REF: 02-RF-01267; JLB-027-02

Buffer Zone Sampling and Analysis Plan
FY 2002
Addendum BZ-02-01

April 2002

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ACRONYMS

Am	americium
Ba	barium
BZ	Buffer Zone
BZSAP	Buffer Zone Sampling and Analysis Plan
CCl_4	carbon tetrachloride
Cd	cadmium
Cr	chromium
1,2-DCE	1,2-dichloroethene
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
HPGe	high-purity germanium
HRR	Historical Release Report
IHSS	Individual Hazardous Substance Site
MC	methylene chloride
mg/kg	milligrams per kilogram
Mn	manganese
Ni	nickel
OU	operable unit
PAC	Potential Area of Concern
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
Pu	plutonium
PU&D	Property Utilization and Disposal
SAP	Sampling and Analysis Plan
Sr	strontium
SVOC	semivolatile organic compound
TBD	to be determined
TCE	trichloroethene
U	uranium
μg/kg	micrograms per kilogram
VC	vinyl chloride
VOC	volatile organic compound

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1.0 INTRODUCTION

This Buffer Zone (BZ) Sampling and Analysis Plan (SAP) (BZSAP) Addendum includes BZ Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for Individual Hazardous Substance Sites (IHSSs) and Potential Areas of Concern (PACs) proposed for characterization during Fiscal Year (FY)02. This BZSAP Addendum is a supplement to the BZSAP (DOE 2002). The location of the BZ Groups, IHSSs, and PACs proposed for FY02 are shown on Figure 1. A description of the BZ Groups and associated IHSSs and PACs are presented in Table 1.

Table 1
BZ Group Description

BZ Group	IHSS/PAC Description
900-2	IHSS 153 – Oil Burn Pit No. 2
	IHSS 154 – Pallet Burn Site
NE/NW	IHSS 216.2 – East Spray Field-Center Area
	IHSS 216.3 – East Spray Field-South Area
	NE-1412 – Trench T-12 (located at Operable Unit (OU) 2 East Trenches)
	NE-1413 – Trench T-13 (located at OU 2 East Trenches)
	NE-1407 – OU 2 Treatment Facility
	IHSS 174a – Property Utilization And Disposal (PU&D) Yard - Drum Storage Area

2.0 EXISTING CHARACTERIZATION INFORMATION

Existing data for results detected above background or detection limits for IHSSs 153, 216.2, 216.3, and PAC NE-1412 are presented on maps in Section 5.0. There were no reported results reported above background or detection limits for NE-1407, NE-1413, and IHSS 154. IHSS 174a is scheduled for remedial action and characterization sampling for this IHSS is not described in this addendum. Remediation of IHSS 174a, consisting of excavation and disposal of contaminated material, is currently planned for FY02. Table 2 presents the PCOCs. Existing data for the IHSSs, PACs, and UBC Sites are available in Appendix C to the BZSAP (DOE 2002) and in the Draft BZ Data Summary Report (DOE 2001).

2.1 Potential Contaminants of Concern

Table 2 presents the PCOCs by BZ Group, IHSS, and PAC site. PCOCs were determined based on process knowledge (DOE 1992-2001) and existing analytical data (DOE 2001).

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3.0 SAMPLING LOCATIONS

Figures in Section 4.0 show proposed sampling locations for BZ Groups 900-2 and NE/NW. Table 3 summarizes sampling and the quality assurance/quality control specifications. Biased sampling locations at East Spray Fields will be field checked by the U.S. Environmental Protection Agency (EPA) prior to sampling.

4.0 MAPS

Maps in this section are organized by IHSS Group and IHSS. All existing sampling locations and existing data, where available, are presented, followed by the proposed new sampling locations.

5.0 REFERENCES

EPA, 1988, Aerial Photographic Analysis Comparison Report, U.S. DOE, Rocky Flats, Golden, Colorado, Appendix A, TS-PIC-88760, July.

DOE, 1992 - 2001, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 2001, Draft Buffer Zone Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, July.

DOE, 2002, Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, March.

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Table 2
Potential Contaminants of Concern

BZ Group	IHSS/PAC	PCOCs	Media	Data Source	Sampling Location Method
900-2	IHSS 153 – Oil Burn Pit No. 2	Radionuclides Metals SVOCs Pesticides/PCBs VOCs	Surface Soil Subsurface Soil	Process Knowledge (Historical Release Report [HRR]) (DOE 1992- 2001)	Statistical grid plus biased locations
	IHSS 154 – Pallet Burn Site	Radionuclides Metals SVOCs Pesticides/PCBs VOCs	Surface Soil Subsurface Soil	Process Knowledge	Statistical grid plus biased locations
NE/NW	IHSS 216.2 – East Spray Field- Center Area	Radionuclides Metals SVOCs Pesticides/PCBs	Surface Soil	Process Knowledge BZ Database (DOE, 2001) EPA Photographic Analysis (EPA, 1988)	Biased sampling locations along drainages
	IHSS 216.3 – East Spray Field- South Area	Radionuclides Metals VOCs SVOCs Pesticides/PCBs	Surface Soil Subsurface Soil (VOCs only)	Process Knowledge BZ Database EPA Photographic Analysis (EPA, 1988)	Biased sampling locations along drainages
	NE-1412 – Trench T-12 Located at OU 2 East Trenches	Radionuclides (Pu, Am, U) Metals (Ba, Cd, Cr, Mn, Ni, Sr) VOCs (PCE, TCE, chloroform, 1,2-DCE, VC, MC, CCl_4, toluene) SVOCs (phenol, chrysene) PCBs	Subsurface Soil	Process Knowledge BZ Database	Statistical grid plus biased locations
	NE-1413 – Trench T-13 Located at OU2 East Trenches	Radionuclides (Pu, Am, U,) Metals (Ba, Cd, Mn, Ni) VOCs (PCE, TCE, MC, CCl_4) PCBs	Subsurface Soil	Process Knowledge	Statistical grid plus biased locations
	NE-1407 – OU 2 Treatment Facility	Metals (Cr) VOCs (PCE, TCE, MC, CCl_4, 1,2-DCE, chloroform, trichloroethane)	Surface Soil Subsurface Soil	Process Knowledge	Biased sampling
	IHSS 174a – Property Utilization And Disposal Yard - Drum Storage Area	Radionuclides Metals VOCs SVOCs Pesticides/PCBs	Subsurface Soil	Process Knowledge BZ Database	Confirmation sampling only

