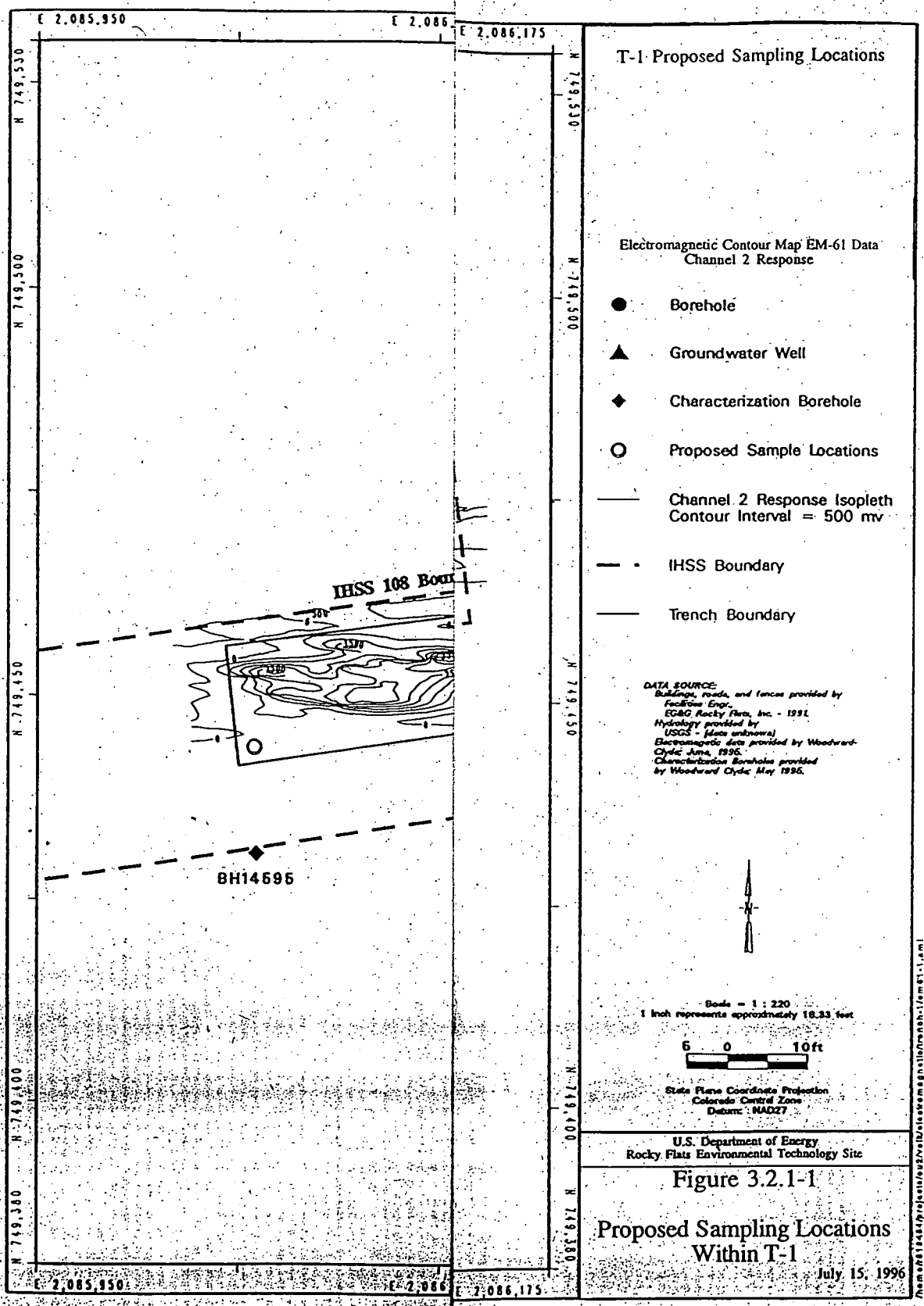

Figure 3.2.1-1

Proposed Sampling Locations Within T-1

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3.3 Soil Boring Surveying and Abandonment

The borings will be marked with unique numbered flags immediately after completion. The numbering on the flags will be correlated with the sample analyses. Boring locations will be surveyed using the Global Positioning System (GPS) which provides digital information that will be placed into the Rocky Flats Environmental Database System (RFEDS). The digital information will be used to produce computer generated maps of the soil boring locations. The GPS survey will be conducted in accordance with the manuals provided by the manufacturer of the surveying equipment, Ashtech, Inc.

The borings will be abandoned in accordance with procedure Plugging and Abandonment of Boreholes (5-21000-ER-OPS-GT.05) and modified as follows: The borehole will be backfilled with powdered or granular bentonite from ground surface.

4. SAMPLE DESIGNATION

The location and depth interval of all subsurface materials, either solid or liquid recovered from the Mound Site, Trench T-1, or the 903 Pad during the course of this investigation will be recorded in the field log book. RFEDS location codes will be cross indexed to appropriate sample grid location designations in the field log book. Soil core and other material that is subject to only field screening will be identified by the sample location code and grid coordinates and depth interval where the sample is obtained. Samples undergoing VOC or radioisotope analysis will have RFEDS sample numbers applied to the container labels in the field. The numbers will be applied sequentially as the samples are collected and the chain-of-custody (COC) form is prepared. A block of sample numbers for soil gas samples and borehole samples as well as a block of location codes will be obtained from the RFEDS. A block of location codes and sample numbers will be of sufficient size to include the entire number of possible locations and samples scheduled for analysis and an additional twenty percent for potential additional locations and samples.

Soil gas sample numbers will be assigned the prefix "SG" followed by a four digit number and a contractor indicator. Borehole samples will be assigned the prefix "BH" followed by a four digit number and a contractor indicator. All samples numbers will be assigned sequentially.

5. SAMPLING EQUIPMENT AND PROCEDURES

Sampling will be conducted through the use of the Geoprobe, equipped for core recovery and liquid sampling. The core recovery equipment will be operated in

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accordance with procedures presented in GT.02, subsection 5.3.5 and as modified by GT.39, Push Subsurface Soil Sample. If free product is encountered in any of the boreholes, an attempt will be made to collect a liquid sample and submit it for analysis.

Tables 5-1 and 5-2 list the applicable procedures for this SAP.

TABLE 5-1 FIELD AND ADMINISTRATIVE STANDARD OPERATING PROCEDURES

IDENTIFICATION NUMBER:	PROCEDURE TITLE:
5-21000-OPS-FO.3	General Equipment Decontamination
5-21000-OPS-FO.6	Handling of Personal Protective Equipment
5-21000-OPS-FO.7	Handling of Decontaminated Water and Waste Water
5-21000-OPS-FO.10	Receiving, Labeling, and Handling Environmental Materials Containers
5-21000-OPS-FO.11	Field Communications
5-21000-OPS-FO.12	Decontamination Facility Operations
5-21000-OPS-FO.13	Containerization, Preserving, Handling, and Shipping of Soil and Water Samples
5-21000-OPS-FO.14	Field Data Management
5-21000-OPS-FO.15	Photoionization Detectors and Flame Ionization Detectors
5-21000-OPS-FO.16	Field Radiological Measurements
5-21000-OPS-FO.18	Environmental Sample Radioactivity Content Screening
4-B11-ER-OPS-FO.25	Shipping Limited Quantities of Radioactive Materials in Samples
5-21000-ER-OPS-GT.01	Logging Alluvial and Bedrock Material
5-21000-ER-OPS-GT.02	Drilling and Sampling Using Hollow Stem Auger Techniques
5-21000-ER-OPS-GT.05	Plugging and Abandonment Boreholes
5-21000-ER-OPS-GT.09	Soil Gas Sampling and Field Analysis
4-S64-ER-OPS-GT.39	Push Subsurface Soil Sample
5-21000-ER-OPS-GW.06	Groundwater Sampling
1-50000-ADM-12.01	Control of Measuring and Test Equipment

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TABLE 5-2 LABORATORY STANDARD OPERATING PROCEDURES

ANALYTICAL SUITE:	CONTROLLING DOCUMENTS:
VOCs	Title 40 of the Codes of Federal Regulation Part 264 Appendix IX. Methods 8210 (modified) and others applicable to TCL-VOA in soils. All laboratory analyses will also adhere to protocols specified in Parts A and B of the RFETS General Radiochemistry and Routine Analytical Services Protocol (GRRASP).
Radionuclides	Part B of the GRRASP

A field notebook will be created and maintained for the project by the Project Manager or their designee. This will be used in conjunction with the appropriate field data forms required by the operating procedures (Table 5-1) governing the field activities occurring during this project. It is not necessary to duplicate items recorded on field data forms in the field notebook, but if additional clarification of entries on the forms is required, they should be recorded in the field notebook. The field notebook should include time and date information concerning the field activities and a sketch map of actual sample locations with a cross index of sample location IDs, RFEDS and other sample numbers, and COC numbers. Information not specifically required by the field data forms should be recorded in the field notebook. Soil cores will be logged in accordance with GT.01, "Logging Alluvial and Bedrock Material" with sufficient detail in the field that detailed logging will not be performed. Soil core observations will be recorded on Form GT.1A, Rocky Flats Plant Borehole Log and not on Form GT.1B, Preliminary Well-Site Field Log. Soil core will be screened for VOCs and radioactive contaminants, a portion or portions from different intervals of the same core run will be used for ambient temperature headspace (ATH) readings per GT.09, and the remaining sections of core will be placed into Ziploc bags before placement in a core box for future reference. Samples for ATH will be labeled with location code and depth interval. Soil samples will not have to be photographed.

6. PROJECT ORGANIZATION

For the purpose of this investigation the work breakdown structure shown in Figure 6-1 shall be implemented.

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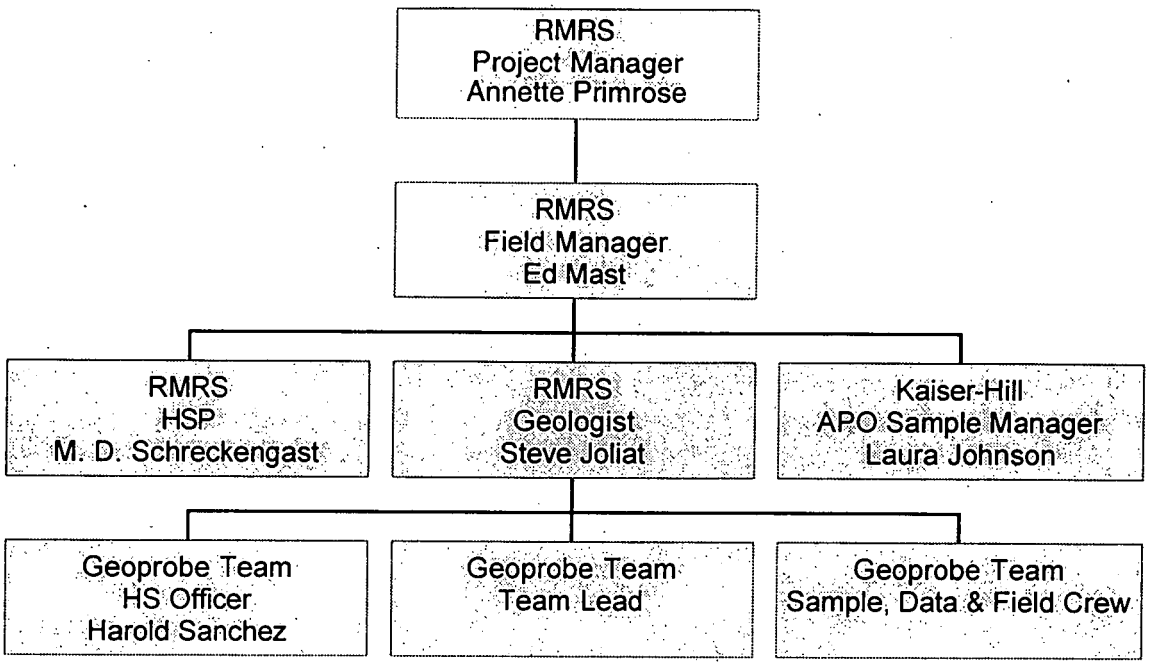
FIGURE 6-1 - PROJECT ORGANIZATION CHART



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7. DATA MANAGEMENT and QUALITY CONTROL

Data shall be acquired, manually or automatically, as specified in this SAP; data forms provided in the standard operating procedure F0.14, "Data Management" may be used for this purpose.

The minimum parameters that must be documented include:

The originator shall authenticate (legibly sign and date) each resulting, completed hardcopy of the data acquired above.

A peer reviewer, someone other than the originator, shall perform a peer review on each hardcopy of data.

The Peer Reviewer shall authenticate (legibly sign and date) each resulting hardcopy completed by the originator. Any modifications shall be lined through, initialed, and dated by the reviewer (in ink).

Data planned for computerized reduction and analysis shall be uploaded on a personal computer using commercially available software. Hardware and software specifications shall be documented in the project files and communicated in the final report.

Following data entry (uploading), a hardcopy of the uploaded data shall be printed and compared with the original quality record. Any modifications shall be lined through, initialed, and dated by the reviewer, and subsequently corrected on the computer. Ensure that hardcopies also display the following information (typically) as titles, subtitles, headers, or footers, etc.) in addition to all data contained within the digital file: eneric title describing the data; filename; and, date.

File the corrected hardcopies of uploaded data as Quality Records in the project files.

Digital data shall be backed-up weekly and filed in a structurally separate location (than the master files).

Within two weeks of final data acquisition or six months of project completion, whichever is sooner, submit originals and one copy of all quality records (i.e., hardcopies and digital files) to the RMRS Records Center (note: digital files must be labeled with indelible ink, and communicate at least the following information: file name(s), hardware, and software platforms).

8. REFERENCES

DOE 1991, *Final Phase II RFI/RI Work Plan TM 1, RFP 903 Pad, Mound and East Trenches Areas*

DOE 1992, *Final Historical Release Report for the Rocky Flats Plant*

DOE 1994, Technical Memorandum No. 9 Chemicals of Concern, Human Health Risk Assessment 903 Pad, Mound, and East Trenches Areas Operable Unit No. 2, August 1994

DOE 1995, *Phase II RFI/RI Report for Operable Unit No. 2 903 Pad, Mound, and East Trenches Area,* RF/ER-95-0079.UN.

EPA, 1994, "EOA QA/G-4, *Guidance for Planning for Data Collection in Support of Environmental Decision Making Using the Data Quality Objectives Process."*

Action Levels and Standards Framework for Surface Water Soils, Ground Water, and Attachment 5 of the Draft Rocky Flats Cleanup Agreement (March 14, 1996)

Gilbert, R. O., 1987, Statistical Methods for Environmental Pollution Monitoring, Van Nostrand Reinhold

FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

"MY OLD LAB WAS CLUTTERED WITH TEST TUBES, BOTTLES, FLASKS, PAPER ... LORD, HOW I MISS IT."

DATE: 8/26/96

TO: Ed Most FAX NUMBER: x2623

RMRS PHONE NUMBER: NA

FROM: John Pestovich FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER: 0584

NUMBER OF PAGES INCLUDING COVER SHEET 8

COMMENTS:

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG26MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/26/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	480.	U
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21015RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2601

Level: (low/med) MED Date Received: 08/21/96

% Moisture: not dec. 0. Date Analyzed: 08/26/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	500.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21016RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2602

Level: (low/med) MED Date Received: 08/22/96

% Moisture: not dec. 0. Date Analyzed: 08/26/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	600.	J
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	1200.	U
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21017RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2603

Level: (low/med) MED Date Received: 08/22/96

% Moisture: not dec. 0. Date Analyzed: 08/26/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	270.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

JB

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21018RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2604

Level: (low/med) MED Date Received: 08/22/96

% Moisture: not dec. 0. Date Analyzed: 08/26/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	270.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21019RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2606

Level: (low/med) MED Date Received: 08/22/96

% Moisture: not dec. 0. Date Analyzed: 08/26/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	240.	J
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	390.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

50

FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

DATE: 8/30/96

TO: Ed Mast FAX NUMBER: 2623

RMRS PHONE NUMBER:

FROM: Kerry Grant FAX NUMBER: 303-966-4365
D5182
881 Analytical Lab PHONE NUMBER:

NUMBER OF PAGES INCLUDING COVER SHEET ____

COMMENTS:

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG29MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/29/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	110.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21020RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2901

Level: (low/med) MED Date Received: 08/26/96

% Moisture: not dec. 0. Date Analyzed: 08/29/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	230.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	1200.	U
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21023RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2904

Level: (low/med) MED Date Received: 08/26/96

% Moisture: not dec. 0. Date Analyzed: 08/29/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	1200.	U
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21024RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2905

Level: (low/med) MED Date Received: 08/27/96

% Moisture: not dec. 0. Date Analyzed: 08/29/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	190.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	240.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

55

FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

"MY OLD LAB WAS CLUTTERED WITH TEST TUBES, BOTTLES, FLASKS, PAPER ... LOOD, HOW I MISS IT."

DATE: 8/30/96

TO: Ed. Most FAX NUMBER: x 2623

RMRS PHONE NUMBER: NA

FROM: J. Pestovich FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER: D5184

NUMBER OF PAGES INCLUDING COVER SHEET 5

COMMENTS:

56

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG30MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/30/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	180.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	250.	J
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21022RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG3006

Level: (low/med) MED Date Received: 08/26/96

% Moisture: not dec. 0. Date Analyzed: 08/30/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	730.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	310.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21021RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG3007

Level: (low/med) MED Date Received: 08/26/96

% Moisture: not dec. 0. Date Analyzed: 08/30/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	610.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	360.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

"MY OLD LAB WAS CLUTTERED WITH TEST TUBES, BOTTLES, FLASKS, PAPER ... LORD, HOW I MISS IT."

DATE: 9/12/96

TO: Steve Jolit FAX NUMBER: X7193

PHONE NUMBER:

FROM: Kerry Grant FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER: 2398

NUMBER OF PAGES INCLUDING COVER SHEET 9

COMMENTS: All samples were extracted on 9/3. Sample extracts are good for 40 days. Data is valid.

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: SEP09MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 09/09/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	280.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21025RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP0901

Level: (low/med) MED Date Received: 08/28/96

% Moisture: not dec. 0. Date Analyzed: 09/09/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	250.	J
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	180.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	600.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21025RM-DUP

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP0902

Level: (low/med) MED Date Received: 08/28/96

% Moisture: not dec. 0. Date Analyzed: 09/09/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	230.	J
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	290.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	420.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21026RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP0903

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/09/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	150.	J
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	250.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	350.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	170.	J
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21027RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP0904

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/09/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	220.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	300.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21028RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP0905

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/09/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	400.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	320.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	120000.	E
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21030RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP0907

Level: (low/med) MED Date Received: 08/30/96

% Moisture: not dec. 0. Date Analyzed: 09/09/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	210.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	310.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	120000.	E
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21030RM-DUP

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP0908

Level: (low/med) MED Date Received: 08/30/96

% Moisture: not dec. 0. Date Analyzed: 09/09/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	320.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	70000.	E
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21029RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP1001

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/10/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	220.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	580.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	140000.	E
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site

P.O. BOX 464
GOLDEN, COLORADO 80402-0464

"OLD LAB WAS CLUTTERED WITH TEST TUBES, BOTTLES, FLASKS, PAPER ... LOOD, HOW I MISS IT."

DATE: 25 Sept 95

TO: Steve Joliet FAX NUMBER: x7193

RMRS PHONE NUMBER: NA

FROM: John Pestovich FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER: D5184

NUMBER OF PAGES INCLUDING COVER SHEET 11

COMMENTS:

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: SEP17MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 09/17/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	120.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BH21001RM

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 96L2658

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP1704

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/17/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	280.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	380.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BH21002RM

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 96L2658

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP1705

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/17/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	220.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	240.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	200.	J
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK2

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: SEP18MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 09/18/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	120.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BH21002RM DUP

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 96L2658

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP1801

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/18/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	320.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK3

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: SEP19MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 09/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	150.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BH21003RM

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 96L2658

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP1806

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/18/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 12500

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	120000.	U
74-83-9	Bromomethane	120000.	U
75-01-4	Vinyl Chloride	120000.	U
75-00-3	Chloroethane	120000.	U
75-09-2	Methylene Chloride	58000.	U
67-64-1	Acetone	120000.	U
75-15-0	Carbon Disulfide	58000.	U
75-35-4	1,1-Dichloroethene	58000.	U
75-34-3	1,1-Dichloroethane	58000.	U
544-59-2	1,2-Dichloroethene (total)	60000.	U
67-66-3	Chloroform	58000.	U
107-06-2	1,2-Dichloroethane	58000.	U
78-93-3	2-Butanone	120000.	U
71-55-6	1,1,1-Trichloroethane	58000.	U
56-23-5	Carbon Tetrachloride	58000.	U
75-27-4	Bromodichloromethane	58000.	U
78-87-5	1,2-Dichloropropane	58000.	U
10061-01-5	cis-1,3-Dichloropropene	58000.	U
79-01-6	Trichloroethene	58000.	U
124-48-1	Dibromochloromethane	58000.	U
79-00-5	1,1,2-Trichloroethane	58000.	U
71-43-2	Benzene	58000.	U
10061-02-6	trans-1,3-Dichloropropene	58000.	U
75-25-2	Bromoform	58000.	U
108-10-1	4-Methyl-2-Pentanone	120000.	U
591-78-6	2-Hexanone	120000.	U
127-18-4	Tetrachloroethene	440000.	
79-34-5	1,1,2,2-Tetrachloroethane	58000.	U
108-88-3	Toluene	58000.	U
108-90-7	Chlorobenzene	58000.	U
100-41-4	Ethylbenzene	58000.	U
100-42-5	Styrene	58000.	U
1330-20-7	Xylene (total)	58000.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BH21004RM

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 96L2658

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP1905

Level: (low/med) MED Date Received: 08/29/96

% Moisture: not dec. 0. Date Analyzed: 09/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 2500