Table 2 - Acronyms

Am	americium	PCB	polychlorinated biphenyl
Ba	barium	PCE	tetrachloroethene
CCl_4	carbon tetrachloride	Pu	plutonium
Cd	cadmium	Sr	strontium
Cr	chromium	SVOC	semivolatile organic compound
1,2 DCE	1,2-dichloroethene	TCE	trichloroethene
HRR	Historical Release Report	U	uranium
MC	methylene chloride	VC	vinyl chloride
Mn	manganese	VOC	volatile organic compound
Ni	nickel		

Table 3
Sampling and QA/QC Specifications

BZ Group	IHSS/PAC	No. of Samples	Media	Depth Interval	Analyte	Methods	Duplicates	Rinsates	Field Blanks (VOCs only)	Trip Blanks (VOCs only)
900-2	IHSS 153 - Oil Burn Pit No. 2	8	Surface Soil	0-6"	Radionuclides	HPGe	≥5%	≥5%		
		8	Surface Soil	0-6"	Metals	6010A	≥5%	≥5%		
		8	Surface Soil	0-6"	SVOCs	8270C	≥5%	≥5%		
		8	Surface Soil	0-6"	PCBs	8082	≥5%	≥5%		
		8	Surface Soil	0-6"	Pesticides	8081A	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	SVOCs	8270C	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	Pesticides	8081A	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	2.5-4.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	2.5-4.5'	SVOCs	8270C	≥5%	≥5%		
		8	Subsurface Soil	2.5-4.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	2.5-4.5'	Pesticides	8081A	≥5%	≥5%		
		8	Subsurface Soil	2.5-4.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	4.5-6.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	4.5-6.5'	SVOCs	8270C	≥5%	≥5%		
		8	Subsurface Soil	4.5-6.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	4.5-6.5'	Pesticides	8081A	≥5%	≥5%		
		8	Subsurface Soil	4.5-6.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	6.5-8.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	6.5-8.5'	Metals	6010A	≥5%	≥5%		

BZ Group	IHSS/PAC	No. of Samples	Media	Depth Interval	Analyte	Methods	Duplicates	Rinsates	Field Blanks (VOCs only)	Trip Blanks (VOCs only)
		8	Subsurface Soil	6.5-8.5'	SVOCs	8270C	≥5%	≥5%		
		8	Subsurface Soil	6.5-8.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	6.5-8.5'	Pesticides	8081A	≥5%	≥5%		
		8	Subsurface Soil	6.5-8.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	8.5-10.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	8.5-10.5'	SVOCs	8270C	≥5%	≥5%		
		8	Subsurface Soil	8.5-10.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	8.5-10.5'	Pesticides	8081A	≥5%	≥5%		
		8	Subsurface Soil	8.5-10.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
	IHSS 154 - Pallet Burn Site	6	Surface Soil	0-6"	Radionuclides	HPGe	≥5%	≥5%		
		6	Surface Soil	0-6"	Metals	6010A	≥5%	≥5%		
		6	Surface Soil	0-6"	SVOCs	8270C	≥5%	≥5%		
		6	Surface Soil	0-6"	PCBs	8082	≥5%	≥5%		
		6	Surface Soil	0-6"	Pesticides	8081A	≥5%	≥5%		
		6	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	≥5%	≥5%		
		6	Subsurface Soil	0.5-2.5'	Metals	6010A	≥5%	≥5%		
		6	Subsurface Soil	0.5-2.5'	SVOCs	8270C	≥5%	≥5%		
		6	Subsurface Soil	0.5-2.5'	PCBs	8082	≥5%	≥5%		
		6	Subsurface Soil	0.5-2.5'	Pesticides	8081A	≥5%	≥5%		
		6	Subsurface Soil	0.5-2.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		6	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	≥5%	≥5%		
		6	Subsurface Soil	2.5-4.5'	Metals	6010A	≥5%	≥5%		
		6	Subsurface Soil	2.5-4.5'	SVOCs	8270C	≥5%	≥5%		
		6	Subsurface Soil	2.5-4.5'	PCBs	8082	≥5%	≥5%		
		6	Subsurface Soil	2.5-4.5'	Pesticides	8081A	≥5%	≥5%		
		6	Subsurface Soil	2.5-4.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		6	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	≥5%	≥5%		

BZ Group	IHSS/PAC	No. of Samples	Media	Depth Interval	Analyte	Methods	Duplicates	Rinsates	Field Blanks (VOCs only)	Trip Blanks (VOCs only)
		6	Subsurface Soil	4.5-6.5'	Metals	6010A	≥5%	≥5%		
		6	Subsurface Soil	4.5-6.5'	SVOCs	8270C	≥5%	≥5%		
		6	Subsurface Soil	4.5-6.5'	PCBs	8082	≥5%	≥5%		
		6	Subsurface Soil	4.5-6.5'	Pesticides	8081A	≥5%	≥5%		
		6	Subsurface Soil	4.5-6.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		6	Subsurface Soil	6.5-8.5'	Radionuclides	HPGe	≥5%	≥5%		
		6	Subsurface Soil	6.5-8.5'	Metals	6010A	≥5%	≥5%		
		6	Subsurface Soil	6.5-8.5'	SVOCs	8270C	≥5%	≥5%		
		6	Subsurface Soil	6.5-8.5'	PCBs	8082	≥5%	≥5%		
		6	Subsurface Soil	6.5-8.5'	Pesticides	8081A	≥5%	≥5%		
		6	Subsurface Soil	6.5-8.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		6	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	≥5%	≥5%		
		6	Subsurface Soil	8.5-10.5'	Metals	6010A	≥5%	≥5%		
		6	Subsurface Soil	8.5-10.5'	SVOCs	8270C	≥5%	≥5%		
		6	Subsurface Soil	8.5-10.5'	PCBs	8082	≥5%	≥5%		
		6	Subsurface Soil	8.5-10.5'	Pesticides	8081A	≥5%	≥5%		
		6	Subsurface Soil	8.5-10.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
NE/NW	IHSS 216.2 — East Spray Field-Center Area	6	Surface Soil	0-6"	Radionuclides	HPGe	≥5%	≥5%		
		6	Surface Soil	0-6"	Metals	6010A	≥5%	≥5%		
		6	Surface Soil	0-6"	SVOCs	8270C	≥5%	≥5%		
		6	Surface Soil	0-6"	PCBs	8082	≥5%	≥5%		
		6	Surface Soil	0-6"	Pesticides	8081A	≥5%	≥5%		
	IHSS 216.3 — East Spray Field-South Area	19	Surface Soil	0-6"	Radionuclides	HPGe	≥5%	≥5%		
		19	Surface Soil	0-6"	Metals	6010A	≥5%	≥5%		
		19	Surface Soil	0-6"	SVOCs	8270C	≥5%	≥5%		
		19	Surface Soil	0-6"	PCBs	8082	≥5%	≥5%		
		19	Subsurface Soil	0.5-2.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment

BZ Group	IHSS/PAC	No. of Samples	Media	Depth Interval	Analyte	Methods	Duplicates	Rinsates	Field Blanks (VOCs only)	Trip Blanks (VOCs only)
	NE-1412 – Trench T-12 Located at OU 2 East Trenches	10	Surface Soil	0-6"	Radionuclides	HPGe	≥5%	≥5%		
		10	Surface Soil	0-6"	Metals	6010A	≥5%	≥5%		
		10	Surface Soil	0-6"	SVOCs	8270C	≥5%	≥5%		
		10	Surface Soil	0-6"	PCBs	8082	≥5%	≥5%		
		10	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	≥5%	≥5%		
		10	Subsurface Soil	0.5-2.5'	Metals	6010A	≥5%	≥5%		
		10	Subsurface Soil	0.5-2.5'	SVOCs	8270C	≥5%	≥5%		
		10	Subsurface Soil	0.5-2.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		10	Subsurface Soil	0.5-2.5'	PCBs	8082	≥5%	≥5%		
		10	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	≥5%	≥5%		
		10	Subsurface Soil	2.5-4.5'	Metals	6010A	≥5%	≥5%		
		10	Subsurface Soil	2.5-4.5'	SVOCs	8270C	≥5%	≥5%		
		10	Subsurface Soil	2.5-4.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		10	Subsurface Soil	2.5-4.5'	PCBs	8082	≥5%	≥5%		
		10	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	≥5%	≥5%		
		10	Subsurface Soil	4.5-6.5'	Metals	6010A	≥5%	≥5%		
		10	Subsurface Soil	4.5-6.5'	SVOCs	8270C	≥5%	≥5%		
		10	Subsurface Soil	4.5-6.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		10	Subsurface Soil	4.5-6.5'	PCBs	8082	≥5%	≥5%		
		10	Subsurface Soil	6.5-8.5'	Radionuclides	HPGe	≥5%	≥5%		
		10	Subsurface Soil	6.5-8.5'	Metals	6010A	≥5%	≥5%		
		10	Subsurface Soil	6.5-8.5'	PCBs	8082	≥5%	≥5%		
		10	Subsurface Soil	6.5-8.5'	SVOCs	8270C	≥5%	≥5%		
		10	Subsurface Soil	6.5-8.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		10	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	≥5%	≥5%		
		10	Subsurface Soil	8.5-10.5'	Metals	6010A	≥5%	≥5%		
		10	Subsurface Soil	8.5-10.5'	SVOCs	8270C	≥5%	≥5%		
		10	Subsurface Soil	8.5-10.5'	PCBs	8082	≥5%	≥5%		

BZ Group	IHSS/PAC	No. of Samples	Media	Depth Interval	Analyte	Methods	Duplicates	Rinsates	Field Blanks (VOCs only)	Trip Blanks (VOCs only)
	NE-1413 - Trench T-13 Located @ OU2 East Trenches	8	Surface Soil	0-6"	Radionuclides	HPGe	≥5%	≥5%		
		8	Surface Soil	0-6"	Metals	6010A	≥5%	≥5%		
		8	Surface Soil	0-6"	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	0.5-2.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	0.5-2.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	2.5-4.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	2.5-4.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	2.5-4.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	4.5-6.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	4.5-6.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	4.5-6.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	6.5-8.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	6.5-8.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	6.5-8.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	6.5-8.5'	PCBs	8082	≥5%	≥5%		
		8	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	≥5%	≥5%		
		8	Subsurface Soil	8.5-10.5'	Metals	6010A	≥5%	≥5%		
		8	Subsurface Soil	8.5-10.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
		8	Subsurface Soil	8.5-10.5'	PCBs	8082	≥5%	≥5%		
	NE-1407 – OU 2 Treatment Facility	5	Surface Soil	0-6"	Metals	6010A	≥5%	≥5%		
		5	Subsurface Soil	0.5-2.5'	VOCs	8260B	≥5%	≥5%	≥5%	1/shipment
	IHSS 174a – Property Utilization And Disposal Yard - Drum Storage Area	TBD	Subsurface Soil	Floor Sidewalls	Radionuclides Metals VOCs SVOCs	HPGe 6010A 8260B 8270C	TBD	TBD	TBD	TBD

BZ Group	IHSS/PAC	No. of Samples	Media	Depth Interval	Analyte	Methods	Duplicates	Rinsates	Field Blanks (VOCs only)	Trip Blanks (VOCs only)
					Pesticides PCBs	8081A 8082				

HPGe - High Purity Germanium
TBD – To Be Determined

BZ-A-547

THIS TARGET SHEET REPRESENTS AN OVER-SIZED MAP / PLATE FOR THIS DOCUMENT: No Unique Numeric Identifier
(Ref: 02-RF-01267; JLB-027-02)

Buffer Zone Sampling and Analysis Plan – FY 2002 Addendum BZ-02-01

April 2002

Figure 2A:

Location of Existing Sample Results Above Detection Limits or Background Levels for IHSS 153 (Oil Burn Pit No. 2)