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	24000.	U
74-83-9	Bromomethane	24000.	U
75-01-4	Vinyl Chloride	24000.	U
75-00-3	Chloroethane	24000.	U
75-09-2	Methylene Chloride	12000.	U
67-64-1	Acetone	7900.	BJ
75-15-0	Carbon Disulfide	12000.	U
75-35-4	1,1-Dichloroethene	12000.	U
75-34-3	1,1-Dichloroethane	12000.	U
544-59-2	1,2-Dichloroethene (total)	12000.	U
67-66-3	Chloroform	12000.	U
107-06-2	1,2-Dichloroethane	12000.	U
78-93-3	2-Butanone	25000.	U
71-55-6	1,1,1-Trichloroethane	12000.	U
56-23-5	Carbon Tetrachloride	12000.	U
75-27-4	Bromodichloromethane	12000.	U
78-87-5	1,2-Dichloropropane	12000.	U
10061-01-5	cis-1,3-Dichloropropene	12000.	U
79-01-6	Trichloroethene	12000.	U
124-48-1	Dibromochloromethane	12000.	U
79-00-5	1,1,2-Trichloroethane	12000.	U
71-43-2	Benzene	12000.	U
10061-02-6	trans-1,3-Dichloropropene	12000.	U
75-25-2	Bromoform	12000.	U
108-10-1	4-Methyl-2-Pentanone	24000.	U
591-78-6	2-Hexanone	24000.	U
127-18-4	Tetrachloroethene	96000.	
79-34-5	1,1,2,2-Tetrachloroethane	12000.	U
108-88-3	Toluene	12000.	U
108-90-7	Chlorobenzene	12000.	U
100-41-4	Ethylbenzene	12000.	U
100-42-5	Styrene	12000.	U
1330-20-7	Xylene (total)	12000.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BH21005RM

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 96L2658

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP1804

Level: (low/med) MED Date Received: 08/30/96

% Moisture: not dec. 0. Date Analyzed: 09/18/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 1250

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12000.	U
74-83-9	Bromomethane	12000.	U
75-01-4	Vinyl Chloride	12000.	U
75-00-3	Chloroethane	12000.	U
75-09-2	Methylene Chloride	5800.	U
67-64-1	Acetone	12000.	U
75-15-0	Carbon Disulfide	5800.	U
75-35-4	1,1-Dichloroethene	5800.	U
75-34-3	1,1-Dichloroethane	5800.	U
544-59-2	1,2-Dichloroethene (total)	6000.	U
67-66-3	Chloroform	5800.	U
107-06-2	1,2-Dichloroethane	5800.	U
78-93-3	2-Butanone	12000.	U
71-55-6	1,1,1-Trichloroethane	5800.	U
56-23-5	Carbon Tetrachloride	5800.	U
75-27-4	Bromodichloromethane	5800.	U
78-87-5	1,2-Dichloropropane	5800.	U
10061-01-5	cis-1,3-Dichloropropene	5800.	U
79-01-6	Trichloroethene	5800.	U
124-48-1	Dibromochloromethane	5800.	U
79-00-5	1,1,2-Trichloroethane	5800.	U
71-43-2	Benzene	5800.	U
10061-02-6	trans-1,3-Dichloropropene	5800.	U
75-25-2	Bromoform	5800.	U
108-10-1	4-Methyl-2-Pentanone	12000.	U
591-78-6	2-Hexanone	12000.	U
127-18-4	Tetrachloroethene	75000.	
79-34-5	1,1,2,2-Tetrachloroethane	5800.	U
108-88-3	Toluene	5800.	U
108-90-7	Chlorobenzene	5800.	U
100-41-4	Ethylbenzene	5800.	U
100-42-5	Styrene	5800.	U
1330-20-7	Xylene (total)	5800.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BH21006RM

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 96L2658

Sample wt/vol: 4.000 (g/mL) G Lab File ID: SEP1805

Level: (low/med) MED Date Received: 08/30/96

% Moisture: not dec. 0. Date Analyzed: 09/18/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	230.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	280.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	410.	J
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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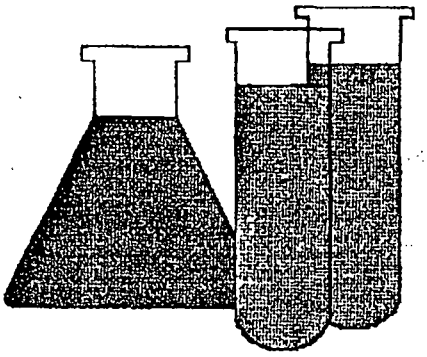
Mound drilling rads

Location	Sample No.	ST	QC-Code	Smpl Date	LabID	Test Group	Res Typ	Chemical Name	Result	Unit Meas	Error	Qual	Detect Limit	VA
30196	BH21005RM	BH	REAL	30-Aug-96	881	TRADS	TR1	AMERICIUM-241	0.007	PCI/G	0.003	J	0.003	Z
30196	BH21005RM	BH	REAL	30-Aug-96	881	TRADS	TR2	AMERICIUM-241	0.005	PCI/G	0.004	U	0.012	Z
30196	BH21007RM	BH	REAL	30-Aug-96	881	TRADS	TR1	AMERICIUM-241	0.17	PCI/G	0.018		0.01	Z
30196	BH21007RM	BH	REAL	30-Aug-96	881	TRADS	RP1	AMERICIUM-241	0.176	PCI/G	0.015		0.003	Z
30196	BH21005RM	BH	REAL	30-Aug-96	881	TRADS	TR1	PLUTONIUM-239/240	0.02	PCI/G	0.004	J	0.005	Z
30196	BH21005RM	BH	REAL	30-Aug-96	881	TRADS	TR2	PLUTONIUM-239/240	0.006	PCI/G	0.002	J	0.002	Z
30196	BH21007RM	BH	REAL	30-Aug-96	881	TRADS	TR1	PLUTONIUM-239/240	0.831	PCI/G	0.049		0.011	Z
30196	BH21007RM	BH	REAL	30-Aug-96	881	TRADS	RP1	PLUTONIUM-239/240	0.865	PCI/G	0.05		0.003	Z

FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464



DATE: 8/12/96

TO: Ed Most FAX NUMBER: x 2623

RmRs PHONE NUMBER: x 5757

FROM: J. Pestovich FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER: D5184

NUMBER OF PAGES INCLUDING COVER SHEET 4

COMMENTS:

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG08MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/08/96

GC Column: DB-624 ID: .53 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	86.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21001RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG0805

Level: (low/med) MED Date Received: 08/02/96

% Moisture: not dec. 0. Date Analyzed: 08/08/96

GC Column: DB-624 ID: .53 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	180.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21002RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG0806

Level: (low/med) MED Date Received: 08/06/96

% Moisture: not dec. 0. Date Analyzed: 08/08/96

GC Column: DB-624 ID: .53 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	210.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21003RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG0807

Level: (low/med) MED Date Received: 08/06/96

% Moisture: not dec. 0. Date Analyzed: 08/08/96

GC Column: DB-624 ID: .53 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	670.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	220.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

DATE: 8/13/96

TO: Ed Most FAX NUMBER: 2623

RMRS PHONE NUMBER: 5757

FROM: J. Pestovich FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER:

NUMBER OF PAGES INCLUDING COVER SHEET 9

COMMENTS: Sample SG21008RM + SG21007RM are currently being reanalyed due to Tetrachloroethene exceeding our instrument Calb. Curve.

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG13MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DB-624 ID: .53 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	95.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21008RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1304

Level: (low/med) MED Date Received: 08/12/96

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DB-624 ID: .53 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	160.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	1500.	
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	160000.	E
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

~~Sample was rerun because of the E qualifier = exceedance - rerun is recorded on spreadsheet~~
~~Elwood 8/14~~

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG13MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	110.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	59.	J
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21004RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1301

Level: (low/med) MED Date Received: 08/08/96

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	340.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	470.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	250.	J
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21005RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1302

Level: (low/med) MED Date Received: 08/12/96

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	270.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	240.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21006RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1303

Level: (low/med) MED Date Received: 08/12/96

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	250.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	310.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	1000.	
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21007RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1304

Level: (low/med) MED Date Received: 08/12/96

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	270.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	300.	BJ
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200	U
127-18-4	Tetrachloroethene	[redacted]	
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

~~This sample was rerun because of the E qualifer = exceedence the reason is to recorded on the spread sheet~~ Elwood 8/14

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FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

"THE OLD LAB WAS CLUTTERED WITH TEST TUBES, BOTTLES, FLASKS, PAPER ... LOOD, HOW I MISS IT."

DATE: 8/13/95

TO: Ed Most
RMRS

FAX NUMBER: 2623

PHONE NUMBER: 5757

FROM: J. Pestovich
881 Analytical Lab

FAX NUMBER: 303-966-4365

PHONE NUMBER: D5184

NUMBER OF PAGES INCLUDING COVER SHEET 5

COMMENTS: Attached are results for reanalyzes of samples SG21008RM and SG21007RM designated DL. Please note that SG21008RM is reported in mg/kg or ppm and Tetrachloroethene still exceeded instrument calb. curve. Please let ~~us~~ us know if you would like it reanalyzed once again per my ~~th~~ audix message.

95

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG13MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DB-624 ID: .53 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	95.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21008RM DL

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1307

Level: (low/med) MED Date Received: 08/12/96

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DB-624 ID: .53 (mm) Dilution Factor: 1250

CONCENTRATION UNITS:

CAS NO.	COMPOUND	MG/KG	Q
74-87-3	Chloromethane	12.	U
74-83-9	Bromomethane	12.	U
75-01-4	Vinyl Chloride	12.	U
75-00-3	Chloroethane	12.	U
75-09-2	Methylene Chloride	6.	U
67-64-1	Acetone	12.	U
75-15-0	Carbon Disulfide	6.	U
75-35-4	1,1-Dichloroethene	6.	U
75-34-3	1,1-Dichloroethane	6.	U
544-59-2	1,2-Dichloroethene (total)	6.	U
67-66-3	Chloroform	6.	U
107-06-2	1,2-Dichloroethane	6.	U
78-93-3	2-Butanone	12.	U
71-55-6	1,1,1-Trichloroethane	6.	U
56-23-5	Carbon Tetrachloride	6.	U
75-27-4	Bromodichloromethane	6.	U
78-87-5	1,2-Dichloropropane	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U
79-01-6	Trichloroethene	1.	J
124-48-1	Dibromochloromethane	6.	U
79-00-5	1,1,2-Trichloroethane	6.	U
71-43-2	Benzene	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U
75-25-2	Bromoform	1.	J
108-10-1	4-Methyl-2-Pentanone	4.	J
591-78-6	2-Hexanone	12.	U
127-18-4	Tetrachloroethene	390.	E
79-34-5	1,1,2,2-Tetrachloroethane	6.	U
108-88-3	Toluene	6.	U
108-90-7	Chlorobenzene	6.	U
100-41-4	Ethylbenzene	6.	U
100-42-5	Styrene	6.	U
1330-20-7	Xylene (total)	6.	U

97

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG13MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	110.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	59.	J
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

98

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21007RM DL

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1307

Level: (low/med) MED Date Received: 08/12/96

% Moisture: not dec. 0. Date Analyzed: 08/13/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 250

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	2500.	U
74-83-9	Bromomethane	2500.	U
75-01-4	Vinyl Chloride	2500.	U
75-00-3	Chloroethane	2500.	U
75-09-2	Methylene Chloride	1300.	U
67-64-1	Acetone	370.	BJ
75-15-0	Carbon Disulfide	1300.	U
75-35-4	1,1-Dichloroethene	1300.	U
75-34-3	1,1-Dichloroethane	1300.	U
544-59-2	1,2-Dichloroethene (total)	1300.	U
67-66-3	Chloroform	1300.	U
107-06-2	1,2-Dichloroethane	1300.	U
78-93-3	2-Butanone	2500.	U
71-55-6	1,1,1-Trichloroethane	1300.	U
56-23-5	Carbon Tetrachloride	1300.	U
75-27-4	Bromodichloromethane	1300.	U
78-87-5	1,2-Dichloropropane	1300.	U
10061-01-5	cis-1,3-Dichloropropene	1300.	U
79-01-6	Trichloroethene	1300.	U
124-48-1	Dibromochloromethane	1300.	U
79-00-5	1,1,2-Trichloroethane	1300.	U
71-43-2	Benzene	1300.	U
10061-02-6	trans-1,3-Dichloropropene	1300.	U
75-25-2	Bromoform	1300.	U
108-10-1	4-Methyl-2-Pentanone	2500.	U
591-78-6	2-Hexanone	2500.	U
127-18-4	Tetrachloroethene	31000.	
79-34-5	1,1,2,2-Tetrachloroethane	1300.	U
108-88-3	Toluene	1300.	U
108-90-7	Chlorobenzene	1300.	U
100-41-4	Ethylbenzene	1300.	U
100-42-5	Styrene	1300.	U
1330-20-7	Xylene (total)	1300.	U

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FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

"MY OLD LAB WAS CLUTTERED WITH TEST TUBES, BOTTLES, FLASKS, PAPER ... LOOD, HOW I MISS IT."

DATE: 8/22/96

TO: Ed Mast FAX NUMBER: X2623

RMRS PHONE NUMBER: NA

FROM: John Pestovich FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER: D5184

NUMBER OF PAGES INCLUDING COVER SHEET 6

COMMENTS: Attached are corrected copies for samples processed & faxed on 8/19/96. Sample IDs were not correct. PV prefix should have been SC. Sorry for the mistake. These forms replace previously faxed.

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG19MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	85.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21009RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1901

Level: (low/med) MED Date Received: 08/16/96

% Moisture: not dec. 0. Date Analyzed: 08/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	290.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	520.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: 96L265 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21010RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1902

Level: (low/med) MED Date Received: 08/16/96

% Moisture: not dec. 0. Date Analyzed: 08/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	190.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	280.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21011RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1903

Level: (low/med) MED Date Received: 08/16/96

% Moisture: not dec. 0. Date Analyzed: 08/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	250.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	450.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site

P.O. BOX 464
GOLDEN, COLORADO 80402-0464

"MY OLD LAB WAS CLUTTERED WITH TEST TUBES, BOTTLES, FLASKS, PAPER ... LOOKS, NOW I MISS IT."

DATE: 8/19/96

TO: Ed. Most FAX NUMBER: x 2623

RmRS PHONE NUMBER: x5757

FROM: J. Pastorick FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER:

NUMBER OF PAGES INCLUDING COVER SHEET 6

COMMENTS:

105

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG19MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	85.	J
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.: SG EW 8/27

Matrix: (soil/water) SOIL Lab Sample ID: PV21009RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1901 1.0-20 Ft 250596

Level: (low/med) MED Date Received: 08/16/96

% Moisture: not dec. 0. Date Analyzed: 08/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	290.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	520.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.: SG - Edm 8/27

Matrix: (soil/water) SOIL Lab Sample ID: ~~PV~~21010RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1902

Level: (low/med) MED Date Received: 08/16/96

% Moisture: not dec. 0. Date Analyzed: 08/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

5.0-60
250596

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	190.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	280.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

108

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.: SG?

Matrix: (soil/water) SOIL Lab Sample ID: PV21011RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG1903

Level: (low/med) MED Date Received: 08/16/96

% Moisture: not dec. 0. Date Analyzed: 08/19/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	250.	BJ
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	450.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

3-4
250696

109

FAX COVER SHEET

KAISER-HILL, LLC
Rocky Flats Environmental Technology Site
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

"MY OLD LAB WAS CLUTTERED WITH TEST TUBES, BOTTLES, FLASKS, PAPER ... LOOD, NOW I MOVE IT."

DATE: 8/21/96

TO: Ed Most FAX NUMBER: x 2623

RMRS PHONE NUMBER: NA

FROM: John Pestovich FAX NUMBER: 303-966-4365

881 Analytical Lab PHONE NUMBER: D5184

NUMBER OF PAGES INCLUDING COVER SHEET 6

COMMENTS:

110

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.000 (g/mL) G Lab File ID: AUG21MB

Level: (low/med) MED Date Received: 00/00/00

% Moisture: not dec. 0. Date Analyzed: 08/21/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 50

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	480.	U
74-83-9	Bromomethane	480.	U
75-01-4	Vinyl Chloride	480.	U
75-00-3	Chloroethane	480.	U
75-09-2	Methylene Chloride	240.	U
67-64-1	Acetone	480.	U
75-15-0	Carbon Disulfide	240.	U
75-35-4	1,1-Dichloroethene	240.	U
75-34-3	1,1-Dichloroethane	240.	U
544-59-2	1,2-Dichloroethene (total)	250.	U
67-66-3	Chloroform	240.	U
107-06-2	1,2-Dichloroethane	240.	U
78-93-3	2-Butanone	480.	U
71-55-6	1,1,1-Trichloroethane	240.	U
56-23-5	Carbon Tetrachloride	240.	U
75-27-4	Bromodichloromethane	240.	U
78-87-5	1,2-Dichloropropane	240.	U
10061-01-5	cis-1,3-Dichloropropene	240.	U
79-01-6	Trichloroethene	240.	U
124-48-1	Dibromochloromethane	240.	U
79-00-5	1,1,2-Trichloroethane	240.	U
71-43-2	Benzene	240.	U
10061-02-6	trans-1,3-Dichloropropene	240.	U
75-25-2	Bromoform	240.	U
108-10-1	4-Methyl-2-Pentanone	480.	U
591-78-6	2-Hexanone	480.	U
127-18-4	Tetrachloroethene	240.	U
79-34-5	1,1,2,2-Tetrachloroethane	240.	U
108-88-3	Toluene	240.	U
108-90-7	Chlorobenzene	240.	U
100-41-4	Ethylbenzene	240.	U
100-42-5	Styrene	240.	U
1330-20-7	Xylene (total)	240.	U

111

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21012RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2103

Level: (low/med) MED Date Received: 08/19/96

% Moisture: not dec. 0. Date Analyzed: 08/21/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	400.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21013RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2104

Level: (low/med) MED Date Received: 08/20/96

% Moisture: not dec. 0. Date Analyzed: 08/21/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	360.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

96L2658

Lab Name: E.G.&G., Rocky Flats Contract:

Lab Code: GLAB Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: SG21014RM

Sample wt/vol: 4.000 (g/mL) G Lab File ID: AUG2105

Level: (low/med) MED Date Received: 08/20/96

% Moisture: not dec. 0. Date Analyzed: 08/21/96

GC Column: DBVRX ID: .32 (mm) Dilution Factor: 125

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1200.	U
74-83-9	Bromomethane	1200.	U
75-01-4	Vinyl Chloride	1200.	U
75-00-3	Chloroethane	1200.	U
75-09-2	Methylene Chloride	600.	U
67-64-1	Acetone	1200.	U
75-15-0	Carbon Disulfide	600.	U
75-35-4	1,1-Dichloroethene	600.	U
75-34-3	1,1-Dichloroethane	600.	U
544-59-2	1,2-Dichloroethene (total)	620.	U
67-66-3	Chloroform	600.	U
107-06-2	1,2-Dichloroethane	600.	U
78-93-3	2-Butanone	380.	J
71-55-6	1,1,1-Trichloroethane	600.	U
56-23-5	Carbon Tetrachloride	600.	U
75-27-4	Bromodichloromethane	600.	U
78-87-5	1,2-Dichloropropane	600.	U
10061-01-5	cis-1,3-Dichloropropene	600.	U
79-01-6	Trichloroethene	600.	U
124-48-1	Dibromochloromethane	600.	U
79-00-5	1,1,2-Trichloroethane	600.	U
71-43-2	Benzene	600.	U
10061-02-6	trans-1,3-Dichloropropene	600.	U
75-25-2	Bromoform	600.	U
108-10-1	4-Methyl-2-Pentanone	1200.	U
591-78-6	2-Hexanone	1200.	U
127-18-4	Tetrachloroethene	600.	U
79-34-5	1,1,2,2-Tetrachloroethane	600.	U
108-88-3	Toluene	600.	U
108-90-7	Chlorobenzene	600.	U
100-41-4	Ethylbenzene	600.	U
100-42-5	Styrene	600.	U
1330-20-7	Xylene (total)	600.	U

114

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CONTRACTOR _____ SAMPLERS _____ ANALYTICAL CHARGE # 951202-00

SITE CONTACT/PHONE _____ FAX Ext _____ LAB/LOCATION 881 ATTN: John Pestovich

C-O-C NUMBER RFP 906338

EG&G ROCKY FLATS CHAIN OF CUSTODY

881 - Main Floor

General C

go downstair go right ½ down on left double doors - go left at T Rm259 Ginger Sample Receiving Office or next door go see

go down 1 Flight — go ~~at~~ through door then right — Analytical Labs 2nd Set of Doors — cypher lock 5 to get in go left - Rm 127 Roger Jensen John Office 127C

Put 96L2658 on all CoC's per Norm Stoner

DATE	TIME	R	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/Pest CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Sol GAS	8240/8260
BOTTLE CODES													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W		
														C				*	A	B	B	C	D	E	G	H	I	J	K		
PRESERVATIVE														C					A	C	A		A						A		
																							*								

RELINQUISHE

ATORY USE ONLY

	Y	N
PCKG REC'D/CUSTODY SEALS INTACT		
SAMPLE LABELS/COCs AGREE		
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

REMARKS (1) INCLUDES Cs,Li,Sr,Mo,Si,Sn
(2) TSS,TDS,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

RF-47987 (Rev. 12/93)

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

N 96L2658 - Put on all

96L2658

SAMPLERS S. A. Jolial, H. Sanchez ANALYTICAL CHARGE # 95 102-00

d Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

906337

, CHAIN OF CUSTODY

E NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos *	CYANIDE	COD	TOC	DOC	H2S	Cr VI	VOA Sweep		
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
														C					A	C	A		A						A			
15 RM	251096	Glass 8 oz	1	S	U	R		X																						X		
16 RM	251196	"	1	S	U	R		X																						X		
17 RM	251196	"	1	S	U	R		X																						X		
18 RM	251296	"	1	S	U	R		X																						X		
19 RM	251296	"	1	S	U	R		X																						X		

	DATE/TIME		RECEIVED BY	DATE/TIME	
	8/26/96	0941	[signature]	8-26-96	0941

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	✓	
SAMPLE LABELS/COCs AGREE	✓	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

Cs,Li,Sr,Mo,Si,Sn
Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.

116

SAMPLERS S. A. Jolas / W. Sanders ANALYTICAL CHARGE # 12-32-00

d Mad 2757 FAX Ext 2623 LAB/LOCATION 861 Mtn John Redwood

906337

, CHAIN OF CUSTODY

E NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	[illegible]		
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
												PRESERVATIVE		C					A	C	A		A						A			
15 RM	251096	Glass 8 oz	1	S	U	R		X															*							X		
16 RM	251196	"	1	S	U	R		X																						X		
17 RM	251196	"	1	S	U	R		X																						X		
18 RM	251296	"	1	S	U	R		X																						X		
19 RM	251296	"	1	S	U	R		X																						X		

	DATE/TIME		RECEIVED BY	DATE/TIME	
	3/12/96	0911	[illegible]		

,Li,Sr,Mo,Si,Sn
.SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	Y	
SAMPLE LABELS/COCs AGREE	Y	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

117

S SAMPLERS S. A. Jolin H. Sanchez ANALYTICAL CHARGE # 9 302-00

Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

906343

, CHAIN OF CUSTODY

E NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos *	CYANIDE	COD	TOC	DOC	H2S	Cr VI	VOA Sweep 8/24/96		
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
														C					A	C	A		A						A			
20 RM	251396	Glass, 8 oz	1	S	U	R		X																						X		
21 RM	251396	"	1	S	U	R		X																						X		
22 RM	251396	"	1	S	U	R		X																						X		
023 RM	251496	"	1	S	U	R		X																						X		
024 RM	251496	"	1	S	U	R		X																						X		

8/27/96

	DATE/TIME		RECEIVED BY	DATE/TIME	
L	8/27/96	1549	[signature]	8-27-96	1549

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

s,Li,Sr,Mo,Si,Sn
F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

118

3 SAMPLERS [illegible] ANALYTICAL CHARGE # [illegible]

[illegible] FAX Ext [illegible] LAB/LOCATION [illegible]

006343

CHAIN OF CUSTODY

NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	[illegible]		
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
														C					A	C	A		A						A			
																							*									
[illegible]	[illegible]	[illegible]	1	S	U	R		Y																						Y		
[illegible]	[illegible]		1	S	U	R		Y																						Y		
[illegible]	[illegible]		1	S	U	R		Y																						Y		
[illegible]	[illegible]		1	S	U	R		Y																						Y		
[illegible]	[illegible]		1	S	U	R		Y																						Y		

DATE/TIME		RECEIVED BY	DATE/TIME	
[illegible]	1549	[illegible]	[illegible]	1549

,Li,Sr,Mo,Si,Sn
,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

119

...ICAL CHARGE # 75 0200

...a mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

906344

...S, CHAIN OF CUSTODY

...LE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos *	CYANIDE	COD	TOC	DOC	H2S	Cr VI	VOA Sweep 8240/8260	TCL VOA 8210
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W		
														C				*	A	B	B	C	D	E	G	H	I	J	K		
														C					A	C	A		A						A		
...25 RM	251596	Glass 8 oz	1	S	U	R		X																						X	
...01 RM	30196	Glass 4 oz	1	S	U	R		X																							X
...002 RM	30196	"	1	S	U	R		X																							X
...003 RM	30196	"	1	S	U	R		X																							X
...004 RM	30196	"	1	S	U	R		X																							X
...002 RM DUP	30196	"	1	S	U	R		X																							X
...25 RM DUP	251596	Glass 8 oz	1	S	U	R		X																						X	
...26 RM	251696	"	1	S	U	R		X																						X	
...27 RM	251696	"	1	S	U	R		X																						X	
...28 RM	251696	"	1	S	U	R		X																						X	
...29 RM	251696	"	1	S	U	R		X																						X	
...30 RM	251696	"	1	S	U	R		X																						X	
...30 RM DUP	251696	Glass 16 oz	1	S	U	R		X																						X	
...06 RM	30196	Glass 4 oz	1	S	U	R		X																							X
...05 RM	30196	"	1	S	U	R		X																							X
		8/30/96																													

DATE/TIME		RECEIVED BY	DATE/TIME	
8/30/96	1445	[signature]	8/30/96	1445

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

...i,Sr,Mo,Si,Sn
...O4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

120

S _____ SAMPLERS [illegible] ANALYTICAL CHARGE # [illegible]

[illegible] Mast [illegible] FAX Ext [illegible] LAB/LOCATION 881 Attn: John [illegible]

906344

S, CHAIN OF CUSTODY

LE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	VOA Sweep 8260	TCL VOA 8210
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W		
														C				*	A	B	B	C	D	E	G	H	I	J	K		
														C					A	C	A		A						A		
																							*								
25 RM	251596	Glass 8 oz	1	S	U	R		X																						X	
01 RM	30196	Glass 4 oz	1	S	U	R		X																							X
202 RM	30196	"	1	S	U	R		X																							X
203 RM	30196	"	1	S	U	R		X																							X
204 RM	30196	"	1	S	U	R		X																							X
202 RM DUP	30196	"	1	S	U	R		X																							X
25 RM DUP	251596	Glass 8 oz	1	S	U	R		X																						X	
26 RM	251696	"	1	S	U	R		X																						X	
27 RM	251696	"	1	S	U	R		X																						X	
28 RM	251696	"	1	S	U	R		X																						X	
29 RM	251696	"	1	S	U	R		X																						X	
30 RM	251696	"	1	S	U	R		X																						X	
30 RM DUP	251696	Glass 8 oz	1	S	U	R		X																						X	
06 RM	30196	Glass 4 oz	1	S	U	R		X																						X	
25 RM	30196	"	1	S	U	R		X																							X
																															X

8/30 KG

DATE/TIME		RECEIVED BY	DATE/TIME	
8/30/96	1445	[signature]	8/30 KG	1445

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

Li,Sr,Mo,Si,Sn
SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

121

TOC 2258

RS SAMPLERS S. A. Joliat H. Sanchez ANALYTICAL CHARGE # 75 200

Ed Most 3757 FAX Ext 2623 LAB/LOCATION 881 Attn John Pedrowich

947852

S, CHAIN OF CUSTODY

LE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	HNO3	TOTAL GROSS ALPHA / BETA	TOTAL Pu 239/240, AM241	TOTAL U 233/234,235,238	TOTAL URANIUM	TOTAL Sr89/90, Cesium (1)	TOTAL Sr 90	TOTAL Ra 226, Ra228	DISS GROSS ALPHA/BETA	DISS Pu 239/240, Am 241	DISS U 233/234,235,238	DISS Sr 89/90, Cesium (1)	DISS Sr 90	DISS Ra 226, Ra 228	TRITIUM (H3)	RAD SCREEN	Alpha Spec
									BOTTLE CODES	R A	R B	R C	R C	R D	R D	R E	R A	R B	R C	R D	R D	R E	R G	R H
									PRESERVATIVE				A		D		*	*	*	*	D *	*		
005 RM	30196	Glass 16 oz	1	S	U	R				X		X												X
005 RM DUP	30196	"	1	S	U	R				X		X												X
007 RM	30196	"	1	S	U	R				X		X												X

	DATE/TIME		RECEIVED BY	DATE/TIME	
	8/30/96	1451	[signature]	8/30/96	1451

17 and Cs 134 when by Gamma

SHIPMENT METHOD:

AIR BILL No.:

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	✓	
SAMPLE LABELS/COCs AGREE	✓	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES	NA	

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

If gross alpha > 5 pci/l analyze for Ra 226
If Ra 226 > 3 pci/l analyze for Ra 228

Form: EGGRFP-081393-COCRC-v1.1

122

SS SAMPLERS ANALYTICAL CHARGE #

FAX Ext LAB/LOCATION

947352

S, CHAIN OF CUSTODY

E NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	HNO3				TOTAL GROSS ALPHA / BETA	TOTAL Pu 239/240, AM241	TOTAL U 233/234,235,238	TOTAL URANIUM	TOTAL Sr89/90, Cesium (1)	TOTAL Sr 90	TOTAL Ra 226, Ra228	DISS GROSS ALPHA/BETA	DISS Pu 239/240, Am 241	DISS U 233/234,235,238	DISS Sr 89/90, Cesium (1)	DISS Sr 90	DISS Ra 226, Ra 228	TRITIUM (H3)	RAD SCREEN	Alpha Spec				
BOTTLE CODES												R A	R B	R C	R C	R D	R D	R E	R A	R B	R C	R D	R D	R E	R G	R H					
PRESERVATIVE															A		D		*	*	*	*	D *	*							
005 RM	30196		1	S	U	R							X		X												X				
005 RM DUP	30196		1	S	U	R							X		X												X				
007 RM	30196		1	S	U	R							X		X												X				

	DATE/TIME		RECEIVED BY	DATE/TIME	
	8/30/96	[illegible]	[illegible]	8/30/96	[illegible]

7 and Cs 134 when by Gamma

SHIPMENT METHOD:

AIR BILL No.:

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	✓	
SAMPLE LABELS/COCs AGREE	✓	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

If gross alpha > 5 pci/l analyze for Ra 226
If Ra 226 > 3 pci/l analyze for Ra 228

Form: EGGRFP-081393-COCRC-v1.1

123

124

VOA Sweep 96L 2658

CONTRACTOR RMRS SAMPLERS S. A. Joliat H. Sanchez ANALYTICAL CHARGE # 951802-00

SITE CONTACT/PHONE Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

C-O-C NUMBER RFP 906341

EG&G ROCKY FLATS, CHAIN OF CUSTODY

General Chemistry

DATE	TIME	SAMPLE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	8240/8260 Soil/Gas
															V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W	
																C				*	A	B	B	C	D	E	G	H	I	J	K	
																C					A	C	A		A						A	
																									*							
8/16/96	1135	SG 21009 RM	250596	Glass, 8 oz	1	S	U	R		X																						X
8/16/96	1155	SG 21010 RM	250596	"	1	S	U	R		X																						X
8/16/96	1503	SG 21011 RM	250696	"	1	S	U	R		X																						X

8/19/96

RELINQUISHED BY	DATE/TIME		RECEIVED BY	DATE/TIME	
S. A. Joliat	8/19/96	0900		8/19/96	0900

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION ____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

REMARKS (1) INCLUDES Cs,Li,Sr,Mo,Si,Sn
(2) TSS,TDS,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

RF-47987 (Rev. 12/93)

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

125

VOA Sweep

CONTRACTOR RMRS SAMPLERS S. A. Joliat H. Sanchez ANALYTICAL CHARGE # 951802-00

SITE CONTACT/PHONE Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

C-O-C NUMBER RFP 906342

EG&G ROCKY FLATS, CHAIN OF CUSTODY

General Chemistry

DATE	TIME	SAMPLE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos *	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil/Gas 8240	VOA SW 8260	
															V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
																C				*	A	B	B	C	D	E	G	H	I	J	K			
																C					A	C	A		A						A			
8/19/96	1352	SG21012RM	250796	Glass, 8oz	1	S	U	R		X																						X		
8/20/96	1105	SG21013RM	250896	"	1	S	U	R		X																						X		
8/20/96	1416	SG21014RM	250996	"	1	S	U	R		X																						X		

8/21/96

RELINQUISHED BY	DATE/TIME		RECEIVED BY	DATE/TIME	
S. A. Joliat [signature]	8/21/96	0921	[signature]	8-21-96	0921

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	✓	
SAMPLE LABELS/COCs AGREE	✓	
TEMPERATURE WITHIN SPECIFICATION ____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

REMARKS (1) INCLUDES Cs,Li,Sr,Mo,Si,Sn
(2) TSS,TDS,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

RF-47987 (Rev. 12/93)

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

126

CONTRACTOR RMRS SAMPLERS S. A. Joliat H. Sanchez ANALYTICAL CHARGE # 96L2658 951802-00

SITE CONTACT/PHONE Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

C-O-C NUMBER RFP 906337

EG&G ROCKY FLATS, CHAIN OF CUSTODY

General Chemistry

DATE	TIME	SAMPLE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	VOA Sweep 8/24/96		
															V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
																C				*	A	B	B	C	D	E	G	H	I	J	K			
																C					A	C	A		A						A			
																									*									
8/21/96	1045	SG21015RM	251096	Glass, 8 oz	1	S	U	R		X																						X		
8/22/96	1110	SG21016RM	251196	"	1	S	U	R		X																						X		
8/22/96	1204	SG21017RM	251196	"	1	S	U	R		X																						X		
8/22/96	1500	SG21018RM	251296	"	1	S	U	R		X																						X		
8/22/96	1535	SG21019RM	251296	"	1	S	U	R		X																						X		

8/26/96

RELINQUISHED BY	DATE/TIME		RECEIVED BY	DATE/TIME	
S. A. Joliat	8/26/96	0941		8-26-96	0941

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	✓	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION ____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

REMARKS (1) INCLUDES Cs,Li,Sr,Mo,Si,Sn
(2) TSS,TDS,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

RF-47987 (Rev. 12/93)

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

AUG-30-96 FRI 16:36 GENERAL LABORATORY 881 FAX NO. 303 966 4365 P. 05

CONTRACTOR RMRS SAMPLERS S. A. Joliat H. Sanchez ANALYTICAL CHARGE # 951802-00

SITE CONTACT/PHONE Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

C-O-C NUMBER RFP 906343

EG&G ROCKY FLATS, CHAIN OF CUSTODY

General Chemistry

DATE	TIME	SAMPLE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos *	CYANIDE	COD	TOC	DOC	H2S	Cr VI	VOA Sweep 8240/8260		
															V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
																C				*	A	B	B	C	D	E	G	H	I	J	K			
																C					A	C	A		A						A			
8/26/96	1120	SG21020RM	251396	Glass, 8, oz	1	S	U	R		X																						X		
8/26/96	1217	SG21021RM	251396	"	1	S	U	R		X																						X		
8/26/96	1434	SG21022RM	251396	"	1	S	U	R		X																						X		
8/26/96	1556	SG21023RM	251496	"	1	S	U	R		X																						X		
8/27/96	1415	SG21024RM	251496	"	1	S	U	R		X																						X		

8/27/96

RELINQUISHED BY	DATE/TIME		RECEIVED BY	DATE/TIME	
S. A. Joliat	8/27/96	1549	[signature]	8-27-96	1549

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION ____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

REMARKS (1) INCLUDES Cs,Li,Sr,Mo,Si,Sn
(2) TSS,TDS,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD:

AIR BILL NO.:

RF-47987 (Rev. 12/93)

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

WOA Sweep 964 7558

RS SAMPLERS S. A. Joliat J. Sanchez ANALYTICAL CHARGE # 95[illegible]2-0[illegible]

Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

906341

S, CHAIN OF CUSTODY

LE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil Gas 8240/8260
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W	
														C				*	A	B	B	C	D	E	G	H	I	J	K	
														C					A	C	A		A						A	
																							*							
1009RM	250596	Glass 8oz	1	S	U	R		X																						X
010 RM	250596	"	1	S	U	R		X																						X
011RM	250696	"	1	S	U	R		X																						X

8/19/96

	DATE/TIME		RECEIVED BY	DATE/TIME	
7	8/19/96	0900	[signature]	8/19/96	0900

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

s,Li,Sr,Mo,Si,Sn
F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

128

VOA Sweep

SAMPLERS S.A. [illegible] ANALYTICAL CHARGE # [illegible]

FAX Ext [illegible] LAB/LOCATION [illegible] Attn: John [illegible]

900341

CHAIN OF CUSTODY

NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil Gas		
BOTTLE CODES													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
PRESERVATIVE														C					A	C	A		A						A			
																							*									
009 RM	250596	Glass Jar	1	S	U	R		x																						x		
010 RM	250596	"	1	S	U	R		x																						x		
011 RM	250696	"	1	S	U	R		x																						x		

DATE/TIME		RECEIVED BY	DATE/TIME	
8/19/96	[illegible]:00	[signature]	8/19/96	0900

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

s,Li,Sr,Mo,Si,Sn
F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

129

VOA Sweep 96L 2658

SAMPLERS S. A. Joliat d. Sanchez ANALYTICAL CHARGE # 951 12-00

Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

906342

, CHAIN OF CUSTODY

E NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos *	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil/Gas 8240/8260		
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
														C					A	C	A		A						A			
12 RM	250796	Glass, 8oz	1	S	U	R		X																						X		
13 RM	250896	"	1	S	U	R		X																						X		
14 RM	250996	"	1	S	U	R		X																						X		

	DATE/TIME		RECEIVED BY	DATE/TIME	
)	8/21/96	0921	[signature]	8-21-96	0921

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	✓	
SAMPLE LABELS/COCs AGREE	✓	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

:s,Li,Sr,Mo,Si,Sn
F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

130

SAMPLERS S. A. [illegible] / VOA Deep / Sanchez ANALYTICAL CHARGE # [illegible]

Ed Most 5752 FAX Ext [illegible] LAB/LOCATION 681 Mr. John Pastrick

[illegible] 000342

S, CHAIN OF CUSTODY

PLE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil/Gas	
BOTTLE CODES													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W		
														C				*	A	B	B	C	D	E	G	H	I	J	K		
PRESERVATIVE														C					A	C	A		A						A		
																							*								
[illegible] KM	250796	Glass 8oz	1	S	U	R		X																						X	
10/12 RM	250796	"	1	S	U	R		X																						X	
10/14 RM	250796	"	1	S	U	R		X																						X	

	DATE/TIME		RECEIVED BY	DATE/TIME	
(1)	8/21/96	0721	[illegible]	8-21-96	0721

ES Cs,Li,Sr,Mo,Si,Sn
S,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

LABORATORY USE ONLY	Y
PCKG REC'D/CUSTODY SEALS INTACT	✓
SAMPLE LABELS/COCs AGREE	✓
TEMPERATURE WITHIN SPECIFICATION _____C	
CORRECTED COPY ATTACHED	
PROBLEMS OR DISCREPANCIES	

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-\

131

96L 265i

CONTRACTOR RMRS SAMPLERS S.A. Joliat H. Sanchez ANALYTICAL CHARGE # 951802-00

SITE CONTACT/PHONE Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

C-O-C NUMBER RFP 906340

EG&G ROCKY FLATS, CHAIN OF CUSTODY

General Chemistry

DATE	TIME	SAMPLE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil/Gas 8240/8260
															V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W	
																C				*	A	B	B	C	D	E	G	H	I	J	K	
																C					A	C	A		A						A	
8/8/96	1510	SG 21004 RM	250396	Glass 8 oz	1	S	U	R		X																						X
8/12/96	1056	SG 21005 RM	250396	"	1	S	U	R		X																						X
8/12/96	1340	SG 21006 RM	250296	"	1	S	U	R		X																						X
8/12/96	1358	SG 21007 RM	250296	"	1	S	U	R		X																						X
8/12/96	1417	SG 21008 RM	250296	"	1	S	U	R		X																						X

8/13/96

RELINQUISHED BY	DATE/TIME		RECEIVED BY	DATE/TIME	
S.A. Joliat	8/13/96	0853		8/13/96	0853

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION ____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

REMARKS (1) INCLUDES Cs,Li,Sr,Mo,Si,Sn
(2) TSS,TDS,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD:

AIR BILL NO.:

RF-47987 (Rev. 12/93)

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

133

VOA Sweep 96L 2658

CONTRACTOR RMRS SAMPLERS S. A. Joliat N. Sanchez ANALYTICAL CHARGE # 951802-00

SITE CONTACT/PHONE Ed Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Pestovich

C-O-C NUMBER RFP 906341

EG&G ROCKY FLATS, CHAIN OF CUSTODY

General Chemistry

DATE	TIME	SAMPLE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil Gas 8240/8260		
															V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
																C				*	A	B	B	C	D	E	G	H	I	J	K			
																C					A	C	A		A						A			
8/16/96	1135	SG 21009 RM	250596	Glass, 8 oz	1	S	U	R		X																						X		
8/16/96	1155	SG 21010 RM	250596	"	1	S	U	R		X																						X		
8/16/96	1503	SG 21011 RM	250696	"	1	S	U	R		X																						X		

8/19/96

RELINQUISHED BY	DATE/TIME		RECEIVED BY	DATE/TIME	
S. A. Joliat	8/19/96	0900		8/19/96	0900

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION ____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

REMARKS (1) INCLUDES Cs,Li,Sr,Mo,Si,Sn
(2) TSS,TDS,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

RF-47987 (Rev. 12/93)

Ship WHITE and YELLOW copies with samples – Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

SAMPLERS _____ ANALYTICAL CHARGE # _____

FAX Ext 2623 LAB/LOCATION _____

900338

S, CHAIN OF CUSTODY

LE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI			
BOTTLE CODES													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
PRESERVATIVE														C					A	C	A		A						A			
																							*									
1001RM	[illegible]	[illegible]	1	S	U	R		X																						X		
1002RM	[illegible]		1	S	U	R		X																						X		
1003RM	230496		1	S	U	R		X																						X		

	DATE/TIME		RECEIVED BY	DATE/TIME	
		1035	[illegible]	8-7-96	1035

Cs,Li,Sr,Mo,Si,Sn
,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

134

SAMPLERS [illegible] ANALYTICAL CHARGE # [illegible]

[illegible] FAX Ext [illegible] LAB/LOCATION [illegible]

906340

S, CHAIN OF CUSTODY

LE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos *	CYANIDE	COD	TOC	DOC	H2S	Cr VI	[illegible]		
													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
														C					A	C	A		A						A			
[illegible] RM	[illegible]	[illegible]	1	S	U	R		X																						X		
[illegible] RM	[illegible]		1	S	U	R		X																						X		
[illegible] RM	[illegible]		1	S	U	R		X																						X		
[illegible] RM	[illegible]		1	S	U	R		X																						X		
[illegible] RM	[illegible]		1	S	U	R		X																						X		

	DATE/TIME		RECEIVED BY	DATE/TIME	
[illegible]	8/13/96	0853	[signature]	8/13/96	0853

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

Cs,Li,Sr,Mo,Si,Sn
I,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

135

PGL 2658

SAMPLERS S. A. Joint / Sanchez ANALYTICAL CHARGE # 7518 -90

d Mast 5757 FAX Ext 2623 LAB/LOCATION 881 Attn: John Restovich

00340

CHAIN OF CUSTODY

NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil / Gas 8240/8260		
BOTTLE CODES													V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
														C				*	A	B	B	C	D	E	G	H	I	J	K			
PRESERVATIVE														C					A	C	A	-	A						A			
																							*									
1 RM	250396	Glass 8 oz	1	S	U	R		X																						X		
5 RM	250396	"	1	S	U	R		X																						X		
RM	250296	"	1	S	U	R		X																						X		
RM	250296	"	1	S	U	R		X																						X		
RM	250296	"	1	S	U	R		X																						X		

DATE/TIME		RECEIVED BY	DATE/TIME	
8/13/96	0853	[signature]	8/13/96	0853

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

,Sr,Mo,Si,Sn
O4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

136

96L 2658

CONTRACT RMRS SAMPLERS S.A. Joliat H. Sanchez ANALYTICAL CHARGE # 9518 .00

SITE CONTACT/PHONE S. Joliat 9401 FAX Ext ~~7193~~ 2623 LAB/LOCATION 881 Attn: John Pestovich

C-O-C NUMBER RFP 906339

EG&G ROCKY FLATS, CHAIN OF CUSTODY

General Chemistry

DATE	TIME	SAMPLE NUMBER	LOCATION CODE	CONTAINER TYPE, SIZE, UNITS	NUMBER OF CONTAINERS	MEDIA: S=SOIL, W=WATER	F=FILTERED, U=UNFILTERED	R=TURN AROUND RUSH	OUT OF SPEC REPORTS	COOLED TO 4°C	NAOH	HNO3	H2SO4	HCl	VOA - CLP	VOA - 524.2 com.	BNA - CLP	PCBs/PEST CLP	TOTAL Metals-CLP+(1)	DISS. Metals-CLP+(1)	WATER QUALITY (2)	NO3/NO2 as N	NH3	OIL & GREASE	Diss Ortho-Phos *	CYANIDE	COD	TOC	DOC	H2S	Cr VI	Soil Gas 8241/8260		
															V	V	B	P	M	M	W	W	W	W	W	W	W	W	W	W	W			
																C				*	A	B	B	C	D	E	G	H	I	J	K			
																C					A	C	A		A						A			
8/2/96	1150	SG 21001RM	250196	Glass 8oz	1	S	U	R		X																						X		
8/6/96	1139	SG 21002RM	250496	"	1	S	U	R		X																						X		
8/6/96	1420	SG 21003RM	250496	"	1	S	U	R		X																						X		