Map ID: postings-02.apr

May 2002

CERCLA Administrative Record Document, BZ - A - 000547

U.S. DEPARTEMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

15

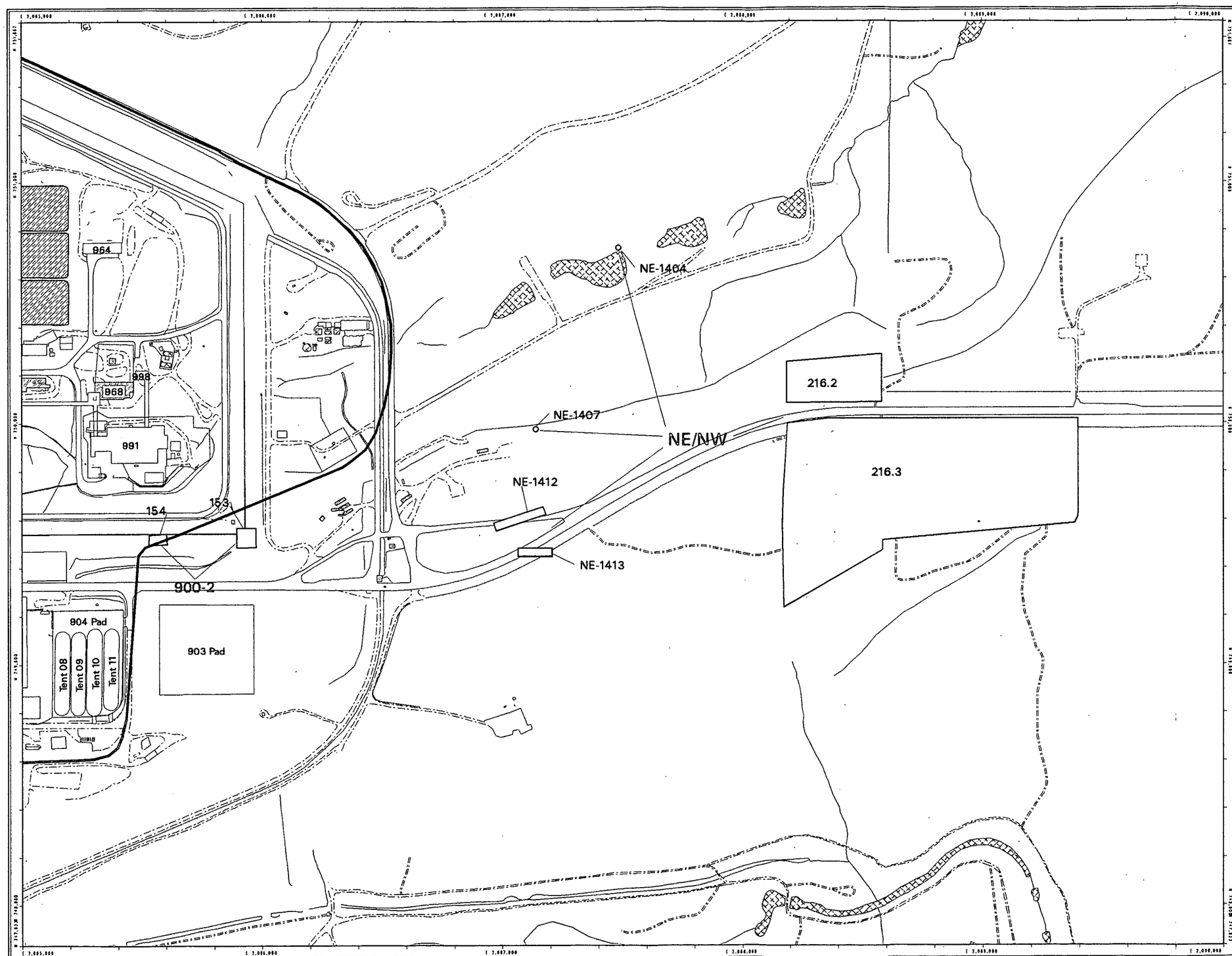

Figure 1
FY02 BZ Group Locations

EXPLANATION

IHSS Groupings

- 900-2
- NE/NW

Standard Map Features

- Buildings and other structures
- Demolished buildings
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads
- Industrial Area Operable Unit Boundary

DATA SOURCE BASE FEATURES:
PACs
Historical Release Report (HRR)
2nd Annual Update
Sept. 30, 1997
Individual Hazardous Substance Sites (IHSS)
DOE, 1992, HRR Report and Subsequent Updates.
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G R.S., Las Vegas.
Digitized from the orthophotographs. 1/95

Scale = 1 : 4950
1 inch represents approximately 413 feet

100 0 200 400ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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

GIS Dept. 303-966-7707

DRAFT

May 22, 2002

NT_Svr w:/projects/fy2002/02-0635/fa-groups-ne_nw.aml

5

THIS TARGET SHEET REPRESENTS AN OVER-SIZED MAP / PLATE FOR THIS DOCUMENT: No Unique Numeric Identifier (Ref: 02-RF-01267; JLB-027-02)

Buffer Zone Sampling and Analysis Plan – FY 2002 Addendum BZ-02-01

April 2002

Figure 6A:

Location of Existing Sample Results Above Detection Limits or Background Levels for NE-1412 (Trench T-12)

Map ID: postings-02.apr

May 2002

CERCLA Administrative Record Document, BZ - A - 000547

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GOLDEN, COLORADO

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(Ref: 02-RF-01267; JLB-027-02)

Buffer Zone Sampling and Analysis Plan – FY 2002 Addendum BZ-02-01

April 2002

Figure 5A:

Location of Existing Sample Results Above Detection Limits or Background Levels for IHSS 216.3 (East Spray Field – South Area)