RELINQUISHED BY	DATE/TIME		RECEIVED BY	DATE/TIME	
S.A. Joliat [signature]	8/7/96	1035	[signature]	8-7-96	1035

LABORATORY USE ONLY	Y	N
PCKG REC'D/CUSTODY SEALS INTACT	X	
SAMPLE LABELS/COCs AGREE	X	
TEMPERATURE WITHIN SPECIFICATION _____C		
CORRECTED COPY ATTACHED		
PROBLEMS OR DISCREPANCIES		

REMARKS (1) INCLUDES Cs,Li,Sr,Mo,Si,Sn
(2) TSS,TDS,Cl,F,SO4,CO3,HCO3

SHIPMENT METHOD :

AIR BILL NO.:

RF-47987 (Rev. 12/93)

Ship WHITE and YELLOW copies with samples -- Retain GREEN field copy
Deliver BLUE copy to RFEDS with Datacap Transmittal

Form: EGGRFP-121593-GWCOCGC-v1.2

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 25096
Location - North: 749614 East: 2086160
Date: 8/2/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5968
Area: Mound
Total Depth: 11.0
Company: Tierra/RMRS Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0-0			NA	NA	NA	GM			0-1.2 mgr sandy gravel dry
								1.0		
										1.2-2.0 lt tan gravelly sand tr ang gravel No miniRae or FID detects
							SW			
	2.0-4.0	2.0						2.0		2.0-4.0 Sand as above No miniRae or FID detects
								3.0		
	4.0-6.0	1.2	SG 2100/RM					4.0		4.0-6.0 wh to lt tan gravelly sand friable, dry
								5.0		
	6.0-8.0	2.0					SW-SM	6.0		6.0-8.0 Varicolored gravelly sand w/ occ silt lenses, friable dry caliche common
								7.0		
	8.0-9.0	1.0						8.0		8.0-9.0 Sand as above predominantly wh lt tan occ gravel
	9.0-11.0	2.0						9.0		9.0-11.0 Unable to extract sample liner from barrel TD @ 11.0'

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

PAGE 1 OF 1

Borehole Number: 250296
Location - North: 749602 East: 2086173
Date: 8/12/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5968
Area: Mound
Total Depth: 8.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.1		NA	NA	NA	SW-SM			0.0-2.0 Wh-ltgy sand w/ com silt, occ gravel (ang), well graded, dry, friable
			SG 2100GRM					1.0		
	2.0-4.0	1.3						2.0		2.0-4.0 Sand a/a upper finer grained zone w/ silt peaks near 70 ppm on FID
			SG 2100TRM					3.0		
	4.0-6.0	1.8						4.0		4.0-6.0 Sand a/a vfgr 1400 ppm peak on FID at ~ 5.5'
			SG 2100GRM					5.0		
	6.0-8.0	2.0					SM	6.0		6.0-6.5 Sand a/a 2-4 ppm incr tr-sl clay near base some caliche
								7.0		6.0-8.0 recovered in offset #3 but unable to remove core from sampler
								8.0		TD @ 8.0'

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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(4011-930-0134-930)(Form GT.1A)(03/01/92)

ROCKY FLATS PLANT BOREHOLE LOG

PAGE 1 OF 1

Borehole Number: 250396
Location - North: 749583 East: 2086484
Date: 8/8/96
Geologist: S.A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5969
Area: Mound
Total Depth: 8.0
Company: Tierra/RMRS Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.7	~~SG21000RM~~ SG21004	NA	NA	NA	SW	1.0		0.0-2.0 Hgy-wh f-mgr sand, w/ 10-20% gravel, tr silt, friable, dry gravel is ang well graded 5-10 mm
	2.0-4.0	1.8		RM				2.0		2.0-4.0 variegated sand w/ gravel & com silt, dry, friable, green stained zone 2.3-2.6 no VOC reading in this zone on FID or PID
								3.0		
	4.0-6.0	2.0					SW-SM	4.0		4.0-6.0 Wh-Hgy f-mgr sand w some ang 5-10mm gravel, dry, friable, sl clay sl Fe stn @ 5.3 1ppm FID, 30ppm PID sampled from 5.0-6.0
			SG21005RM					5.0		
	6.0-8.0	?						6.0		6.0-8.0 Unable to recover sampler due to broken rod
								7.0		TD @ 8.0'
								8.0		
								9.0		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched; accurate footage measurements not possible.

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(4011-930-0134-930)(Form GT.1A)(03/01/92)

ROCKY FLATS PLANT BOREHOLE LOG

PAGE 1 OF 1

Borehole Number: 250496
Location - North: 749593 East: 2086444
Date: 8/6/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5969
Area: Mound
Total Depth: 8.0'
Company: Tierra/RMRS Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.3		NA	NA	NA	SW			0.0-2.0 Ltgy-wh gravelly sand w com silt. Gravel approx 25% angular, 5-10mm, dry, friable
								1.0		
	2.0-4.0	1.6	SG21002 RM					2.0		2.0-4.0 a/a wh-lt tan tr gravel No stn 40 ppm FID Sampled 2.5-3.5
								3.0		
	4.0-6.0	1.8						4.0		4.0-6.0 a/a trace readings of VOC's 1ppm and less. gravel becoming rounded some cmtd zones near base
								5.0		
	6.0-8.0	1.9						6.0		6.0-8.0 Gravelly sand a/a
								7.0		
		SG21003 RM						8.0		TD @ 8.0'
								9.0		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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(4011-930-0134-930)(Form GT.1A)(03/01/92)

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1A (REV. 2)

ROCKY FLATS PLANT BOREHOLE LOG

PAGE 1 OF 1

Borehole Number: 250596
Location - North: 749615 East: 2086182
Date: 8/16/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5968
Area: Mound
Total Depth: 7.5'
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL Elmost DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.7	SG21009RA	NA	NA	NA	ML	1.0		0.0-2.0 lt gy brn grading to wh at base silt w/ gravel & sand. Gravel is 5-10 mm, angular well graded 15-20% gravel 1.0-1.5' decr to sl in remainder, some sand dry friable Sampled 1.0-2.0
	2.0-4.0	2.0					SW-SM	2.0		2.0-4.0 Sand a/a wh grading to orng @ 1.0-1.7 sl gravel some clay and silt
								3.0		
	4.0-6.0	1.8	SG21010RA					4.0		4.0-6.0 Sand a/a wh-lt gy vcc orng Fe stn
								5.0		
	6.0-7.5	1.1						6.0		6.0-7.5 Sand a/a orng Fe stn a 6.5-7.2 TD@ 7.5 3 offsets
								7.0		
								8.0		
								9.0		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched; accurate footage measurements not possible.

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(4011-930-0134-930)(Form GT.1A)(03/01/92)

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 250696
Location - North: 749620 East: 2086690
Date: 8/16/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5968
Area: Mound
Total Depth: 6.0
Company: RMRS/Tisria Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.5		NA	NA	NA	SP-SM			0.0-2.0 Hgy-brn to wh sand w/ com silt & gravel, some caliche dry, friable gravel 5-10mm, sbang, sand fg-vfg, upper foot sl organic w/roots
								1.0		
	2.0-4.0	1.3						2.0		2.0-4.0 Sand a/a
			SG 21011 RM					3.0		
	4.0-6.0	1.6						4.0		4.0-6.0 wh-Hgy sand w/ com silt and gravel, vfg sand, some caliche, dry, friable, gravel 5-10 mm, sng, tr Fe stns throughout, no discernable VOC's
								5.0		
								6.0		TD @ 6.0'
								7.0		
								8.0		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 250796
Location - North: 749633 East: 2086184
Date: 8/19/96
Geologist: S. A. Joliet
Drilling Equip.: Geoprobe

Surface Elevation: 5968'
Area: Mound
Total Depth: 6.0'
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.3		NA	NA	NA	SW-SM			0.0-2.0 ltgy-brn to wh sand w/ com silt and gravel, no staining, dry, friable, sand is fgr-vfgr, gravel is 5-20mm, ang., upper foot is sl organic, w tr roots
								1.0		
	2.0-4.0	1.5						2.0		2.0-4.0 wh sand a/a
								3.0		
	4.0-6.0	1.5	SG21012RM					4.0		4.0-6.0 sand a/a sampled 4.0-5.0
								5.0		
								6.0		TD @ 6.0'
								7.0		
								8.0		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

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Borehole Number: 250896
Location - North: 749632 East: 2086203
Date: 8/20/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5967
Area: Mound
Total Depth: 4.0'
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL Elmost DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.4	S6210 13RM	NA	NA	NA	SW-SM	1.0		0.0-1.0 dk gy-brn to wh sand w/ gravel and silt, dry, friable, gravel is 5-10 mm, angular, sand is vfg-fgr, upper 6" is sl organic w/ roots
	2.0-4.0	0.9						2.0		2.0-4.0 Sand a/a occ wit brn tr gravel
								3.0		
								4.0		TD @ 4.0'
								5.0		
								6.0		
								7.0		
								8.0		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

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Borehole Number: 250996
Location - North: 749653 East: 2086201
Date: 8/20/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5967
Area: Mound
Total Depth: 5.5
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL EJmost DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.5		NA	NA	NA	SW-SM	1.0		0.0-2.0 ngy-brn to wh sand w some silt and gravel, dry friable top 0.3' organic w/roots & stems, lightens to base gravel is angular ~~to~~ to subrnd, qtzt, 5-20mm, sand is vfgr-fgr.
	2.0-4.0	1.3						2.0		2.0-4.0 wh sand a/a
								3.0		
	4.0-5.5	1.5	SG 210141RM					4.0		4.0-5.5 sand a/a
								5.0		
								6.0		TD @ 5.5'

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

(4011-930-0134-930)(Form GT.1A)(03/01/92)

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ROCKY FLATS PLANT BOREHOLE LOG

PAGE 1 OF 1

Borehole Number: 251096
Location - North: 749652 East: 2086187
Date: 8/20/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5967
Area: Mound
Total Depth: 5.5
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 8/27/96

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-1.5	1.5	SG 21014 RM	NA	NA	NA	SW-SM	1.0		0.0-1.5 mgy-brn to wh sand w/ some silt and gravel, dry, friable upper 0.5' s/ organic w/ roots, sand is vfgr-fgr, gravel is 5-15 mm ang-sbang
	1.5-3.5	1.4						2.0		1.5-3.5 wh sand a/a
								3.0		
	3.5-5.5	1.4	SG 21015 RM					4.0		3.5-5.5 wh sand a/a incr clay to base
								5.0		TD @ 5.5'
								6.0		
								7.0		
								8.0		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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(4011-930-0134-930)(Form GT.1A)(03/01/92)

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251196
Location - North: 749569 East: 2086172
Date: 8/22/96
Geologist: S.A Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5963
Area: Mound
Total Depth: 12.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.9		NA	NA	NA	SW-SC	1.0		0.0-2.0 Location in CA ditch Hgy-brn to lt gy sand w/ com gravel and clay, vsl moist friable, sand is m-vfgr, some clay and silt, gravel is 5-10mm, angular, well graded, top 0.2' is sl organic w roots, oxidized Fe stn on grains and surfaces in finer grained zones
	2.0-4.0	1.7						2.0, 3.0		2.0-~~4.0~~ 3.5 sand a/a
										3.5-4.0 org-red clay w/some sand, and sl gravel, m plastic, sl moist, gravel is 5-10 mm ang.
	4.0-6.0	1.9	SG21016RM				CL	4.0, 5.0		4.0-6.0 Clay a/a
	6.0-8.0	1.8						6.0, 7.0		6.0-8.0 olive-gy clay w/some sand and Fe stn on surfaces, plastic, sl moist. Top of weathered bedrock at approx 6.5'
	8.0-10.0	1.6	SG21017RM					8.0, 9.0		8.0-10.0 Clay a/a

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251196
Location - North: 749569 East: 2086172
Date: 8/22/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5963
Area: Mound
Total Depth: 12.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL T. Dingley DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	10.0-12.0	2.0		NA	NA	NA	CL			10.0-12.0 Olive-gy sandy clay with heavy orng Fe stn and accarbonized plant fragments, sl moist, nplastic
								10.0		
								12.0		
										TD @ 12.0 in weathered bedrock

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251296
Location - North: 749589 East: 2086188
Date: 8/22/96
Geologist: S.A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5963
Area: Mound
Total Depth: 12.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL F. Brigley DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.7		NA	NA	NA	SW-SC	1.0	SW-SC	0.0-2.0 m gy-brn to wh sand w/ com gravel and silt, dry, friable upper 0.3' sl organic w/ roots, gravel is ang, 2-10mm, occ Fe stn on matrix sfcs, sand is fgr-vfgr
	2.0-4.0							2.0, 3.0		2.0-4.0 Sand a/a yearly wh to lt gy no organic material
	4.0-6.0	1.9						4.0, 5.0		4.0-5.5 Sand a/a
		SG21018RM					CL		CL	5.5-6.0 lt olive-gy sandy clay, sl moist plastic, occ Fe stn on sfc's top of weathered bedrock
	6.0-8.0	2.0						6.0, 7.0		6.0-8.0 Clay a/a incr Fe stn
	8.0-10.0	1.5	SG21019RM				Claystone	8.0, 9.0	Claystone	8.0-10.0 lt olive-gy claystone weathered w/ sand veins, sl blocky, sl plastic, sl moist, com Fe stn

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

Depth of SG21018RM shown as 4.0'-5.0' on Daily Activity Report J.C.B.

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(4011-930-0134-930)(Form GT.1A)(03/01/92)

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251296
Location - North: 749589 East: 2086188
Date: 8/22/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5963
Area: Mound
Total Depth: 12.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL Z. Bingly DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	10.0-12.0	2.0		NA	NA	NA	Claystone	11.0 12.0	Clayst	10.0-12.0 olive-gy claystone, weathered w/ Fe stn, sl blocky, sl plastic, sl moist occ carbonized plant frags, occ vfgr sand veins TD @ 12.0'

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251396
Location - North: 749780 East: 2086228
Date: 8/26/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5946
Area: North of Mound
Total Depth: 16.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL F. Kingsley DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.2	SG 210201RM	NA	NA	NA	CL	1.0		0.0-2.0 m gy-brn sandy clay w/ some gravel, dry, friable, 5-10 mm ang gravel 10-15 ppm on FID/PID
	2.0-4.0	1.6						2.0 3.0		2.0-4.0 Clay a/a
	4.0-6.0	1.7						4.0 5.0		4.0-6.0 Clay a/a
	6.0-8.0	2.0						6.0 7.0		6.0-8.0 m brn clay w/ occ 5-10 mm gravel layers, sl plastic sl moist some sand or silt, tr carbonaceous fragments
	8.0-10.0	2.0	SG 210211RM					8.0 9.0		8.0-10.0 Clay a/a no gravel

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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(4011-930-0134-930)(Form GT.1A)(03/01/92)

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1A (REV. 2)

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251386
Location - North: 749780 East: 2086228
Date: 8/26/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5946
Area: North of Mound
Total Depth: 16.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL F. Dingsly DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	10.0-12.0	2.0		NA	NA	NA	CL			10.0-12.0 m brn clay w/ sand & occ gravel lags, m plastic, m moist
								11.0		
	12.0-14.0	2.0						12.0		12.0-14.0 wh-pink sandy clay w/ com gravel, chaotic structure, m plastic, m moist; gravel angular, 5-25mm
								13.0		
	14.0-16.0	1.7	SG 210223RA					14.0		14.0-~~16.0~~ 14.8 clay a/a
								15.0		14.8-16.0 wh-olive gn sandy clay plastic, sl moist, sl blocky, com Fe stn on sfcs. Top of weathered bedrock @ 14.8
								16.0		
										TD @ 16.0

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251496
Location - North: 749784 East: 2086208
Date: 8/26/96
Geologist: S.A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5946
Area: N. Mound
Total Depth: 14.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL T. Kingsley DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	1.0		NA	NA	NA	CL			0.0-2.0 m gy-brn sandy clay w/com gravel, dry, friable, 5-10 mm ang gravel
								1.0		
	2.0-4.0	1.4						2.0		2.0-4.0 sandy clay a/a decr gravel to 5-10% color becoming more olive-brn toward base
								3.0		
	4.0-6.0	1.7	SG21023RM					4.0		4.0-6.0 sandy clay a/a
								5.0		
	6.0-8.0	1.6						6.0		6.0-8.0 Sandy clay a/a
								7.0		
	8.0-10.0	1.8						8.0		8.0-10.0 lt brn-wh sandy clay, plastic, sl. moist, tr gravel, caliche stringers throughout. com fe stn, gravel is angular 5-20 mm, intervals containing gravel include coarser grained matrix also. Sand is generally fgr-vfgr.
								9.0		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251496
Location - North: 749784 East: 2086208
Date: 8/27/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5946
Area: North of Mound
Total Depth: 14.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL F. Dingly DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
	10-12.0	1.8	SG21024RM	NA	NA	NA	CL			10.0-12.0 lt olive brn to mgy clay plastic, moist, top of unweathered bedrock at 11.3
								11.0		
	12.0-14.0	1.2						12.0		12.0-14.0 mgy clay a/a unweathered bedrock
								13.0		
								14.0		TD @ 14.0

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

Depth of SG21024RM shown as 10.0-12.0 on Daily Activity Report

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ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251596
Location - North: 749788 East: 2086194
Date: 8/28/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5946
Area: North of Mound
Total Depth: 14.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-2.0	0.9		NA	NA	NA	CL	1.0		0.0-2.0 lt brn sandy clay w sl gravel dry, friable, gravel is 5-10 mm angular,
	2.0-4.0	1.5						2.0, 3.0		2.0-4.0 m yell-brn sandy clay ~~a/a~~ w/ gravel lags, sl plastic, sl moist, gravel is 5-20 mm sbang-ang.
	4.0-6.0	2.0						4.0, 5.0		4.0-6.0 Clay a/a
	6.0-8.0	2.0						6.0, 7.0		6.0-8.0 lt-m olive to lt brn sandy clay a/a occ caliche lenses and com Fe stn
	8.0-10.0	1.9					Claystone	8.0, 9.0		8.0-10.0 Olive gy claystone frm, sl blocky, sl moist com Fe stn on sfcs

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251596
Location - North: 749788 East: 2086194
Date: 8/28/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5946
Area: North of Mound
Total Depth: 14.0'
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL F. Bingley DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
	10.0-12.0	1.6		NA	NA	NA	CL	11.0		10.0-12.0 m yell-brn to olive sandy clay, disturbed appearing plastic, sl moist, disturbed appearance may be due to core handling
	12.0-14.0	2.0	SG21025RM SG21025RM DUP					12.0		12.0-~~14.0~~ 13.0 Clay ara
							Claystone	13.0		13.0-14.0 Blocky m gy ~~gra~~ claystone sl moist top of unweathered bedrock approx 13.0'
								14.0		TD @ 14.0'

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251696/30196
Location - North: 749606 East: 2086169
Date: 8/29/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5968
Area: Mound
Total Depth: 13.0
Company: RMRS/Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL F. Brigdy DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	0.0-3.0	0.0	BH21009RM	NA	NA	NA	SW-SM	1.0, 2.0		0.0-3.0 Drilled sample recovered in offset 0-2.0' interval
	3.0-5.0	1.0	SG21026RM BH21001RM					3.0, 4.0		3.0-5.0 Wh-brn m gr sand sl moist, friable
	5.0-7.0	1.7	SG21027RM BH21002RM BH21002RM DUP					5.0, 6.0		5.0-7.0 Sand a/a w com gravel ang, 5-20mm
	7.0-9.0	1.9	SG21029RM BH21003RM SG21028RM BH21004RM					7.0, 8.0		7.0-9.0 Sand, H tan-orng, sl moist, friable, m-fgr, some silt
	9.0-11.0	1.8	SG21030RM SG21030RM DUP	BH21006RM BH21005RM DUP				9.0		9.0-11.0 H tan-orng, sl moist, Sand friable, some clay, m-fgr

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

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ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 251696 / 30196
Location - North: 749606 East: 2086169
Date: 8/30/96
Geologist: S. A. Joliat
Drilling Equip.: Geoprobe

Surface Elevation: 5968
Area: Mound
Total Depth: 13.0
Company: RMRS / Tierra Project No.:
Sample Type: Core

EG&G LOGGING SUPERVISOR
APPROVAL [signature] DATE 1-30-97

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/ LITHOLOGIC LOG	SAMPLE DESCRIPTION
NA	11.0-13.0	1.9	BH21006 RA	NA	NA	NA	SW-SM	11.0		11.0-13.0 Olive-gy to gn Clay Fe stnd, moist, plastic, tr carbonized plant fragments
							CL	12.0		
								13.0		TD @ 13.0 Top of weathered bedrock @ 11.0

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250196 DATE: 8/1/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 11.0 BORING DIAMETER (IN): 1 5/8
FIELD DEPTH (FT): 11.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental samples

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/5/96 END DATE: 8/5/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 7,8,9
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S.A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, R. Michaelp

DRILLER & DRILLING COMPANY: R. Michaelp

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): * 0.93 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/5/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 8 offsets abandoned at same time as primary hole

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Steven A. Joliat Date: 8/5/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250296 DATE: 8/12/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 8.0 BORING DIAMETER (IN): 1 5/8
FIELD DEPTH (FT): 8.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental samples

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/13/96 END DATE: 8/13/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 13,14
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): *0.25 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/13/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 3 offsets abandoned at same time as primary hole

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Steven A. Joliat Date: 8/13/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250396 DATE: 8/8/96
PROJECT NAME: Mound Prerenediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 8.0 BORING DIAMETER (IN): 1 5/8
FIELD DEPTH (FT): 8.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental samples

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/12/96 END DATE: 8/12/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 12,13
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S.A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): * 0.28 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/12/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 3 offsets abandoned at same time as primary hole

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: S.A. Joliat Steven A. Joliat Date: 8/12/96

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Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250496