Map ID: postings-02.apr

May 2002

CERCLA Administrative Record Document, BZ - A - 000547

U.S. DEPARTEMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

20

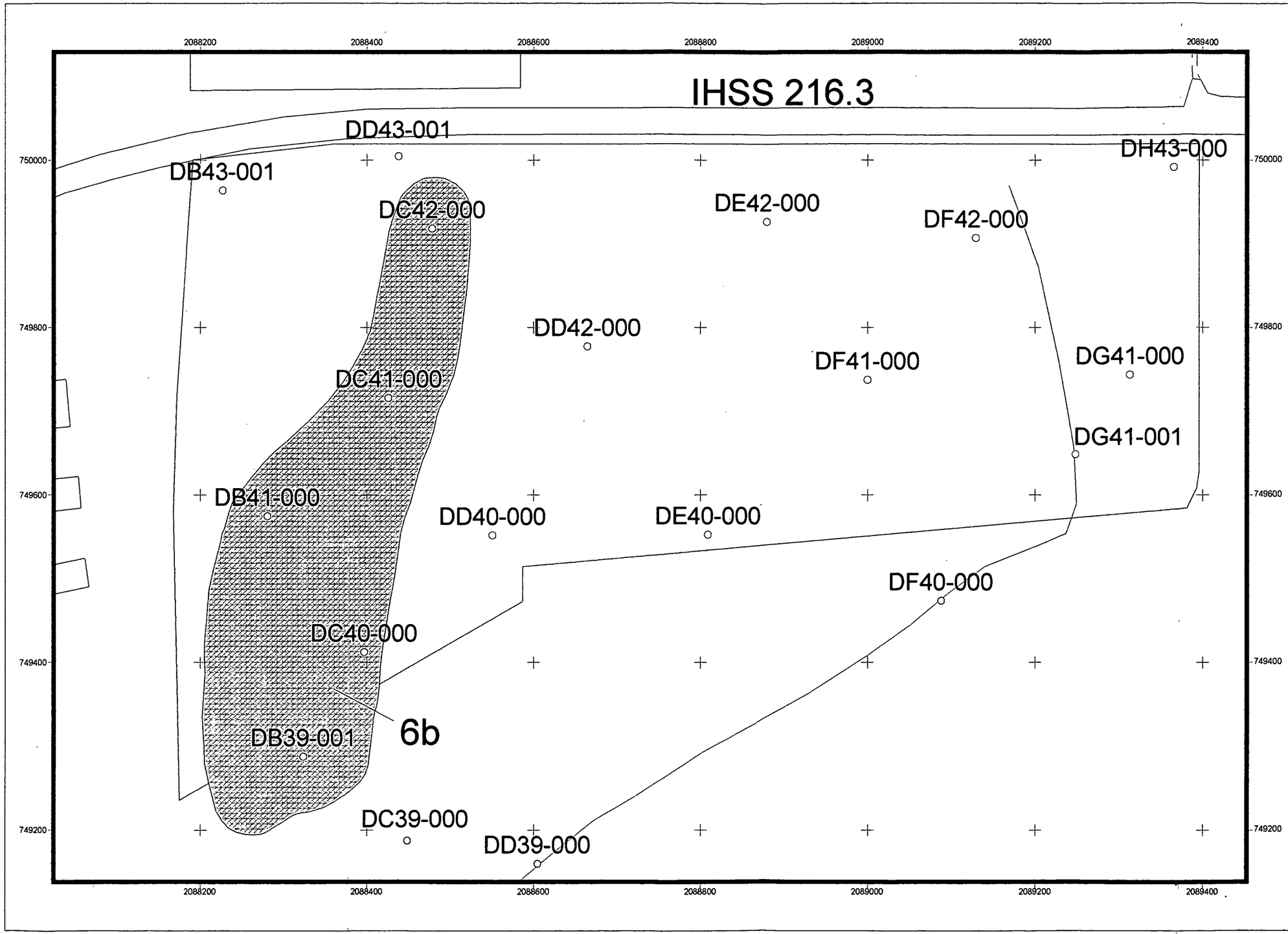

Figure 5B
FY2002
Sampling Locations
for IHSS 216.3

KEY

- Sampling Locations
- Buffer Zone IHSS
- Site 6b
- Paved area
- Dirt roads
- Streams, ditches, or other drainage features

N

Scale = 1:1400

100 0 100 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

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2162and3.apr April 2002

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THIS TARGET SHEET REPRESENTS AN OVER-SIZED MAP / PLATE FOR THIS DOCUMENT: No Unique Numeric Identifier (Ref: 02-RF-01267; JLB-027-02)

Buffer Zone Sampling and Analysis Plan – FY 2002 Addendum BZ-02-01

April 2002

Figure 4A:

Location of Existing Sample Results Above Detection Limits or Background Levels for IHSS 216.2