DATE: 8/6/96

PROJECT NAME: Mound Preremediation Inves

SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 8.0

BORING DIAMETER (IN): 1 5/8

FIELD DEPTH (FT): 8.0

WATER LEVEL (FT): NA

NUMBER OF SCREENS: NA

SCREEN TYPE(S): NA

SCREEN DIAMETER(S) (IN): NA

SCREENED INTERVALS (FT): NA

STICKUP OR FLUSH MOUNT: NA

PENETRATES CONFINING LAYERS (Y/N): N

AQUIFERS MONITORED: NA

REASON FOR ABANDONMENT: Borehole for environmental samples

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/8/96

END DATE: 8/8/96

FIELD BOOK ID NUMBER: NA

PAGE NUMBER(S): 10, 11, 12

WEATHER CONDITIONS: Warm, dry

GEOLOGIST: S. A. Joliat

SITE PERSONNEL: H. Sanchez, T. Luthercer, R. Michaelf

DRILLER & DRILLING COMPANY: R. Michaelf

RIG TYPE: Geoprobe

DRILLING METHOD: Direct push

TREMIE & PUMPING EQUIPT.: NA

GROUT VOLUME PLACED (FT^3): *0.36 (dry)

CASING REMOVED (Y/N): N

TYPE: NA

DIAMETER (IN): NA

LENGTH (FT): NA

CASING LEFT IN PLACE (Y/N): N

TYPE: NA

DIAMETER (IN): NA

LENGTH (FT): NA

SURFACE SEAL DEPTH (FT): 0

DATE SET: 8/8/96

CONCRETE PAD INSCRIPTION: NA

METAL ID PLATE INSTALLED (Y/N): N

ABANDONMENT METHOD: Dry placement of granular bentonite w/hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 4 offsets abandoned at same time as primary hole

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N

DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Steven A. Joliat Date: 8/8/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97

Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250596 DATE: 8/16/96
PROJECT NAME: Mound Preremediation Investigat SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 7.5 BORING DIAMETER (IN): 1 5/8
FIELD DEPTH (FT): 7.5 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental samples

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/16/96 END DATE: 8/16/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 15
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson, Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): ≈0.14 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/16/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 2 offsets abandoned at same time as primary hole

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Steven A. Joliat Date: 8/16/96

164 Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250696 DATE: 8/16/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 6.0 BORING DIAMETER (IN): 1 5/8
FIELD DEPTH (FT): 6.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/19/96 END DATE: 8/19/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 15,16
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S.A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): #0.23 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/19/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 3 offsets abandoned at same time as primary hole

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Steven A. Joliat Date: 8/19/96

165 Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250796 DATE: 8/19/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 6.0 BORING DIAMETER (IN): 1 5/8"
FIELD DEPTH (FT): 6.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/19/96 END DATE: 8/19/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 16
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S.A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): * 0.22 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/19/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 3 offsets abandoned at same time as primary hole

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED: —

Completed By: Steven A. Joliat Date: 8/19/96

Checked By: Fred C. Griggsby Fred C. Griggsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250896 DATE: 8/20/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 4.0 BORING DIAMETER (IN): 1 5/8"
FIELD DEPTH (FT): 4.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/20/96 END DATE: 8/20/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 17
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): 0.19+ (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/20/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: *3 offsets abandoned at same time

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Date: 8/20/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 250996 DATE: 8/20/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 5.5 BORING DIAMETER (IN): 1 5/8"
FIELD DEPTH (FT): 5.5 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/20/96 END DATE: 8/20/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 17
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): 0.21* dry
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): NA
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/20/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 3 offsets abandoned at same time

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Date: 8/20/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 251096 DATE: 8/20/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 5.5 BORING DIAMETER (IN): 1 5/8"
FIELD DEPTH (FT): 5.5 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/21/96 END DATE: 8/21/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 17, 18
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Latherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): 0.29 * (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/21/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: * 3 offsets to primary hole abandoned at same time

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Date: 8/21/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 251196 DATE: 8/22/96
PROJECT NAME: Mound Precremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 12.0 BORING DIAMETER (IN): 1 5/8"
FIELD DEPTH (FT): 12.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/22/96 END DATE: 8/22/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 19
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): 0.17 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/22/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED:

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Thom A. Joliat Date: 8/22/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 251296

DATE: 8/22/96

PROJECT NAME: Mound Preremediation Inves

SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 12.0

BORING DIAMETER (IN): 1 5/8"

FIELD DEPTH (FT): 12.0

WATER LEVEL (FT): NA

NUMBER OF SCREENS: NA

SCREEN TYPE(S): NA

SCREEN DIAMETER(S) (IN): NA

SCREENED INTERVALS (FT): NA

STICKUP OR FLUSH MOUNT: NA

PENETRATES CONFINING LAYERS (Y/N): N

AQUIFERS MONITORED: NA

REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/22/96

END DATE: 8/22/96

FIELD BOOK ID NUMBER: NA

PAGE NUMBER(S): 19, 20

WEATHER CONDITIONS: Warm, dry

GEOLOGIST: S.A. Joliat

SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson, Tierra

RIG TYPE: Geoprobe

DRILLING METHOD:

TREMIE & PUMPING EQUIPT.: NA

GROUT VOLUME PLACED (FT^3): 0.17 (dry)

CASING REMOVED (Y/N): N

TYPE: NA

DIAMETER (IN): NA

LENGTH (FT): NA

CASING LEFT IN PLACE (Y/N): N

TYPE: NA

DIAMETER (IN): NA

LENGTH (FT): NA

SURFACE SEAL DEPTH (FT): 0

DATE SET: 8/22/96

CONCRETE PAD INSCRIPTION: NA

METAL ID PLATE INSTALLED (Y/N): N

ABANDONMENT METHOD: Dry placement of granular bentonite

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED:

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N

DATE FORM SUBMITTED:

Completed By: Steven A. Joliat

Date: 8/22/96

Checked By: Fred C. Gregsby / Fred C. Gregsby

Date: 1-30-97

Print Name

Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 251396 DATE: 8/26/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 16.0 BORING DIAMETER (IN): 1 5/8"
FIELD DEPTH (FT): 16.0 WATER LEVEL (FT): 14.7
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/30/96 END DATE: 8/30/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 21
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): 0.23 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0 DATE SET: 8/30/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): NA
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED:

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Date: 8/30/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 251496 DATE: 8/26/96
PROJECT NAME: Mound preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 14.0 BORING DIAMETER (IN): 1 5/8
FIELD DEPTH (FT): 14.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/30/96 END DATE: 8/30/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 22
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct Push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): 0.2 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): NA
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0.0 DATE SET: 8/30/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED:

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Date: 8/30/96

Checked By: Fred C. Dingley Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT

FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 251596 DATE: 8/28/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): ~~13.0~~ 14.0 BORING DIAMETER (IN): 1 5/8"
FIELD DEPTH (FT): ~~13.0~~ 14.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/30/96 END DATE: 8/30/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 23
WEATHER CONDITIONS: Warm, dry changing to rain at midday
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Luthcer, K. Jackson

DRILLER & DRILLING COMPANY: K. Jackson Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct Push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): 0.2 (dry
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0.0 DATE SET: 8/30/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED:

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Date: 8/30/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.5A (REV. 3)

WELL / BOREHOLE ABANDONMENT FORM

LOCATION CODE: 251696 DATE: 8/30/96
PROJECT NAME: Mound Preremediation Inves SUBCONTRACTOR: Tierra

Well Specifics (as applicable):

CONSTRUCTED DEPTH (FT): 13.0 BORING DIAMETER (IN): 1 5/8"
FIELD DEPTH (FT): 13.0 WATER LEVEL (FT): NA
NUMBER OF SCREENS: NA
SCREEN TYPE(S): NA
SCREEN DIAMETER(S) (IN): NA
SCREENED INTERVALS (FT): NA
STICKUP OR FLUSH MOUNT: NA
PENETRATES CONFINING LAYERS (Y/N): N
AQUIFERS MONITORED: NA
REASON FOR ABANDONMENT: Borehole for environmental sampling

Abandonment Specifics (as applicable)

ABANDONMENT START DATE: 8/30/96 END DATE: 8/30/96
FIELD BOOK ID NUMBER: NA PAGE NUMBER(S): 25
WEATHER CONDITIONS: Warm, dry
GEOLOGIST: S. A. Joliat
SITE PERSONNEL: H. Sanchez, T. Lutherer

DRILLER & DRILLING COMPANY: T. Lutherer Tierra

RIG TYPE: Geoprobe DRILLING METHOD: Direct Push
TREMIE & PUMPING EQUIPT.: NA
GROUT VOLUME PLACED (FT^3): 0.22 (dry)
CASING REMOVED (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
CASING LEFT IN PLACE (Y/N): N
TYPE: NA DIAMETER (IN): NA
LENGTH (FT): NA
SURFACE SEAL DEPTH (FT): 0.0 DATE SET: 8/30/96
CONCRETE PAD INSCRIPTION: NA
METAL ID PLATE INSTALLED (Y/N): N
ABANDONMENT METHOD: Dry placement of granular bentonite w/ hydration

DISPOSITION OF MATERIALS REMOVED: NA

COMMENTS OR PROBLEMS ENCOUNTERED: Adjacent 0-2 ft offset abandoned at same time

STATE WELL ABANDONMENT FORM SUBMITTED TO GEOSCIENCES (Y/N): N
DATE FORM SUBMITTED:

Completed By: Steven A. Joliat Date: 8/30/96

Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.2A (REV. 3.1)

DAILY FIELD DRILLING ACTIVITIES REPORT

Project Name: Mound Pre Remediation Investigation
Subcontractor: Tierra
Date: ~~5/10/96~~ 8/1/96
Location Code: 250196
Rig Type: Geoprobe
Drilling Co.:
Drilling Method: Direct Push
Driller: Ray Michaels
Drilling Fluid: NA
Geologist: S. A. Joliat
Bit Diameter: 1.25" IN
Crew Member(s): R. Michaels, H. Sanchez, Tom Lutherer
Bit Type:
Total Depth: FT

Sample #	QC Code	Time	(C)omp (G)rab	Depths (FT): Start	End	Types: OVM Reading (PPM)	α Readings (CPM)	β Readings (CPM)

End of Day Status: In Progress X Drilling Completed

Chronological Record of Activities and Comments: 1300 Sign soil disturbance permit
1415 Move Geoprobe to location 1445 - 1515 Core to 4.0 feet
1530 leave field

Was there fluid in the hole at the beginning of the daily drilling operation? Yes No X
If yes, what was the water level? FT
Weather: Hot, clear, sl breeze

Completed By: No longer at RFETS - FG Date:
Print Name Signature
Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Inv
Subcontractor: Tierra
Location Code: 250196
Rig Type: Geoprobe
Driving Co.: Tierra
Driving Method: Direct push
Driver: R. Michaels
Drilling Fluid: NA
Geologist: S. A. Joliat
Bit Diameter (in.): 1 5/8
Total Depth (Ft): 11.0
Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time

End of Day Status: In Progress X Drilling Completed

Chronological Record of Activities and Comments: 9:30-10:30 Pre-Ev, 10:30 Organizing equipment, 1:15 Signed Soil disturbance permit, 2:20 FIDLER Survey, 3:05 Sampling 250196, 4:00 Shut down for day

Was there fluid in the hole at the beginning of the daily drilling operation? Yes ____ No X

If yes, what was the water level? ____ Ft.

Weather: Warm, dry

Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/1/96

Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Inv. Subcontractor: Tierra
Location Code: 250196 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct push
Driver: R. Michaels Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 11.0 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG21001RM	Real	G	4.9	6.0	0/0	0	326	1150

End of Day Status: In Progress X Drilling Completed
Chronological Record of Activities and Comments: 9:30 Safety meeting, 10:00 - 300 Sampling 250196, 3:00 Left field looking for tools to extract samples from sampler barrel

Was there fluid in the hole at the beginning of the daily drilling operation? Yes No X
If yes, what was the water level? Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat Steven A. Joliat Date: 8/2/96
Print Name Signature
Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Precremediation Inv. Subcontractor: Tierra
Location Code: 250196 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct push
Driver: R. Michaels Drilling Fluid: NA
Geologist: S.A. Joliat Bit Diameter (in.): 1 7/8
Total Depth (Ft): 11.0 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C)omp (G)rab	Depths (FT) Start	End	OVM Type: Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time

End of Day Status: In Progress _____ Drilling Completed X
Chronological Record of Activities and Comments: 10:15 Safety meeting, 10:20-3:10 Sampling 250196 and attempting to clean jammed sampters.

Was there fluid in the hole at the beginning of the daily drilling operation? Yes _____ No X
If yes, what was the water level? _____ ft.
Weather: Warm, dry
Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/5/96
Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Inv. Subcontractor: Tierra
Location Code: 250496 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct push
Driver: R. Michaels Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 8.0 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C)omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG 21002RM	Real	G	2.5	3.5	40 / 0	0	367	1139
SG 21003RM	Real	G	7.0	8.0	0 / 0	0	388	1420

End of Day Status: In Progress X Drilling Completed
Chronological Record of Activities and Comments: 10:00 Safety meeting, 10:15 Sampling 250496, 3:30 cleaning up site

Was there fluid in the hole at the beginning of the daily drilling operation? Yes No X
If yes, what was the water level? Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat Steven A. Joliat Date: 8/6/96
Print Name Signature
Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation
Subcontractor: Tierra
Location Code: 250496
Rig Type: Geoprobe
Driving Co.: Tierra
Driving Method: Direct push
Driver: R. Michaels
Drilling Fluid: NA
Geologist: S. A. Joliat
Bit Diameter (in.): 1 5/8
Total Depth (Ft): 8.0
Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time

End of Day Status: In Progress X Drilling Completed

Chronological Record of Activities and Comments: Used morning waiting on parts, 12:45 Safety meeting, 12:50 - 1:15 Sampling ~~250496~~, 1:15 - 3:00 Cleaning jammed samplers, 3:00 Shut down for weather

Was there fluid in the hole at the beginning of the daily drilling operation? Yes ____ No X

If yes, what was the water level? ____ Ft.

Weather: Warm, dry

Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/7/96

Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Inv. Subcontractor: Tierra
Location Code: 250496, 230396 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct push
Driver: K. Jackson Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 8.0, 8.0 Crew Member(s): H. Sanchez, T. Lutkerer

Sample #	QC Code	(C)omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG21004RM	Real	G	1.0	2.0	200/5	0	379	1510

End of Day Status: In Progress X Drilling Completed

Chronological Record of Activities and Comments: 9:45 Safety meeting 10:00-12:00 Cleaning jammed samplers, 1:00-1:40 Sampling ~~250496~~ ~~1:55-3:00 FIDLER~~ survey & repair malfunctioning FIDLER, 3:00-4:15 Sampling 250396, 4:25 Shut down for day

Was there fluid in the hole at the beginning of the daily drilling operation? Yes No X

If yes, what was the water level? Ft.

Weather: Warm, dry

Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/8/96

Checked By: Fred C. Gregsby (Print Name) Fred C. Gregsby (Signature) Date: 1-30-97

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APPENDIX [illegible]
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Inv. Subcontractor: Tierra
Location Code: 250396, 250296 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct push
Driver: K. Jackson Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 8.0, 8.0 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C)omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG21005RM	Real	G	5.0	6.0	1.0/30.0	0	388	1056
SG21006RM	Real	G	1.0	2.0	10/10	0	369	1340
SG21007RM	Real	G	3.0	4.0	60/60	0	420	1358
SG21008RM	Real	G	5.0	5.5	1400/1400	0	411	1417

End of Day Status: In Progress X Drilling Completed
Chronological Record of Activities and Comments: 10:00 Safety meeting 10:20-11:55 Sampling 250396, lost sampler downhole at 11:30, 1400-3:30 Sampling 250296

Was there fluid in the hole at the beginning of the daily drilling operation? Yes No X
If yes, what was the water level? Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/12/96
Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Inves. Subcontractor: Tierra
Location Code: 250296 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct Push
Driver: K. Jackson Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 8.0 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time

End of Day Status: In Progress _____ Drilling Completed X
Chronological Record of Activities and Comments: 10:00 Safety meeting, 10:10 - 11:11 Sampling 250296, 11:45 - 4:30 Cleaning jammed samplers

Was there fluid in the hole at the beginning of the daily drilling operation? Yes _____ No X
If yes, what was the water level? _____ Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/13/96
Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Inv. Subcontractor: Tierra
Location Code: 250596, 250696 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct Push
Driver: K. Jackson Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 7.5, 6.0 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG 21009RM	Real	G	1.0	2.0	0/40	0	388	1135
SG 21010 RM	Real	G	5.0	6.0	0/0	0	345	1155
SG 21011RM	Real	G	3.0	4.0	0/0	0	368	1503

End of Day Status: In Progress X Drilling Completed
Chronological Record of Activities and Comments: 9:45 Safety meeting, 10:00-10:30 FIDLER Survey, 10:30-1:50 Sampling 250596, ~~1:50-2:15 FIDLER Survey~~, 2:15-3:30 Sampling 250696, 3:30 Cleaning up site for day

Was there fluid in the hole at the beginning of the daily drilling operation? Yes ____ No X
If yes, what was the water level? ____ Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/16/96
Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Inv. Subcontractor: Tierra
Location Code: 250696, 250796 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct push
Driver: K. Jackson Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 6.0, 6.0 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG 21012RM	Real	G	4.0	5.0	0/0	0	298	1352

End of Day Status: In Progress _____ Drilling Completed X
Chronological Record of Activities and Comments: 9:15 Safety meeting, 9:45-11:30 Sampling 250696, 11:30-12:15 FIDLER Survey, 1:15-3:35 Sampling 250796, 3:45 Cleaning up for day

Was there fluid in the hole at the beginning of the daily drilling operation? Yes _____ No X
If yes, what was the water level? _____ Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat Steven A. Joliat Date: 8/19/96
Print Name Signature
Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation
Subcontractor: Tierra
Location Code: 250896, 250996, 251096
Rig Type: Geoprobe
Driving Co.: Tierra
Driving Method: Direct push
Driver: K. Jackson
Drilling Fluid: NA
Geologist: S. A. Joliat
Bit Diameter (in.): 1 5/8
Total Depth (Ft): 4.0, 5.5, 5.5
Crew Member(s): H. Sanchez, T. LaTherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG21013RM	Real	G	0.5	1.5	0/30	0	345	1105
SG21014RM	Real	G	4.0	5.0	0/0	0	365	1416

End of Day Status: In Progress X Drilling Completed

Chronological Record of Activities and Comments: 9:45 Safety meeting, 10:00-12:00 Sampling 250896, 1:00-1:40 FIDLER Survey, 1:40-2:50 Sampling 250996, 3:00-3:30 FIDLER Survey, 3:30-3:45 Sampling 251096

Was there fluid in the hole at the beginning of the daily drilling operation? Yes ____ No X

If yes, what was the water level? ____ Ft.

Weather: Warm, dry

Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/20/96

Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation In Subcontractor: Tierra
Location Code: 251096 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct push
Driver: K. Jackson Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 5.5 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C)omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG21015RM	Real	G	4.0	5.0	0/0	0	394	1045

End of Day Status: In Progress _____ Drilling Completed X
Chronological Record of Activities and Comments: 9:30 Safety meeting
10:00 - 11:30 Sampling 251096 - 11:30 off for afternoon

Was there fluid in the hole at the beginning of the daily drilling operation? Yes _____ No X
If yes, what was the water level? _____ Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat Steven A. Joliat Date: 8/21/96
Print Name Signature
Checked By: Fred C. Grigsby Fred C. Grigsby Date: 1-30-97
Print Name Signature

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APPENDIX 1
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation Invs Subcontractor: Tierra
Location Code: 251196/251296 Rig Type: Geoprobe
Driving Co.: Tierra Driving Method: Direct push
Driver: K. Jackson Drilling Fluid: NA
Geologist: S. A. Joliat Bit Diameter (in.): 1 5/8
Total Depth (Ft): 12.0, 12.0 Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C)omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG21016RM	Real	G	4.0	5.0	0/0	0	348	1110
SG21017RM	Real	G	9.0	10.0	0/0	0	335	1204
SG21018RM	Real	G	4.0	5.0	0/0	0	388	1500
SG21019RM	Real	G	9.0	10.0	0/0	0	423	1535

End of Day Status: In Progress _____ Drilling Completed X
Chronological Record of Activities and Comments: 9:30 Safety Meeting 9:45 FIDLER Survey 10:15-12:15 Sampling 251196, 1:05-1:30 Sampling 251196, 1:30-2:10 FIDLER Survey, 2:10-4:00 Sampling 251296, 4:15 Return to yard
Was there fluid in the hole at the beginning of the daily drilling operation? Yes _____ No X
If yes, what was the water level? _____ Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/22/96
Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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APPENDIX [illegible]
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation
Subcontractor: Tierra
Location Code: 251396/251496
Rig Type: Geoprobe
Driving Co.: Tierra
Driving Method: Direct push
Driver: K. Jackson
Drilling Fluid: NA
Geologist: S. A. Joliat
Bit Diameter (in.): 1 5/8
Total Depth (Ft): 16.0 / 6.0
Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG 21020RM	Real	G	1.0	2.0	0/15	0	365	1120
SG 21021RM	Real	G	9.0	10.0	0/0	0	386	1217
SG 21022RM	Real	G	14.0	15.0	0/0	0	461	1434
SG 21023RM	Real	G	4.0	5.0	0/0	0	432	1556

End of Day Status: In Progress X Drilling Completed
Chronological Record of Activities and Comments: 10:00 Safety meeting 10:15 FIDLER Survey at 251396 11:15 - 2:45 Sampling at 251396 3:00 FIDLER Survey at 251496 3:25 Sampling at 251496 4:05 Shutting down for day
Was there fluid in the hole at the beginning of the daily drilling operation? Yes No X
If yes, what was the water level? Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/26/96
Checked By: Fred C. Grigsby (Print Name) Fred C. Grigsby (Signature) Date: 1-30-97

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APPENDIX [illegible]
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation
Subcontractor: Tierra
Location Code: 251496
Rig Type: Geoprobe
Driving Co.: Tierra
Driving Method: Direct Push
Driver: K. Jackson
Drilling Fluid: NA
Geologist: S. A. Joliat
Bit Diameter (in.): 1 5/8
Total Depth (Ft): 14.0
Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG21024RM	Real	G	10.0	12.0	0/0	0	368	1415

End of Day Status: In Progress _____ Drilling Completed X
Chronological Record of Activities and Comments: 12:45 Safety Meeting 1:00-2:15 Sampling at 251496. 2:15-2:30 FIDLER Survey for 251596. 2:30 measuring water level in 251396. 3:00 Shut down for day

Was there fluid in the hole at the beginning of the daily drilling operation? Yes _____ No X
If yes, what was the water level? _____ Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/27/96
Checked By: [illegible] (Print Name) [illegible] (Signature) Date: 1-30-97

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APPENDIX [illegible]
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Preremediation
Subcontractor: Tierra
Location Code: 251596
Rig Type: Geoprobe
Driving Co.: Tierra
Driving Method: Direct push
Driver: K. Jackson
Drilling Fluid: NA
Geologist: S. A. Joliat
Bit Diameter (in.): 1 5/8"
Total Depth (Ft): 14.0
Crew Member(s): H. Sanchez, T. Lutherer

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG 21025RM	Real	G	12.0	13.0	0/0	0	442	1155
SG 21025RM	Dup	G	12.0	13.0	0/0	0	442	1155

Some No??

End of Day Status: In Progress ____ Drilling Completed X
Chronological Record of Activities and Comments: 9:30 Safety Meeting 10:00 FIDLER Survey 10:35 Attempting to measure water levels in 251596 and 251596 10:40 - 12:15 Sampling 251596 12:45 lunch 1:00 Shut down for weather 2:00 Return to yard
Was there fluid in the hole at the beginning of the daily drilling operation? Yes ____ No X
If yes, what was the water level? ____ Ft.
Weather: Warm, dry
Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/28/96
Checked By: [illegible] (Print Name) [illegible] (Signature) Date: 1-30-97

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APPENDIX [illegible]
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DAILY FIELD ACTIVITY REPORT

Project Name: Mound Procremediation
Subcontractor: Tierra
Location Code: 251696
Rig Type: Geoprobe
Driving Co.: Tierra
Driving Method: Direct push
Driver: T. Lutherer
Drilling Fluid: NA
Geologist: S. A. Joliat
Bit Diameter (in.): 1 5/8"
Total Depth (Ft): 13.0
Crew Member(s): H. Sanchez

Sample #	QC Code	(C) omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha/Beta		Time
SG21030RM	Real	G	9.0	11.0	1600/1600	0	286	1145
SG21030RM	Dup	G	9.0	11.0	1600/1600	0	388	1145
BH21005RM	Real	G	9.0	11.0	1600/1600	0	365	1145
BH21005RM	Dup	G	9.0	11.0	1600/1600	0	369	1145
BH21006RM	Real	G	11.0	13.0	10/10	0	377	1211
BH21007RM	Real	G	0.0	2.0	2/2	0	325	1230

End of Day Status: In Progress ____ Drilling Completed X

Chronological Record of Activities and Comments: 9:45 Safety Meeting 10:15 Onsite 251696 10:25 Attempting to bail 251396 10:55 Sampling at 251696 12:30 Break for lunch 1:30 Clean up site & abandon holes

Was there fluid in the hole at the beginning of the daily drilling operation? Yes ____ No X

If yes, what was the water level? ____ Ft.

Weather: Warm, dry

Completed By: Steven A. Joliat (Print Name) Steven A. Joliat (Signature) Date: 8/30/96

Checked By: Fred C. Gregg (Print Name) Fred C. Gregg (Signature) Date: 1-30-97

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DAILY FIELD ACTIVITY REPORT

Project Name: Monroe Reconciliation
Subcontractor: Tierra
Location Code: 251696
Rig Type: Geoprobe
Driving Co.: Tierra
Driving Method: Direct Push
Driver: T. Lutterer, K. Jackson
Drilling Fluid: N/A
Geologist: S. A. Joliat
Bit Diameter (in.): 1 5/8
Total Depth (Ft): 13.0
Crew Member(s): H. Sanchez, T. Lutterer

Sample #	QC Code	(C)omp (G)rab	Depths (FT) Start	End	OVM Type: FID/PID Reading (PPM)	RAD Type Reading (CPM) Alpha	Beta	Time
SG21026RM	Real	G	4.0	5.0	0/0	0	388	1355
SG21027RM	Real	G	5.0	6.0	40/40	0	411	1420
SG21028RM	Real	G	8.0	9.0	1000/1000	0	369	1522
SG21029RM	Real	G	7.0	8.0	1000/1000	0	381	1526
BH21001RM	Real	G	4.0	5.0	0/0	0	388	1355
BH21002RM	Real	G	5.0	6.0	40/40	0	385	1420
BH21003RM	Real	G	7.0	8.0	1000/1000	0	365	1526
BH21004RM	Real	G	8.0	9.0	1000/1000	1	296	1522

End of Day Status: In Progress ____ Drilling Completed X

Chronological Record of Activities and Comments: 9:45 Safety Meeting 10:35-11:50 Attempting to drill 251396 1100-4:45 Set second sample at 251696

Was there fluid in the hole at the beginning of the daily drilling operation? Yes ____ No X

If yes, what was the water level? ____ ft.

Weather: Warm, dry

Completed By: Steven A. Joliat — Steven A. Joliat — Date: 8/29/96

Print Name — Signature

Checked By: Fred C. Gregory — [signature] — Date: 1-30-97

Print Name — Signature

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Date: 6/20/96 Date Reviewed: MCC Number: MCC-96-292

Please check where appropriate: ☒ Urgent ☐ New Activity ☒ Request Activity Status Change

To:	MAL Change Control, FAX 6505 Building T130A				
From:	R. K. Volk/E. C. Mast (Name)	Rmrs-Er (organization)	T893A (bldg.)	7700 (ext.)	6145 (pgr.)

ACTIVITY DESCRIPTION FOR MASTER ACTIVITY LIST (MAL)

Activity Identifier: MP-ER-009

Activity Title/Name: Characterization For OU 2

Recommended Status: ☒ (A) Authorized for Performance ☐ (P) Authorized for Planning ☐ (U) Unauthorized ☐ Delete ☐ Closure

Type of Activity: ☐ Baseline OR ☒ Mission Program *(select one of the following):*
Category: A
☐ Hazard Reduction
☒ Uncertainty Reduction
☐ Work Preparation

Description: * Comparison of recent characterization data with preexisting data to assist in the remediation decision for OU 2. * Compilation of field investigation data from FY95 investigations; provides characterization information for trenches which are being considered for early actions. * Pre-remediation characterization for Mound Area, which is a top ranked IHSS, requires determination of contamination level and health and safety requirements for removal and remediation methodology. * HPGE and FIDLER instruments will be used to survey Americium Zone in 903 Pad Area.

Expected Hazards: ☒ Radiological ☒ Hazardous ☐ Flammables/Explosives/Combustibles ☐ Nuclear Criticality ☒ Industrial Safety *(select one of the following):*
☐ Electrical
☒ Other (significant and unique to RFETS)

Existing Uncertainties: None identified

Identified Interfaces: None identified

Authorization Basis: Field sampling plan, WP 12330, SOPs and OU 2 Health and Safety Plan

Site Infrastructure

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WAIT FOR FORMAL NOTIFICATION FROM THE MAL TEAM BEFORE TAKING FURTHER ACTION

PADC-96-00045

Notification via phone convesation w/ Barb Swenson on Monday, July 1 that the MAL had been approved and work could begin [illegible] 7/2/96

Activity Number:	**MP-ER-009 (A)**
Activity Title:	Characterization for OU2
Activity Type:	Mission Program -Uncertainty Reduction
Activity Description:	This activity includes: • Comparison of recent characterization data with preexisting data to assist in the remediation decision for OU2 • Compilation of field investigation data from FY95 investigations; provides characterization information for trenches which are being considered for early actions • Pre-remediation characterization for Mound Area, which is a top ranked IHSS, requires determination of contamination level and health and safety requirements for removal and remediation methodology • HPGE and FIDLER instruments will be used to survey Americium Zone in 903 Pad
Expected Hazards:	Radiological, Hazardous/Toxic, Industrial Safety
Existing Uncertainties:	None Identified
Identified Interfaces:	None Identified
Authorization Basis:	Site Infrastructure Note 2

June 26, 1996
Change 38
MCC-96-292

Source One Management, Inc.

Fax Transmittal Sheet

Date: 7-2-96

Number of pages: 3
(including this cover page)

To: Ed Most

Company:

Phone No.: 5757 Fax: 2623

From: Ann Stoddard

Department: Document Control

Phone No.: 3257 Fax: 8014

Comments:

Have a nice day!

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RMRS Rocky Mountain Remediation Services, L.L.C
. . . protecting the environment

INTEROFFICE MEMORANDUM

DATE: May 16, 1996

TO: R. K. Volk, Sitewide Actions Group, Bldg. T893A, X7700

FROM: G. M. Deters, Data Management, Bldg. 080, X8739

SUBJECT: SAMPLE NUMBERS/LOCATION CODES - GMD-020-96

DOE Order: 4700.1

Action: Share information with field personnel.

Listed below are the sample number and/or location code blocks assigned to your project by the Rocky Flats Environmental Database System (RFEDS) group. Please have sampling team personnel utilize the sample numbers and location codes on field data forms; chain-of-custody (COC) documents and when entering information into the RFEDS field data capture software known as Datacap. Only use sample numbers and location codes approved by RFEDS. If you need additional sample numbers, location blocks or have questions concerning this correspondence, contact Louise Martin at extension 6947.

As a reminder, it is your responsibility as project manager to ensure that the appropriate personnel are trained in 5-B35-ER-OPS-FO.13, Sample Management and B-B29-ER-OPS-FO.14, Field Data Management. Please contact George Bigger for this training at extension 8756.

An accurate, legible copy of the completed COC form must be placed in the appropriate box at T891E in the contractor's yard the day following shipment of samples. Without this paperwork, RFEDS cannot process and accept analytical data submitted by the labs.

INFORMATION SUPPLIED TO RFEDS

Project Name: OU2 Mound / T1 / 903 Pad Pre-Remediation Characterization

Sample Type: Borehole (BH)

Start Date: ~~May 20, 1996~~ July 30, 1996

End Date: ~~June 28, 1996~~ Aug 30, 1996

Subcontractor: RMRS / Tierra

Sample Mgr: ~~Robin Volk~~ ~~Steve Jofrat~~

Analytical Charge Number: 951802-AN

RFEDS Processing Charge #: 951802-00

Number of New Locations: ~~30~~ 4

Number of Samples: ~~60~~

INFORMATION PROVIDED BY RFEDS

Project Abbreviation: OU2_PREREM_CHAR

Location Code Block:

30196 through 33096

Sample Number Block:

Soil BH21001RM through BH21060RM
GW

APO Batch Number Block:

through

When first sample is sent in, APO Batch No. Block will be assigned and stay constant throughout the project

cc:
L. B. Johnson
L. A. Martin
ER Project File (2)

per Norm Stoner
7/30/96

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Norn Stoner X 4289

RMRS Rocky Mountain Remediation Services, L.L.C
. . . protecting the environment

INTEROFFICE MEMORANDUM

DATE: May 16, 1996

TO: R. K. Volk, Sitewide Actions Group, Bldg. T893A, X7700

FROM: G. M. Deters, Data Management, Bldg. 080, X8739

SUBJECT: SAMPLE NUMBERS/LOCATION CODES - GMD-~~020~~-96

DOE Order: 4700.1

Action: Share information with field personnel.

Steve - Here are the Location codes & sample # for the Soil Gas & Soil - I am getting Groundwater samples

Listed below are the sample number and/or location code blocks a... ...ned # for the ...cky Flats Environmental Database System (RFEDS) group. Please have sa... ...ize the sample numbers and location codes on field data forms, chain-of-custody (COC) docume... ...tion into the RFEDS field data capture software known as Datacap. Only use sample numbers a... ...EDS. If you need additional sample numbers, location blocks or have questions co... ...ntact Louise Martin at extension 6947.

See note at bottom of page regarding APO #'s ↓ thanks Ed

As a reminder, it is your responsibility as project manager to ensure ... trained in 5-B35-ER-OPS-FO.13, Sample Management and B-B29-ER-OPS-FO.14, ... contact George Bigger for this training at extension 8756.

An accurate, legible copy of the completed COC form must be placed in the appropriate box a... 1E in the contractor's yard the day following shipment of samples. Without this paperwork, RFEDS cannot process and accept analytical data submitted by the labs.

INFORMATION SUPPLIED TO RFEDS

Project Name: OU2 Mound / T1 / 903 Pad Pre-Remediation Characterization

Sample Type: Soil Gas (SG) Elmost 7/30/96

Start Date: ~~May 20, 1996~~ July 31, 1996

End Date: ~~June 28, 1996~~ August 31, 1996

Subcontractor: RMRS / Tierra

Sample Mgr: ~~Robin Volk~~ Steve Joliat

Analytical Charge Number: 951802-AN

RFEDS Processing Charge #: 951802-00

Number of New Locations: ~~75~~ 17

Number of Samples: ~~150~~ 100

INFORMATION PROVIDED BY RFEDS

Project Abbreviation: OU2_PREREM_CHAR

Location Code Block:

SG250196 through SG257596

Sample Number Block:

Soil Gas SG21001RM through SG21150RM

APO Batch Number Block:

through

When first sample is sent in, APO Batch No. will be assigned and will stay constant through the project
per: Norn Stoner 7/30/96
Elmost

cc:
L. B. Johnson
L. A. Martin
ER Project File (2)

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EG&G ROCKY FLATS

INTEROFFICE CORRESPONDENCE

DATE: February 13, 1995

TO: R. J. LaBorde, RPM Construction Managemnt, Bldg. T130F, X2538

FROM: R. K. Volk, Operable Unit 2 Characterization Team, Bldg. 080, X8645

SUBJECT: SOIL DISTURBANCE PERMIT FOR OPERABLE UNIT 2 TRENCHES AND MOUND SITE CHARACTERIZATION – RKV-007-95

DOE Order: 4700.1

Action: Evaluate the Operable Unit 2 (OU 2) Trench and Mound Site Characterization activities for issuance of soil disturbance permit.

Beginning in mid-February 1995, the OU 2 Characterization Team would like to start Trench and Mound Site Characterization activities. Individual Hazardous Substance Sites (IHSS) which will be included in these activities are as follows: IHSS 113 (Mound Site), IHSS 108 (Trench T-1), IHSS 109 (Trench T-2), IHSS 111.1 (Trench T-4), IHSS 111.8 (Trench T-11), IHSS 111.7 (Trench T-10), IHSS 111.2 (Trench T-5), IHSS 111.3 (Trench T-6), IHSS 111.6 (Trench T-9), IHSS 111.4 (Trench T-7), IHSS 111.5 (Trench T-8) and Trenches T-12 and T-13. (Please see the enclosed maps for further detail and locations.) In order to begin field activities it is necessary that we receive an approved soil disturbance permit. Also enclosed is a completed Soil Disturbance Evaluation Form. Please evaluate the possibility that the sampling activities under the described characterization is similar to the work performed under previous OU 2 disturbance permits, number 986446 or 986379 and therefore can be reopened. Following is a brief description of the activities which will be taking place during the characterization.

The characterization will be divided into two phases. The first phase will use non-intrusive methods to define the extent of the trenches within OU 2. Ground penetrating radar and electromagnetic surveys (EM-31 and EM-61) will be used to identify the edges of the trenches and detect any metallic items (i.e. drums) which may be buried in the trenches. The second phase of the characterization will involve using a Geoprobe to collect soil gas samples along a twenty foot grid spacing centered along the long axis of the trenches. Hollow-stem augers will be used to drill boreholes and collect soil samples in the center of anomalies detected during the soil gas survey sampling. The Geoprobe will be used to take samples at five and ten feet below ground surface. If initial samples indicate deeper contamination may exist, drilling may go as deep as five feet above the top of groundwater. Boreholes for soil sampling will extend to ten feet below ground surface. If observations from the soil gas survey indicate the possibility of deeper contamination, the borehole may be extended to the top of groundwater. The enclosed maps provide additional information on the proposed drilling locations.

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Thank you for your help with the issuance of the soil disturbance permit, the charge number you will need for this work is 98921400. If you require any further information or have any questions, please feel free to call me at extension 8645.

RKV:bll

Enclosures:
As Stated (2)

cc:
L. W. Harston
P. J. Laurin
ERPD Project File (2)

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COST ESTIMATE FOR MOUND IMPLEMENTATION OF FSP, DATA INTERPRETATION AND REPORTING
Sheet2

Analyte Suite		No. of Locations	No. of Samples /Location	QA Samples	Total No of Samples	$/Sample	Total Cost	Burden @	Cost Summary
	Soil Samples							2.4	
Soils	**VOCs**/TCL -VOA Modified Method 8210	2	4	2	10	$ 550	$ 5,500	$ 13,200	
Soils	Rads, Am241, Pu239/240, U Alpha Spec	2	4	2	10	$ 911	$ 9,110	$ 21,864	
Total Analytical for Soils									$ 35,064
	Soil Gas Samples				Sampling Days	$/Day		Burden @ 2 (100%)	
Soil Gas	GC (SW846 Methods 8240 and 8260)(See footnote 1)	15	4	1 per 10	6	$ 1,800	$ 10,800	$ 21,600	
Total Analytical for Soil Gas									$ 21,600
	Groundwater (if present)					$/Day		Burden @	
								2.4	
Groundwater	**VOCs**/TCL -VOA Modified Method 8210	4	1	6	10	$ 550	$ 5,500	$ 13,200	
Groundwater	Rads, Am241, Pu239/240, U Alpha Spec	4	1	2	6	$ 911	$ 5,466	$ 13,118	
Total Analytical for Groundwater									$ 26,318

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MOUND SAMPLING and QC PROGRAM

Analyte Suite		No. of Locations	No. of Samples /Location	Total No of Real Samples	QA Samples	QA Sample Types	Container/Preservatives/ Holding Time	Notes (also read FSP for further clarification)
	Soil Samples							
Soils	**VOCs**/TCL -VOA Modified Method 8210	2	4	8	2	1 Dup & 1 Field Blank	4 oz glass w/Teflon liner/4°C/7 Days	Boring locations will be selected after Soil Gas data analysis, 1 from area of high VOA contamination, 1 from low contamination area
Soils	**Rads**, Am241, Pu239/240, U Alpha Spec	2	4	8	2	1 Dup & 1 Field Blank	500 ml glass jars/NA/61 days	Collect at 5' intervals, or where there is visible contamination (staining)
					4			
	Soil Gas Samples							
Soil Gas	GC (SW846 Methods 8240 and 8260) (See footnote 1)	15	4	60	1 per 10	6 Duplicates	500 ml glass jars or 1 inch diameter lexan sleeve w/ caps/NA/14 Days	Sample location predicated on prior days analytical results
					6			
	Groundwater (if present)							
Groundwater	**VOCs**/TCL -VOA Modified Method 8210 (see Footnote 2)	4	1	4	2	1 Dup & 1 Rinsate	2-40 ml VOA Vials/4oC/7 Days	Collect if groundwater present, consult with project manager,
					4	1 Trip Blank /Cooler	2-40 ml VOA Vials/4oC/7 Days	Maximum of 4 borings will be sampled if groundwater is present
Groundwater	**Rads**, Am241, Pu239/240, U Alpha Spec (see Footnote 2)	4	1	4	2	1 Dup & 1 Rinsate	1 gal poly/HNO3/ 61 days	
					8			
	NAPL (if present)							
NAPL	**VOCs**/TCL -VOA Modified Method 8210 (see Footnote 2)	2	1	2	1	1 Duplicate	2-40 ml VOA Vials/4oC/7 Days	Collect if NAPL present, consult with project manager,
NAPL	**Rads**, Am241, Pu239/240, U Alpha Spec (see Footnote 2)	2	1	2	1	1 Duplicate	1 gal poly/HNO3/ 61 days	Maximum of 2 borings will be sampled if NAPL is present
				88				

Footnote 1: The analytical procedure is the same as the procedure following in the Trench T3/4 PAM

Footnote 2: The number of samples will ultimately be determined by the number of borings in which groundwater is encountered

Footnote 3: The number of samples will ultimately be determined by the number of borings in which NAPL is encountered

SOIL DISTURBANCE EVALUATION FORM

The purpose of this information is to assist the committee in identifying the potential hazard (s) associated with this soil disturbance.

REQUESTER: Name Robin K. Volk

Group OU 2 Closure Phone/Pager 8645/6145

PROJECT TITLE: OU 2 Trenches and Mound Site Char. CHARGE #: 989204

Will the disturbance occur in or near an Individual Hazardous Substance Site (IHSS, formerly SWMU)?
YES See Attached maps

Are overhead utilities present?	Yes	☒	No	☐
Are underground utilities present?	Yes	☐	No	☒
Will a utility outage be required?	Yes	☐	No	☒

IS THE EXCAVATION FOR:

Construction ☐ Trenching ☐ Sampling ☒ Driven rods/posts ☐
Grounding ☐ Post holes ☐ Other types ☐

IF SAMPLING:

Soil removal by hand? Yes ☐ No ☒
Drilling? Yes ☒ No ☐

Depth of drilling 5 ft., 10 ft. and top of groundwater Diameter 6 1/4 in.

IF CONSTRUCTION:
Hand digging only? Yes ☐ No ☐
Will mechanical equipment be required? Yes ☐ No ☐

What Type? _____

Depth of excavation _____ Length of excavation _____

Width of excavation _____ Will shoring be required _____

Requester shall fill out this form and submit it along with information required in SOIL DISTURBANCE GUIDELINE to EXCAVATION ADMINISTRATOR.