Map ID: postings-02.apr

December 14, 2002

CERCLA Administrative Record Document, BZ - A - 000547

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

18

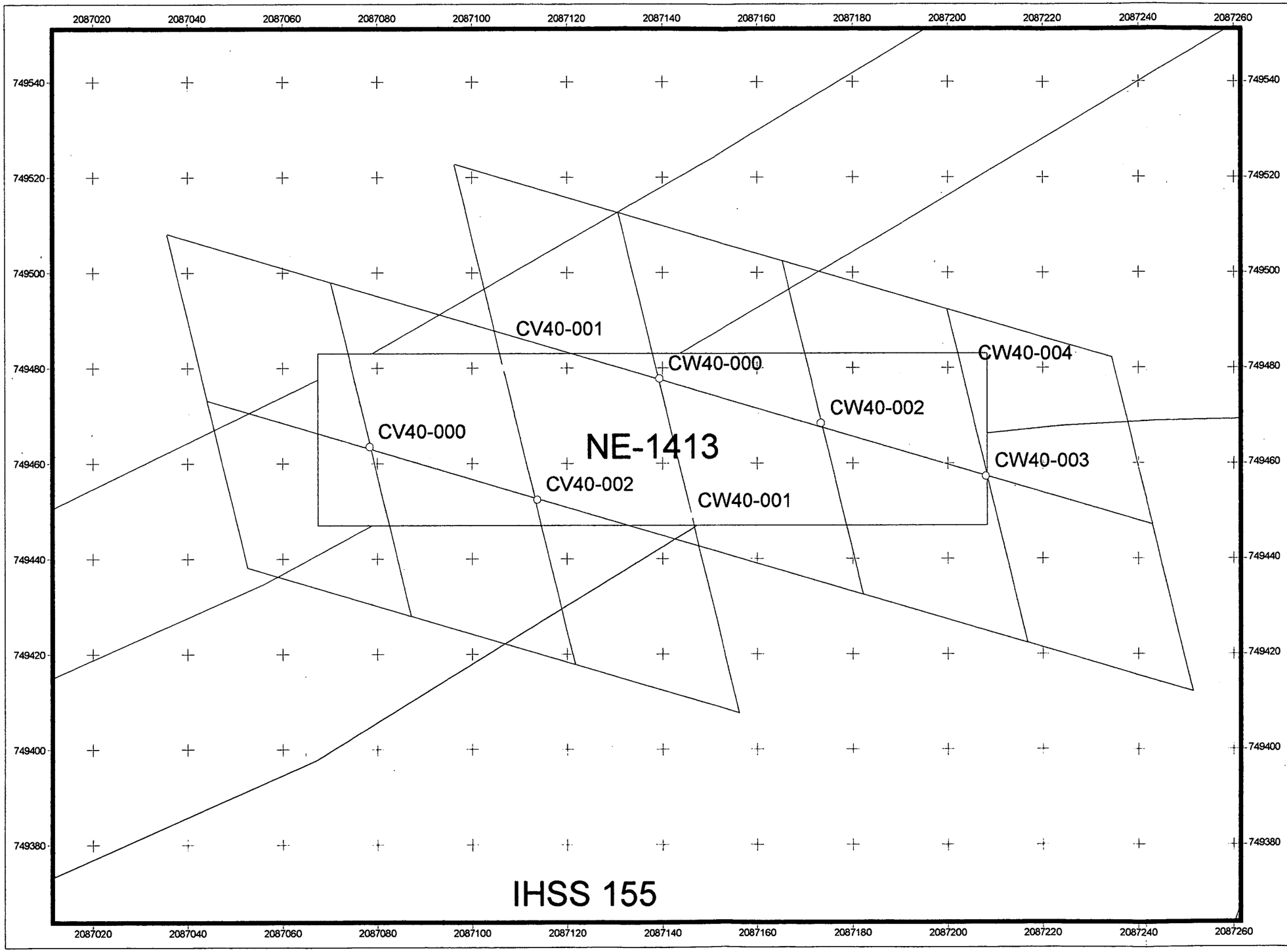

Figure 7
FY 2002 Sampling Locations for IHSS Group NE/NW PAC NE-1413 (Trench T-13)

KEY

- FY2002 Biased Sampling Locations
- FY2002 Statistical Sampling Locations
- BZ IHSS
- IA IHSS
- Random start 36-ft triangular grid line
- Dirt road
- Stream, ditch, or other drainage feature
- Fence
- Paved areas

Existing soil sampling locations (50-ft buffer)

- Both subsurface and surface soil
- Subsurface soil
- Surface soil

N

Scale =1:250

20 0 20 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

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153.apr April 2002

24

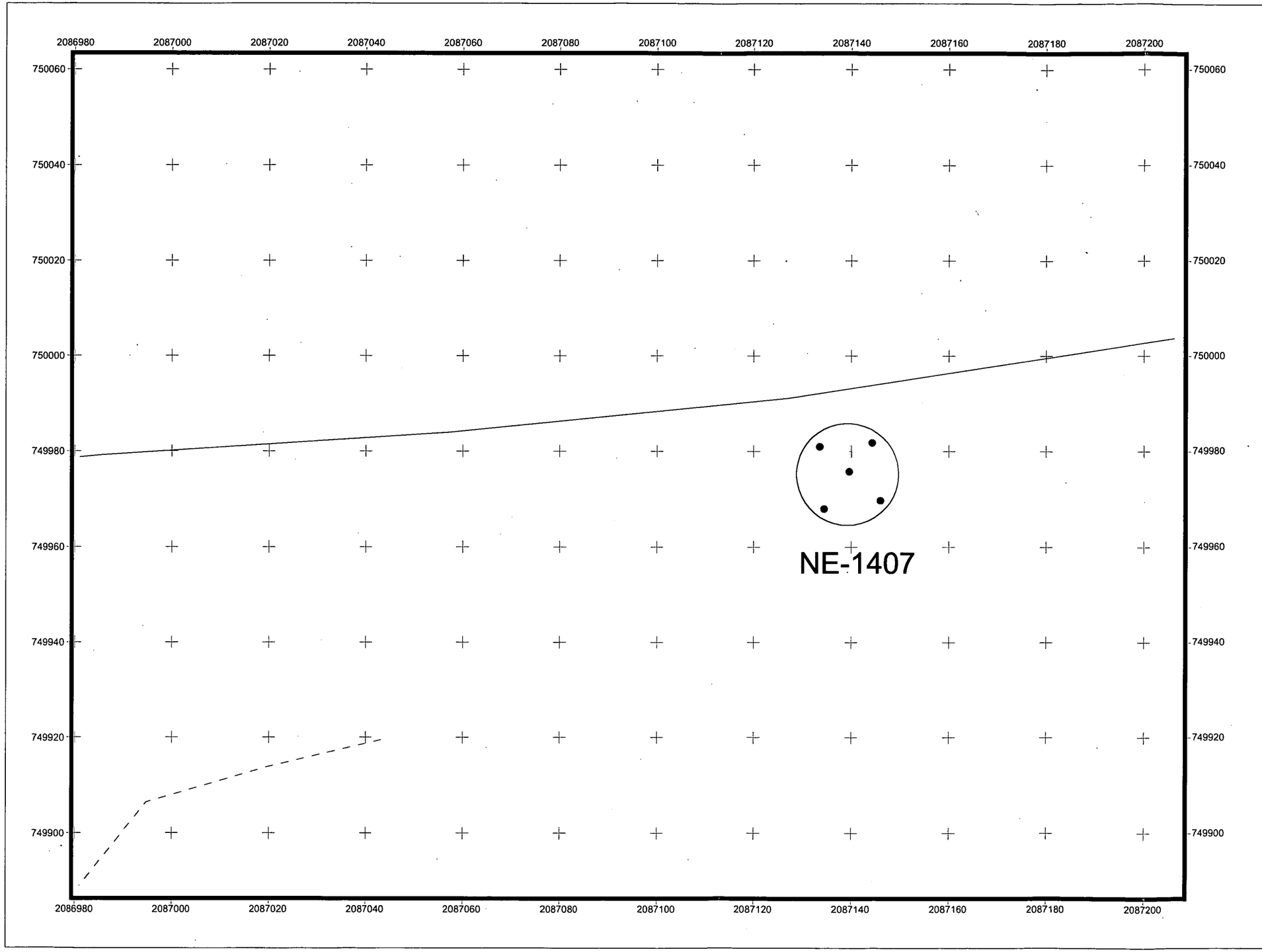

Figure 8
FY 2002 Sampling Locations for NE-1407 (OU 2 Treatment Facility)

KEY

- FY 2002 biased sampling location
- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