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COST ESTIMATE FOR MOUND IMPLEMENTATION OF FSP, DATA INTERPRETATION AND REPORTING
Sheet2

Analyte Suite		No. of Locations	No. of Samples /Location	QA Samples	Total No of Samples	$/Sample	Total Cost	Burden @	Cost Summary
	NAPL (if present)							Burden @	
								2.4	
NAPL	VOCs/TCL -VOA Modified Method 8210	2	1	1	3	$ 550	$ 1,650	$ 3,960	
NAPL	Rads, Am241, Pu239/240, U Alpha Spec	2	1	1	3	$ 911	$ 2,733	$ 6,559	
Total Analytical for NAPL									$ 10,519
Footnote 1: The analytical procedure is the same as the procedure following in the Trench T3/4 PAM									
	Labor Requirements							Burden @ 2 (100%)	
	(Pre-Drilling Activities)			60 hrs x $80/hr =			$ 4,800	$ 9,600	
	(Drillers)		2 people x 9 hours x 11 days x $50/hr =				$ 9,900	$ 19,800	
	(Drilling Days)		2 people x 9 hours x 11 days x $80/hr =				$ 15,840	$ 31,680	
	(Non-Drilling Days)		1 person x 9 hours x 4 days x $80/hr =				$ 2,880	$ 5,760	
	(Data Interpretation)			40 hrs x $80/hr =			$ 3,200	$ 6,400	
	(Report Preparation)			58 hrs x $80/hr =			$ 4,640	$ 9,280	
	(Peer Review)			18 hrs x $80/hr =			$ 1,440	$ 2,880	
							$ 42,700	$ 85,400	$ 85,400
Assume :	drilling rate @ 40 ft/day	boreholes TD is 20 Ft	assume number of boreholes = 19					**Total Project Cost**	$ 178,902

	SOIL GAS RESULTS							CONTAMINATES OF CONCERN												
Distance from BH14295	LOCATION	LAB SAMPLE ID.	DATE COLLECTED	DATE RECEIVED	DATE ANALYZED	DEPTH INTERVAL	TOTAL DEPTH OF BORING	Vinyl Chloride		Methylene Chloride		Carbon Tetrachloride		Tri-chloroethene (TCE)		Tetra-chloroethene (PCE)		OTHER COMPOUNDS DETECTED	Comments
						(FT)	(FT)	UG/KG	Q	UG/KG	Q	UG/KG	Q	UG/KG	Q	UG/KG	Q	COMPOUND	
20' N of BH14295	250196	SG21001RM	8/2/96	8/2/96	8/8/96	4.5 - 5.5	11.0	1200	U	600	U	600	U	600	U	600	U	NA	
20' W of BH14295	250496	SG21002RM	8/6/96	8/6/96	8/8/96	2.5 - 3.5		1200	U	600	U	600	U	600	U	600	U	NA	
	250496	SG21003RM	8/6/96	8/6/96	8/8/96	7.0 - 8.0	9.0	1200	U	600	U	600	U	600	U	600	U	NA	
20' S of BH14295	250396	SG21004RM	8/8/96	8/13/96	8/13/96	1.0 - 2.0		1200	U	600	U	600	U	600	U	250	J	NA	
	250396	SG21005RM	8/12/96	8/13/96	8/13/96	5.0 - 6.0	8.0	1200	U	600	U	600	U	600	U	600	U	NA	
20' E of BH14295	250296	SG21006RM	8/12/96	8/13/96	8/13/96	1.0 - 2.0		1200	U	600	U	600	U	600	U	1000		NA	Core Barrel broke off in hole, unable to collect samples at deeper interval, offsets TDed at shallower depths
	250296	SG21007RM	8/12/96	8/13/96	8/13/96	3.0 - 4.0		1200	U	600	U	600	U	600	U	**36,000**	E	NA	
	250296	SG21008RM	8/12/96	8/13/96	8/13/96	5.1 - 5.5	5.5	1200	U	600	U	600	U	600	U	**160,000**	E	NA	
20' N & 20' E BH14295	250596	SG21009RM	8/16/96	8/16/96	8/19/96	1.0 - 2.0		1200	U	600	U	600	U	600	U	600	U	NA	
	250596	SG21010RM	8/16/96	8/16/96	8/19/96	5.0 - 6.0	6.0	1200	U	600	U	600	U	600	U	600	U	NA	
30' E & 15' N of BH14295	250696	SG21011RM	8/16/96	8/16/96	8/19/96	3.0 - 4.0	4.0	1200	U	600	U	600	U	600	U	600	U	NA	
40N 20E	250796	SG21012RM	8/19/96	8/21/96	8/21/96	4.0 - 5.0	5.0	1200	U	600	U	600	U	600	U	600	U	NA	
40N 80E	250896	SG21013RM	8/20/96	8/21/96	8/21/96	0.5 - 1.5		1200	U	600	U	600	U	600	U	600	U	NA	
60N 40E	250996	SG21014RM	8/20/96	8/21/96	8/21/96	4.0 - 5.0	5.0	1200	U	600	U	600	U	600	U	600	U	NA	
60N 20E	251096	SG21015RM	8/21/96	8/26/96	8/26/96	4.0 - 5.0	5.5	1200	U	600	U	600	U	600	U	600	U	NA	
20S 20E	251196	SG21016RM	8/22/96	8/26/96	8/26/96	4.0-5.0	12.0	1200	U	600	U	600	U	600	U	600	U	NA	
	251196	SG21017RM	8/22/96	8/26/96	8/26/96	9.0-10.0	12.0	1200	U	600	U	600	U	600	U	600	U	NA	
0S 40E	251296	SG21018RM	8/22/96	8/26/96	8/26/96	4.0-5.0	12.0	1200	U	600	U	600	U	600	U	600	U	NA	
	251298	SG21019RM	8/22/96	8/26/96	8/26/96	9.0-10.0		1200	U	600	U	600	U	600	U	600	U	NA	

Verify in field

PRE-EVOLUTION BRIEFING RECORD(per 2-31100-COOP-011)

TIERRA ENVIRONMENTAL CONSULTANTS, INC.

PERSONNEL ATTENDING Thursday August 01,1996
Geoprobe Mound Project

EMPL#	NAME	INITIALS
1) [redacted]	d Mast	Elm
2) [redacted]	RAY Michael	RM
3) [redacted]	TOM FUTHERER	TL
4) [redacted]	Harold Sanchez	HS
5) [redacted]	S. A. Joliat	SAJ
6) [redacted]		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		
16)		
17)		
18)		
19)		
20)		

Comments

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6.02

RMRS Rocky Mountain Remediation Services, L.L.C.
. . . prot cting the nvironm nt

MEMORANDUM

DATE: July 25, 1996 5400.1

TO: Ed Mast, Environmental Restoration, Bldg. T893A, X5757

FROM: T.R. Ryon, Ecology Team, Bldg. T893B, X3657

Subject: SITE-SPECIFIC SURVEY OF THE PRE-REMEDIATION INVESTIGATION SAMPLING OF THE MOUND AREA-TRR-010-96

At your request, Ecology Group performed migratory bird clearance survey of your work site on July 24, 1996. A threatened and endangered species and wetlands clearance surveys have been preformed previously. No concerns for threatened and endangered species or for wetlands were noted. The migratory bird survey is good for two weeks from the survey date, however, a concern for nesting birds was noted.

A night hawk nest with two nestlings was discovered during the survey. A 15 ft. diameter area has been flagged around the nest. Please avoid driving in or near this area (5 ft.) while conducting the initial geoprobe sampling. If initial results indicate additional sampling closer to the nest, please contact the ecology group for reassessment. It is our view that the nestlings will be mobile within a week and this time frame seems to fit within the initial sampling time frame.

Please contact me at X3657 or Marcia Murdock at X3560 for additional assistance with the migratory bird survey or if you have any additional questions.

TRR:trr

cc:
C.S. Evans
M.M. Fink
M.B. Murdock
J.K. Nelson
S.M. Nesta
File

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Steve Joliat

ROCKY FLATS
SOIL DISTURBANCE APPROVAL FORM

LOCATION/PROJECT TITLE/WORK DESCRIPTION GEOPROBE MOUND INVESTIGATION

CONTRACTOR: _____ AUTH./CHARGE NO.: 951802

LOG NO: 22-96-7-31 DRAWING NO.: 15501-75

CAUTIONS/SPECIAL INSTRUCTIONS: _____

DISTURBANCE LIMITS (DURATION/BOUNDARY): _____

RESPONSIBLE JOB SUPERVISOR: _____

OPERATOR/WORKER(S): _____

EXCAVATION SPECIALIST: _____ DATE: _____

EXCAVATION ENTRY APPROVAL

OSHA SOIL CLASS: A ☐ B ☐ C ☐

INITIAL SAFETY INSPECTION: BY: _____ DATE: _____

DAILY INSPECTIONS:

INITIALS	DATE	INITIALS	DATE	INITIALS	DATE

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SITE SURVEY DETERMINATION FOR ENVIRONMENTAL AND WORKER EXPOSURE

Authorization No.: 951802 Project Manager STEVEN Jolint - 4401/5470

Project Title: Geoprobe Mound Investigation

Date submitted for determination: 7-24-96
(Submit site plan and scope of site work to committee)

		YES	NO
1.	Review completed of historical data to determine location relative to IHSS/SWMU's or other areas of known contamination that may influence the site. Data may include IHSS/SWMU maps and descriptions of sites, previous documented soil, sediment, or water sampling, and documented radiological surveys. Summary Attached? Responsibility: ER Signature: 7-30-96 Date:	☐	☐
2.	Sampling plan required to satisfy IAG, Hazardous Waste Determination, or other requirements for environmental sampling. Summary Attached? Responsibility: ER Signature 7-30-96 Date	☐	☐
3.	Sampling plan required to satisfy Health & Safety requirements for radiological protection. Summary Attached? Responsibility: RE/EC Signature 7/31/96 Date	☑	☐
4.	Sampling plan required to satisfy Health & Safety requirements for non-radiological protection. Summary Attached? Responsibility: IH Signature 7-30-96 Date	☑	☐

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SOIL DISTURBANCE EVALUATION FORM

The purpose of this information is to assist the Soil Disturbance Committee in identifying the potential hazard (s) associated with this soil disturbance. Return the completed form to the Excavation Specialist in Building 130.

REQUESTER: Name Steven A. Joliat Date 7/24/96

Group Sitewide Actions Phone/Pager 4401 / 5470

PROJECT TITLE: Mound Investigation CHARGE #: 951802

Will the disturbance occur in or near an Individual Hazardous Substance Site (IHSS, formerly SWMU)?

Yes [X] No [ ]

Explain: IHSS 113

Will the disturbance interfere with any radiological or other hazard boundary or postings?

Yes [ ] No [X]

Explain:

Are overhead utilities present? Yes [ ] No [ ]

Are underground utilities present? Yes [ ] No [ ]

Will a utility outage be required? Yes [ ] No [ ] ✓

IS THE EXCAVATION FOR:

Construction [ ] Trenching [ ] Sampling [X] Driven rods/posts [ ]

Grounding [ ] Post holes [ ] Other types [ ]

IF SAMPLING: Soil removal by hand? Yes [ ] No [X]

Drilling? Yes [X] No [ ]

Depth of drilling 20' Diameter 1.5"

Explain: Geoprobe direct push method no cuttings generated

IF CONSTRUCTION:

Hand digging only? Yes [ ] No [ ]

Will mechanical equipment be required? Yes [ ] No [ ]

Describe Type?

Depth of excavation Length of excavation

Width of excavation Will shoring be required

ADDITIONAL COMMENTS:

The Requester shall fill out this form and submit it along with information required in SOIL DISTURBANCE GUIDELINE to the EXCAVATION SPECIALIST.

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FORM EM.001A

HAZARDOUS WASTE DETERMINATION

Page ___ of ___

Rocky Flats Project: Mound Geoprobe Investigation

Soil Sample Location: per attached map

Date: 7/23/96

Sampling Coordinates (If Available): N/A

Responsible Manager (Print): S. A. Joliat / E. Mast

NOTE: A copy of this form must accompany the Soils Disturbance Permit prior to the start of work.

INFORMATION USED TO MAKE HAZARDOUS WASTE DETERMINATION (Process Knowledge)

- ☐ **Historical Data** (Clarify in basis for determination section)
- ☐ **Analytical Results** (Attach all data to this form and show total number of pages in the upper right hand corner)
- ☒ **No Hazardous Waste will be generated due to this activity**

- ☒ **IHSS** IHSS 113
- ☐ **PAC**
- ☐ **AAC**

SAMPLING INFORMATION:

SAMPLING METHOD(S): ☐ Surficial Grab, ☐ Depth Integrated, ☒ Composite, ☐ CDH Method, ☐ RFP Method, ☐ Soil Gas ☐ Other(s) (Specify)

LABORATORY ANALYSIS:

ANALYTICAL METHOD(S): (How are samples analyzed):

☐ TCLP ☐ CLP ☐ Total ☐ Dissolved ☐ X-Ray Fluorescence ☐ Infra-Red Spectroscopy ☐ Other Screening ☐ Other (Specify):

VOA headspace GC

ANALYTICAL RESULTS: Validation Complete ☐ Yes ☐ No

- ☒ Non-Hazardous Waste
- ☐ Hazardous Waste (Metals and/or Organics Above TCLP or Upper Tolerance Level [UTL])

Basis for Determination: SOILS GENERATED FROM THIS ACTIVITY WILL CONSTITUTE "ENVIRONMENTAL SAMPLES" ONLY. NO RCRA HAZARDOUS WASTE WILL BE GENERATED.

Qualified Hazardous Waste Generator: Fred C. Grigsby **Date:** 7/24/96

CONCURRENCE: [signature]

Responsible Manager: Steven A. Joliat **Date:** 7/23/96

SITE SURVEY/SAMPLING REPORT

Authorization No.: 951802 Project Manager: Stven Joliat

Project Title: Goeprobe Mound Investigation

T.TS

Prepared By: T.T. Sangaline Date: 07/31/95

CHECK ONE: Report for Industrial Hygiene X Radiological Engineering _____

Brief Survey/Sampling Description: (Summary of Sampling Plan)
The work will take place in IHSS 113

Recommendations for Worker Safety Based on Evaluation: (Include protective equipment, protective clothing and monitoring required during construction. Extensive requirements will require a H&S Plan as indicated below. A finding of low hazardous exposure would allow construction to proceed under normal plant procedures.)

1. In accordance with 29 CFR 1926.65, a site specific Health and Safety Plan is required. Please ensure that the plan is reviewed by Health and Safety disciplines before implementation. All work must be performed in accordance with the approved Health and Safety Plan.

2. Dust control measures shall be implemented during dust generation activities.

3. In accordance with Section 1700, Industrial Hygiene and Safety reserves the right to inspect heavy equipment brought onto Rocky Flats Environmental Technology Site.

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ENVIRONMENTAL ASSESSMENT FOR CONSTRUCTION ACTIVITIES

Authorization No.:951802

Reviewer: RMRS, Environmental Remediation Projects/Operations Management, T893B, X4605 D3842

Date: 07/30/96

OBJECTIVE:

Geoprobe Mound Investigation (IHSS 113).

ENVIRONMENTAL ASSESSMENT:

Excavation of the soil within Individual Hazardous Substance Site (IHSS) 113 (see attached map) is not within the scope of this soils disturbance permit. The objectives for the proposed work are to collect samples and provide analysis to support future Environmental Restoration field characterizations, removal actions, and associated cleanup tasks involved for the Mound (IHSS 113) Site. IHSS 113 has historically received spills/releases of radionuclides, solvents, and toxic metals from waste drums once buried at the site. The drums were excavated in 1970 however, groundwater contamination is known to exist from nearby sampling wells. Radiological surveys are recommended as deemed appropriate by Radiological Engineering.

A qualified hazardous waste generator will be identified by the project manager for this project prior to work being performed. RMRS-ER Operations Management will support the project manager and/or waste generator if necessary.

In the unforeseen event that additional sampling is required and contaminated soils are identified and excavated, then the soils must be properly dispositioned as the responsibility of the requesting organization in accordance with applicable environmental laws and regulations. **The requestor or responsible manager for the activity will be accountable for waste management under RCRA regulations and/or DOE Orders (if applicable) once the excavated soils are containerized. This includes procurement and transportation of containers, filling excavations with clean fill material, and returning the site to its original condition. Under no circumstances will "any" soil piles be allowed to remain at the site after the project is complete.**

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SURFACE WATER DIVISION:

If water is encountered during the excavation, work in the area must stop immediately. The RMRS Sitewide Surface Water Division (SWD) will be responsible for determining if the water will require sampling. The requestor or project manager will be responsible for timely notification to the SWD. **Contact ~~Ron Henry X4368~~.**

Bill Hayes 2181 ElMoost 7/31/96

NEPA, AIR QUALITY, ECOLOGY AND WATERSHED DIVISIONS:

The requestor or project Manager is responsible for contacting the above organizations as early as possible in the planning stages, and before initiation of field work to ensure compliance with procedure 2-L92-COEM-PMG-302, Overview to Quality, Environmental, Davis Bacon, Security, and Safety and Health for Project Managers. **Contact: Robert Miles, X5038 and Marcia Murdock X3560, D5428.**

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SITE SURVEY/SAMPLING REPORT

AUTHORIZATION NO: 951802 PROJECT MANAGER: STEVEN JOLIAT

PROJECT TITLE: Geoprobe Mound Investigation

PREPARED BY: R. W. Norton RADIOLOGICAL ENGINEERING #073196-0300

CHECK ONE: Report for Industrial Hygiene: __ Radiological Engineering: x

DATE: July 31, 1996

BRIEF SURVEY/SAMPLING DESCRIPTION: (summary of sampling plan)
Radiological Engineering will require the following actions before and during excavation:

* The location of the excavation is in/or near an area that is listed as containing potential underground radioactive material. The Radiological Control Technicians (RCT's)/or Health & Safety Specialits (HSS) will post the area to be excavated as a Radioactive Material Area (RMA). The RCT's/or HSS's will perform soil screening activities prior to and during the excavation using the Field Instrument for the Detection of Low energy Radiation (FIDLER). Readings that are 50% above background, stop work and notify Radiological Operations supervision/or Safety Oficer and Radiological Engineering immediately. If the readings are below the above criteria then depost the area, after the excavation has been completed.

* The above criteria may be waived at the discretion of Radiological Engineering if:
  (i) Existing survey and/or sampling data is sufficient to ascertain whether or not there are potential radiological hazards and;
  (ii) There is documented evidence that there have been no activities in and/or around the proposed excavation site which may have compromised existing radiological survey and/or sampling information.

* Copies of documentation relating to radiological control practices (e.g. survey/sampling data or incident information) are to be put in the appendix of the Work Package, and sent to R.W. Norton, Radiological Engineering, Building T690B.

* Upon completion of the excavation, contact Radiological Operations, for the survey requirements for the unrestricted release of the equipment used during the excavation as per the Health and Safety Practices (HSP) manual 18.10 .

* Radiological Engineering must be contacted to evaluate the disposal of any waste generated during the excavation as per HSP 18.10

RECOMMENDATIONS FOR WORKER SAFETY BASED ON EVALUATION: (include protective equipment, protective clothing and monitoring required during construction. Extensive requirements will require a H&S Plan as indicated below. A finding of low hazardous exposure would allow construction to proceed under normal plant procedures.)

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* Follow all training and Personnel Protective Equipment (PPE) requirements and work precautions detailed in the work package. If it is determined that additional PPE will be required for radiological concerns they will be listed on the Radiation Work Permit (RWP) if required.

* Rad Worker I Training is required for personal entering or working in a posted RMA. Based on the FIDLER survey, if the area of excavation is determined to be posted for additional radiological concerns, personnel working in the radiological posted areas must have Rad Worker II Training.

* No additional radiological protection precautions will be required for the scope of work, pending no significant readings from the FIDLER surveys and provided work does not exceed the work stated.

PAC REFERENCE NUMBER: 900-113

IHSS Reference Number: 113

Unit Name: Mound Area

Approximate Location: N749,500; E2,086,500

Date(s) of Operation or Occurrence

August 1954 - September 1958

Description of Operation or Occurrence

In April 1954, the mounding of contaminated combustible wastes from Building 444 was suggested as a method of disposal.[1] The mound was developed by digging a shallow trench, aligning drums in rows, and covering them with soil with the resulting burial site extending above initial ground level. RFP photographs[2] from April 21, 1954, show the mounding of the first 869[3] drums of contaminated wastes from Building 444. The drums had been shipped to the mound area between April 12, 1954, and April 21, 1954.[4] Several drums had pinhole leaks at the time of burial.[5,6]

Mounding activities continued until September 1958. Drums from Building 444, Building 888, Building 883, Building 771, and Building 776 were placed in the mound. Different sides of the mound were opened periodically for disposition of drums. After September 1958, additional drums were moved to the mound area but not placed in the mound. In July 1959, they were moved to the 903 Pad area which was becoming established as a drum storage area.[7] The burning of uranium-contaminated oil became an acceptable method of disposal in 1959 and mounding was discontinued.[8]

On February 9, 1959, one drum of liquid waste from Building 776 was punctured at the mound. Additionally, two trucks were contaminated to a level greater than 100,000 cpm and were cleaned at Building 774. One service department employee's shoes were contaminated as well and cleaned at Building 776.[9] One drum of liquid waste from Building 881 leaked at the mound in April 1960.[10]

During the construction of the PSZ in 1981, several areas of uranium-contaminated soil were detected in the mound area and removed.[11,12]

Physical/Chemical Description of Constituents Released

Contamination resulted from organic liquid wastes. Radioactive elements of the waste were in the forms of depleted uranium and enriched uranium, with some limited plutonium.[10] As a result of the punctured drum in February 1959, an unknown amount of soil in the mound area was contaminated to a level greater than 100,000 cpm.

The ground and pallets had levels of contamination greater than 100,000 cpm due to the liquid waste from Building 881 that leaked in April 1960. The area was roped off pending cleaning.[13] No documentation was found detailing the results of the cleaning effort.

Odors of solvents were detected by construction workers when they encountered groundwater in the mound area during construction of the PSZ.[14]

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Responses to Operation or Occurrence

On August 26, 1954, soil samples were taken from a barrel burial site located southeast of Building 991.[15] Soil contaminated as a result of the punctured drum in February 1959 was removed to a level of 1,000 cpm.

On April 14, 1970, excavation of the mound began. All drums were removed by the end of May 1970. Approximately 10 percent of the drums were thought to have holes. No detectable alpha contamination was found in the soil at the time of removal. Solid material was shipped offsite for burial. Drums with liquids were sent to Building 774 for processing. Those that were leaking at the time of excavation were pumped into sound drums before processing in Building 774. Empty drums were boxed with absorbent material and shipped for off-site burial. No personnel or equipment contamination resulted from the excavation of the mound and no airborne contamination was detected. Soil from the excavation was graded and excess was placed in the Present Landfill. Four wells were drilled in the four corners of the mound area for groundwater monitoring.[7]

Fate of Constituents Released to Environment

At the time of initial mounding of drums, it was believed that any water leaching the material contained in the drums would have drained into the gully north of the mound because of the natural topographic slope. The gully also received sewage treatment plant effluent. Any activity not removed by the soil in the mound and then carried by water to the gully would have been diluted by the effluent and the retention ponds.[3] These retention ponds have been monitored since the beginning of plant operations. Migrating contaminants would have been detected prior to their off-site release. These retention ponds are detailed in PAC NE-142.5 - NE-142.9.

Groundwater monitoring reports indicate that groundwater in the vicinity of the Mound Area is contaminated with inorganics, radionuclides, and volatile organic compounds. These contaminants are not necessarily from the mound itself but are reflective of the materials buried in the mound. These same materials were burned in Oil Burning Pit No. 2 (PAC 900-153).[16]

This IHSS is being studied in accordance with the IAG schedule for OU2. The IAG activities will include site investigations, site characterizations, and possible site remediation. The Final Phase II RFI/RI Report is to be completed by August 9, 1993.

Comments

Many references document that the mound was no longer used for the burial of waste materials after 1959;[10,17] however, several documents indicate activities at the mound at later dates.[10,13] A request was made and approval was given in December 1962 for the burial of 14 drums of depleted uranium waste in the mound burial area.[10] No documentation was found stating that the burial occurred; yet, documents indicate that Trench T-1 (PAC 900-108), located adjacent to the mound, accepted these drums.[10] Therefore it is assumed that activities occurring at the mound after September 1958 related to storage activities and not burial.

The chemical characteristics of the materials stored in the mound and the materials stored on the 903 Pad (PAC 900-112) are similar and therefore, the impact that the mound area had on the environment may be difficult to differentiate from the impact of the 903 Pad area.