N

Scale = 1:250

10 0 10 20 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

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NE-1407.apr

May 2002

25/25

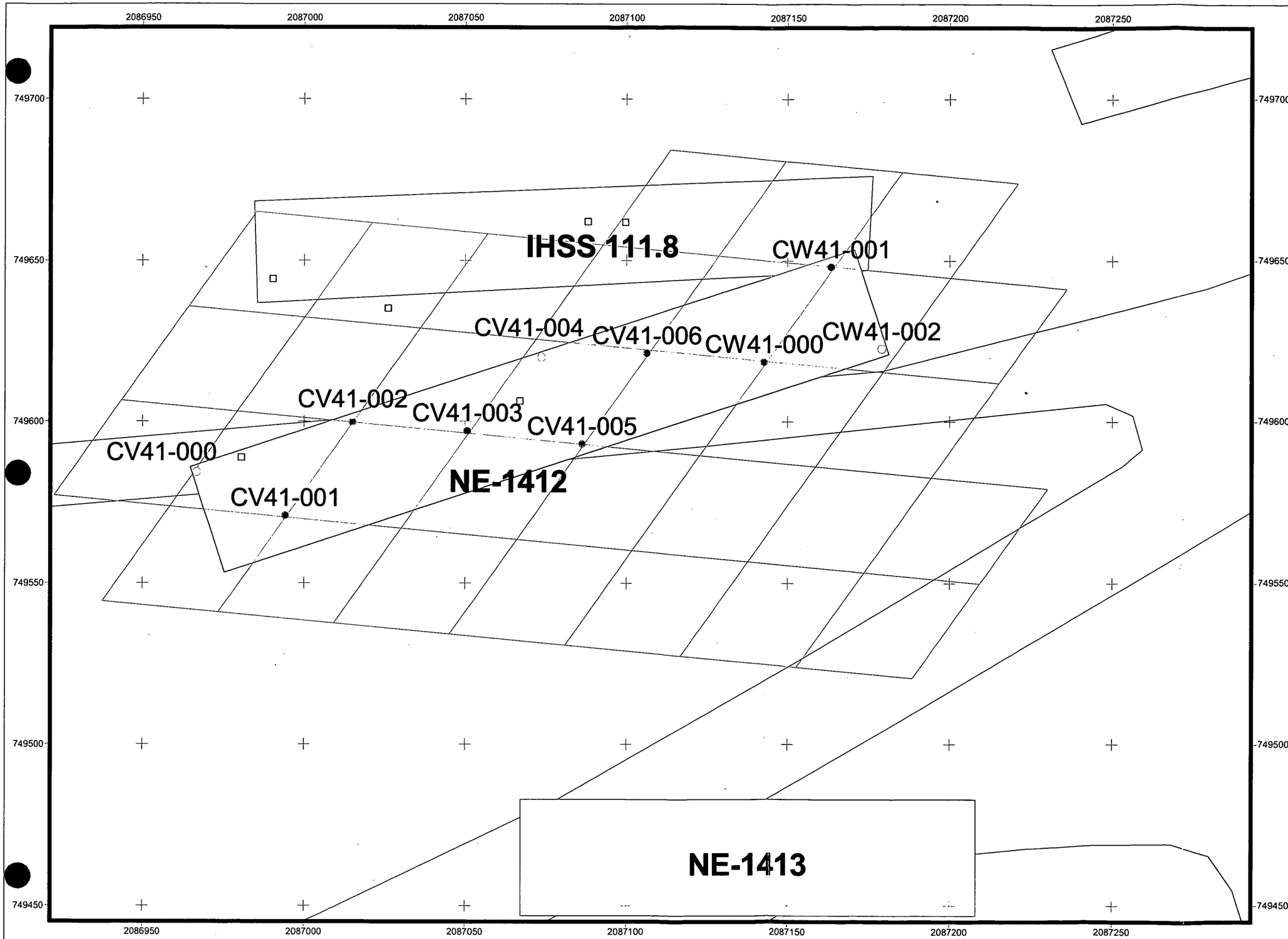

Figure 6B
FY 2002 Sampling Locations for IHSS Group NE/NW PAC NE-1412

KEY

- FY2002 Biased Sampling Locations
- FY2002 Statistical Sampling Locations
- BZ IHSS
- PAC
- Random start 36-ft triangular grid line
- Dirt road
- Stream, ditch, or other drainage feature
- Fence
- Paved areas

Existing soil sampling locations (50-ft buffer)

- Both subsurface and surface soil
- Subsurface soil
- Surface soil

N

Scale =1:350

10 0 10 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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23