References

[1] 1600672
[2] RFP Photograph Negatives 957 and 958, April 21, 1954 and 959 and 960 July 28, 1954.
[3] 1600598
[4] 1600277

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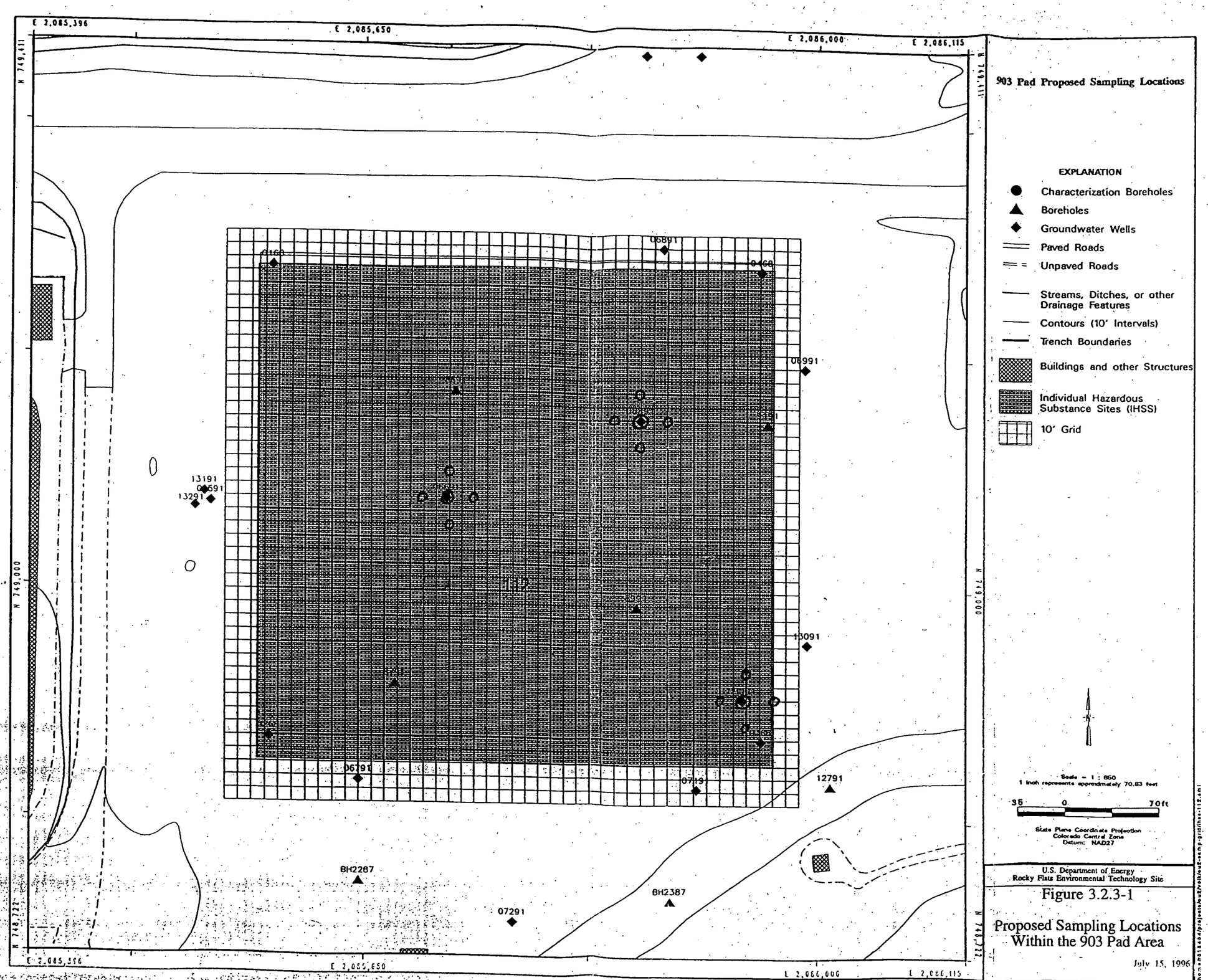
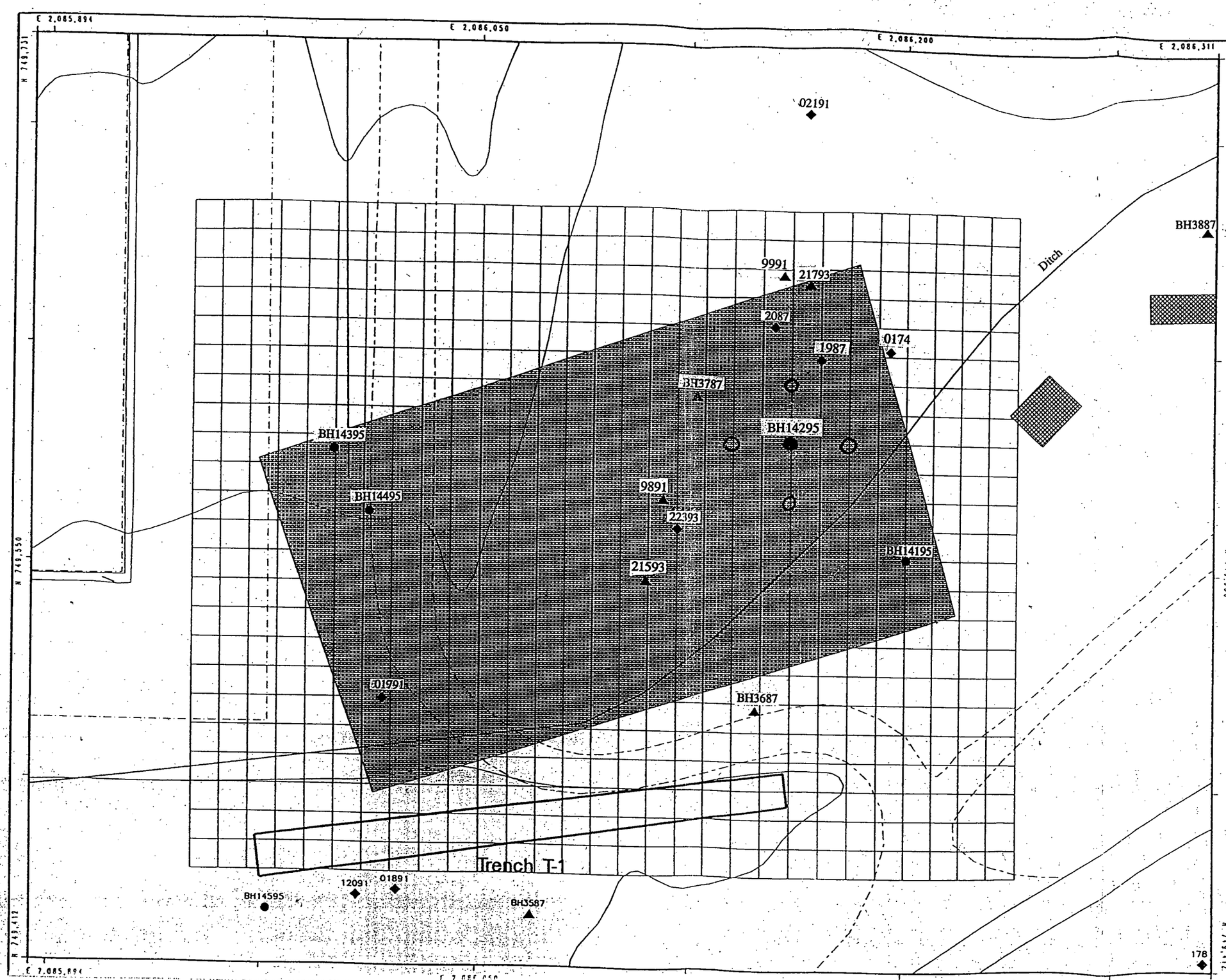

903 Pad Proposed Sampling Locations
EXPLANATION
Characterization Boreholes
Boreholes
Groundwater Wells
Paved Roads
Unpaved Roads
Streams, Ditches, or other Drainage Features
Contours (10' Intervals)
Trench Boundaries
Buildings and other Structures
Individual Hazardous Substance Sites (IHSS)
10' Grid
Scale = 1 : 850
1 inch represents approximately 70.83 feet
35 0 70ft
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27
U.S. Department of Energy
Rocky Flats Environmental Technology Site
Figure 3.2.3-1
Proposed Sampling Locations Within the 903 Pad Area
July 15, 1996
E 2,085,396
E 2,085,650
E 2,086,000
E 2,086,115
N 749,411
N 749,000
N 748,722
06891
06991
13191
13291
13091
06791
07191
12791
BH2287
BH2387
07291
112

36



Mound Proposed Sampling Locations

EXPLANATION

- Characterization Boreholes
- Boreholes
- Groundwater Wells
- Paved Roads
- Unpaved Roads
- Streams, Ditches, or other Drainage Features
- Contours (10' Intervals)
- Trench Boundaries
- Buildings and other Structures
- Individual Hazardous Substance Sites (IHSS)
- 10' Grid

o Geoprobe/Soil Gas Sampling Location

A total of 17 geoprobe locations will be completed, 4 locations (as shown on map) have been programmed for 20 ft north, east, south and west of BH14295, the locations of the remaining geoprobe borings will be determined by the soil gas results.

Scale = 1 : 400
1 Inch represents approximately 33.33 feet

15 0 30 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Figure 3.2.2-1

Proposed Sampling Locations Within the Mound Site

July 15, 1996

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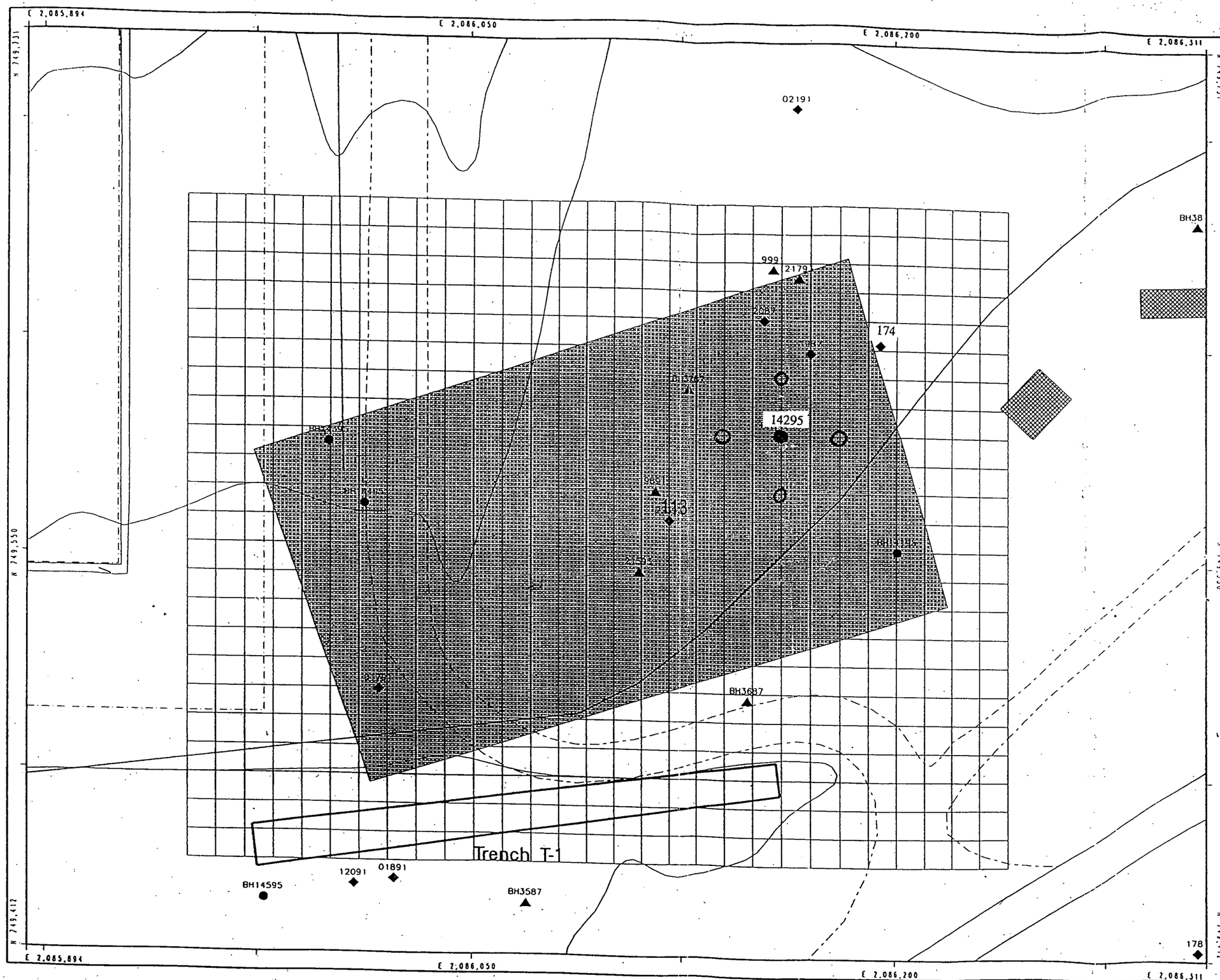

Mound Proposed Sampling Locations

EXPLANATION

- Characterization Boreholes
- Boreholes
- Groundwater Wells
- Paved Roads
- Unpaved Roads
- Streams, Ditches, or other Drainage Features
- Contours (10' Intervals)
- Trench Boundaries
- Buildings and other Structures
- Individual Hazardous Substance Sites (IHSS)
- 10' Grid

Scale = 1 : 400
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15 0 30 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

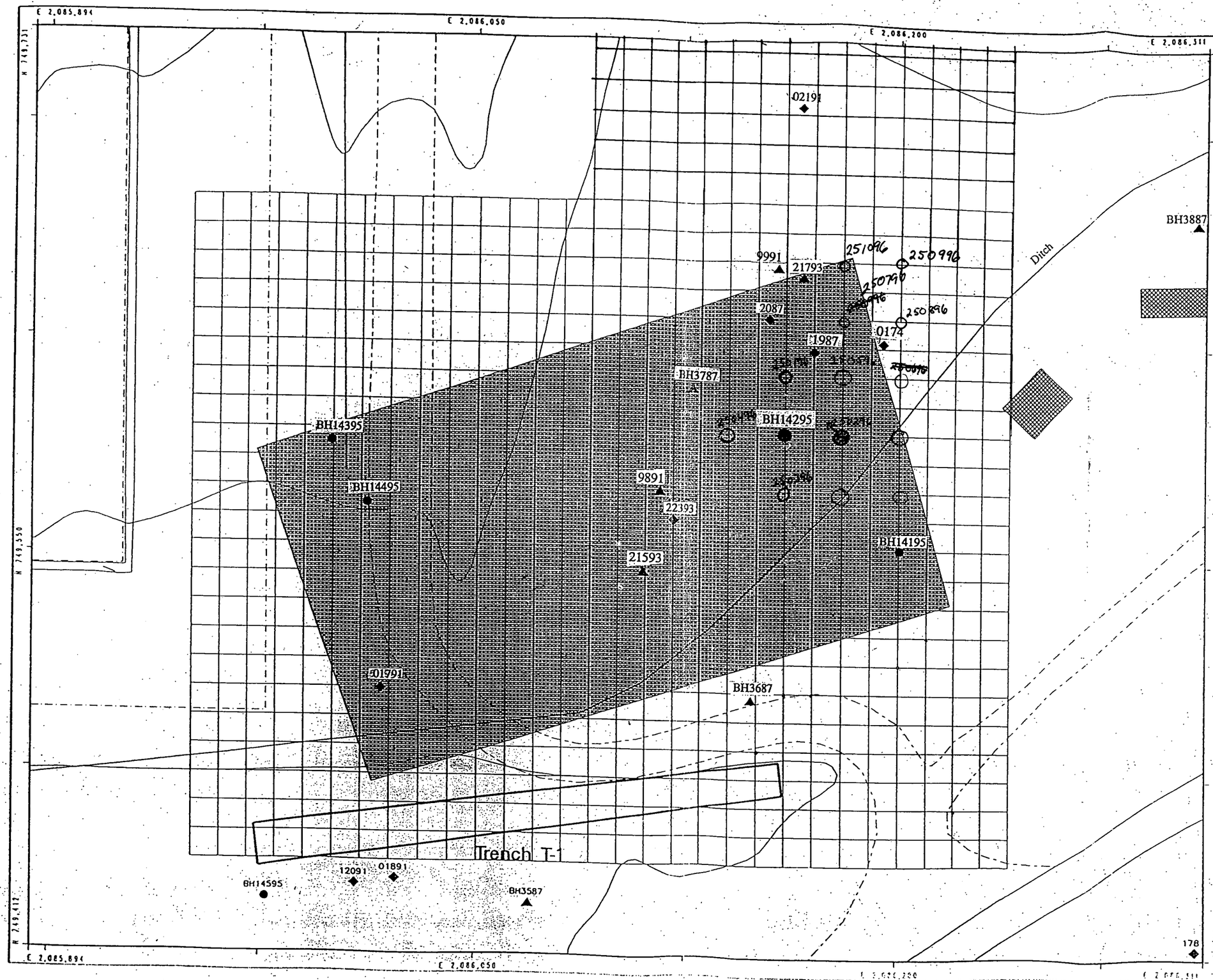
U.S. Department of Energy
Rocky Flats Environmental Technology Site

Figure 3.2.2-1

Proposed Sampling Locations Within the Mound Site

July 15, 1996

202



Mound Proposed Sampling Locations

EXPLANATION

- Characterization Boreholes
- Boreholes
- Groundwater Wells
- Paved Roads
- Unpaved Roads
- Streams, Ditches, or other Drainage Features
- Contours (10' Intervals)
- Trench Boundaries
- Buildings and other Structures
- Individual Hazardous Substance Sites (IHSS)
- 10' Grid

o Geoprobe/Soil Gas Sampling Location

A total of 17 geoprobe locations will be completed, 4 locations (as shown on map) have been programmed for 20 ft north, east, south and west of BH14295, the locations of the remaining geoprobe borings will be determined by the soil gas results.

Scale = 1 : 400
1 inch represents approximately 33.33 feet

16 0 30 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

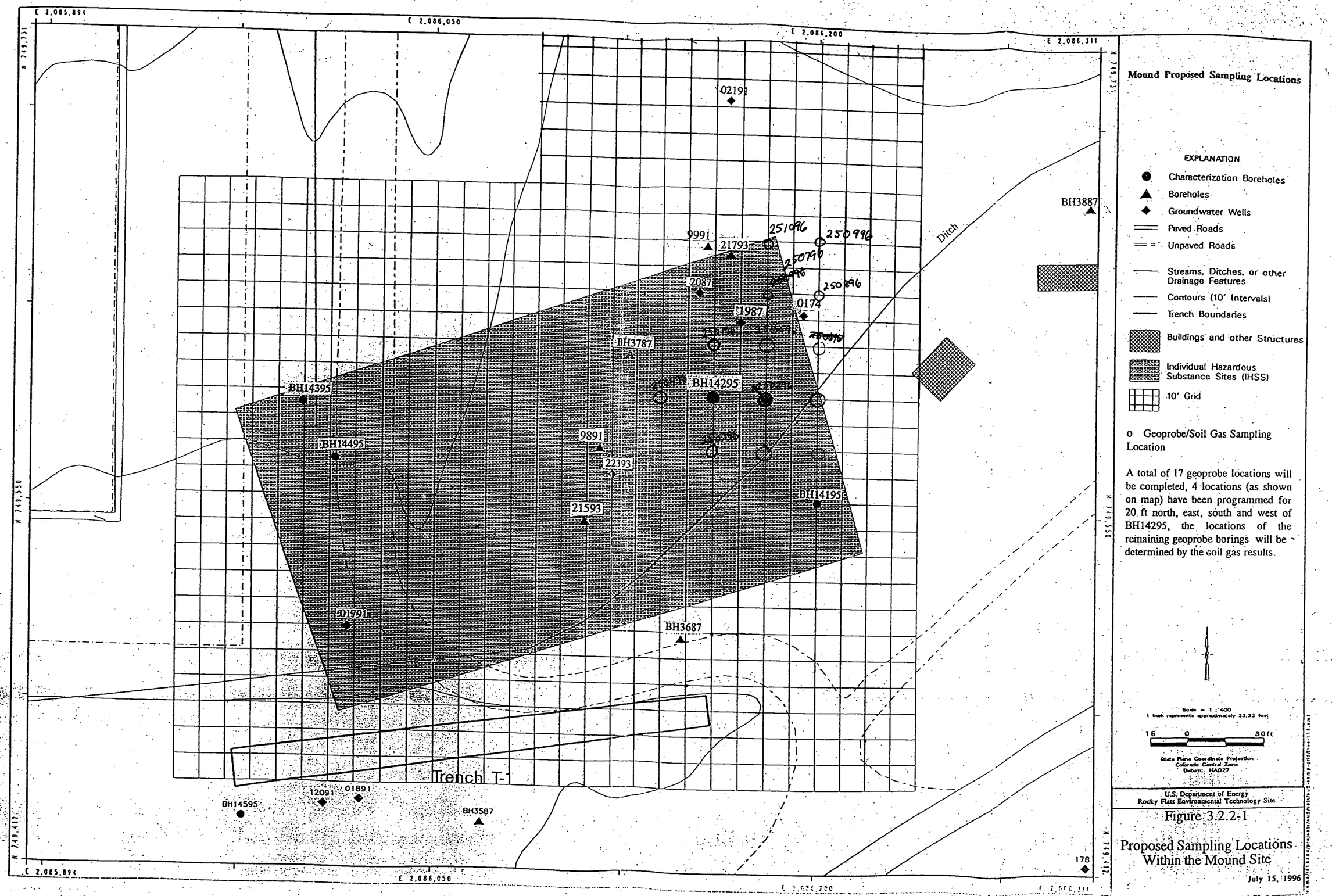
U.S. Department of Energy
Rocky Flats Environmental Technology Site

Figure 3.2.2-1

Proposed Sampling Locations Within the Mound Site

July 15, 1996

207


Mound Proposed Sampling Locations
EXPLANATION
Characterization Boreholes
Boreholes
Groundwater Wells
Paved Roads
Unpaved Roads
Streams, Ditches, or other Drainage Features
Contours (10' Intervals)
Trench Boundaries
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16 0 30ft
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27
U.S. Department of Energy
Rocky Flats Environmental Technology Site
Figure 3.2.2-1
Proposed Sampling Locations Within the Mound Site
July 15, 1996
E 2,085,894
E 2,086,050
E 2,086,200
E 2,086,311
N 749,550
N 749,412
02191
BH3887
Ditch
9991
21793
251096
250996
250796
2087
0172
1987
BH3787
BH14295
BH14395
BH14495
9891
22393
21593
BH14195
01991
BH3687
Trench T-1
BH14595
12091
01891
BH3587
178

208