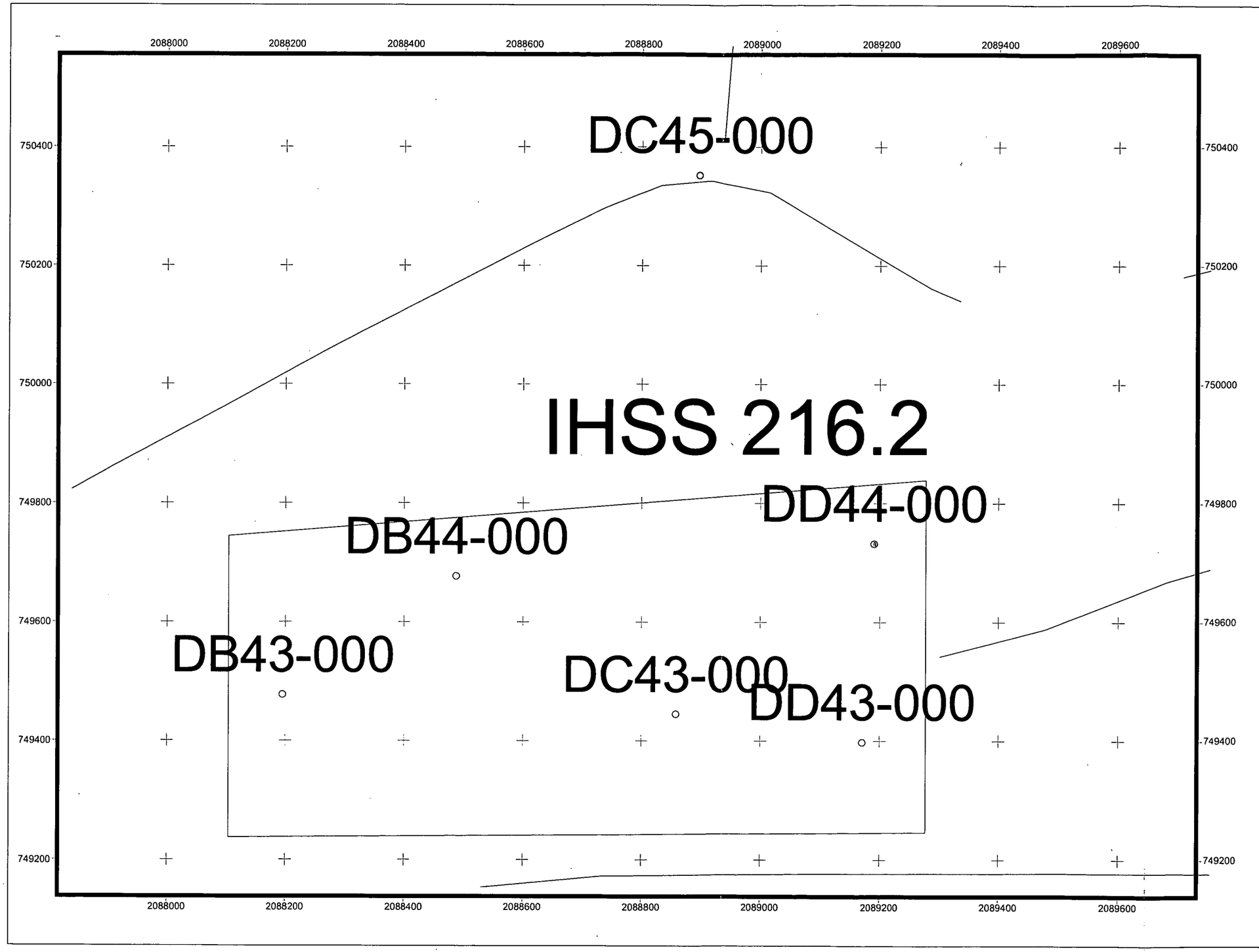

Figure 4B
FY2002
Sampling Locations
for IHSS 216.2

KEY

- Sampling Locations
- Buffer Zone IHSS
- Site 6b
- Paved area
- Dirt roads
- Streams, ditches, or other drainage features

N

Scale = 1:675

30 0 30 60 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

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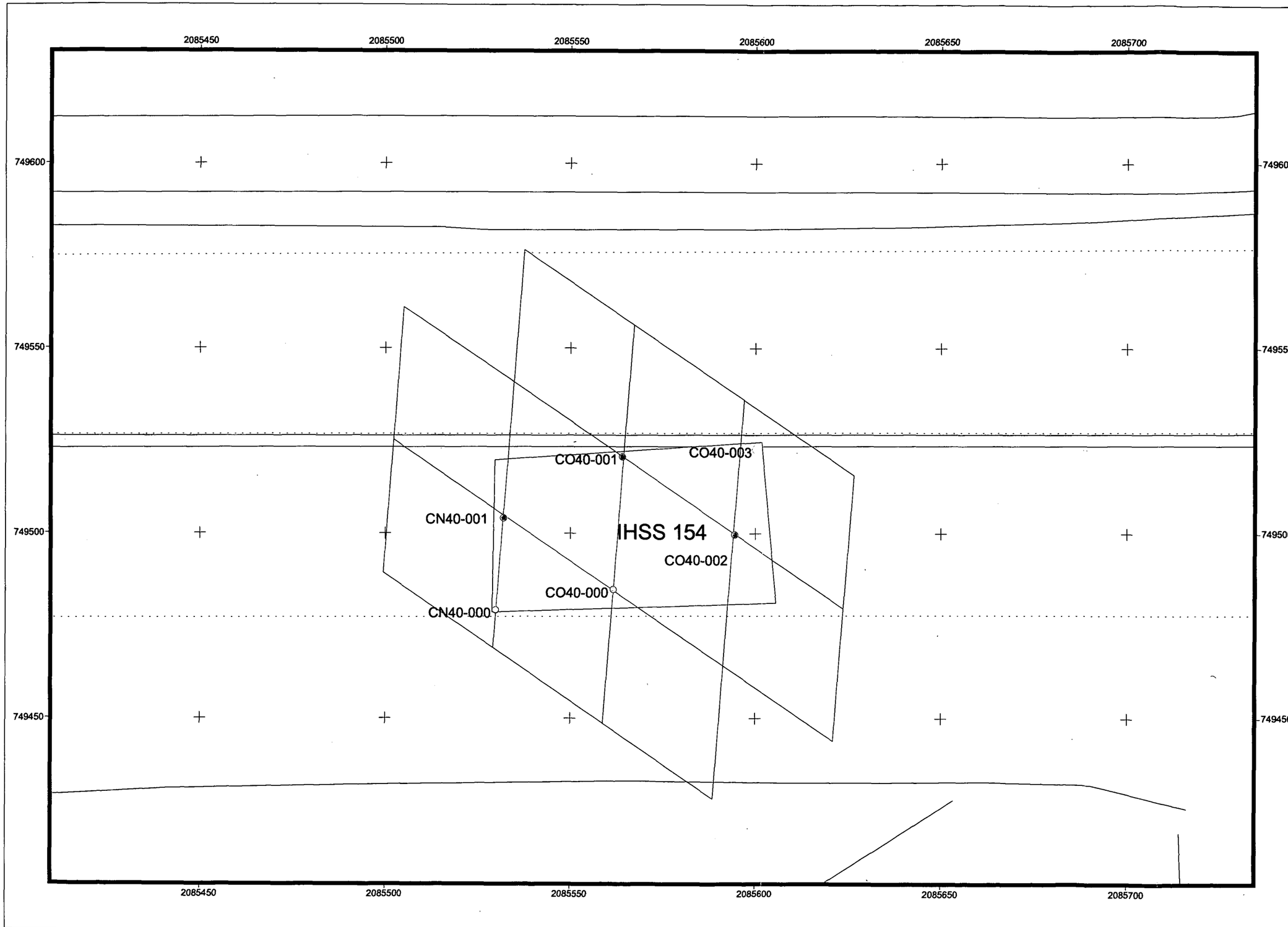

Figure 3
FY2002 Sampling Locations for IHSS Group 900-2 IHSS 154

KEY

- FY2002 Biased Sampling Locations
- FY2002 Statistical Sampling Locations
- BZ IHSS
- Random start 36-ft triangular grid line
- Dirt roads
- Stream, ditch, or other drainage feature
- Fence
- Paved area

N

Scale = 1:300

10 0 10 20 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

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154.apr

April 2002

17

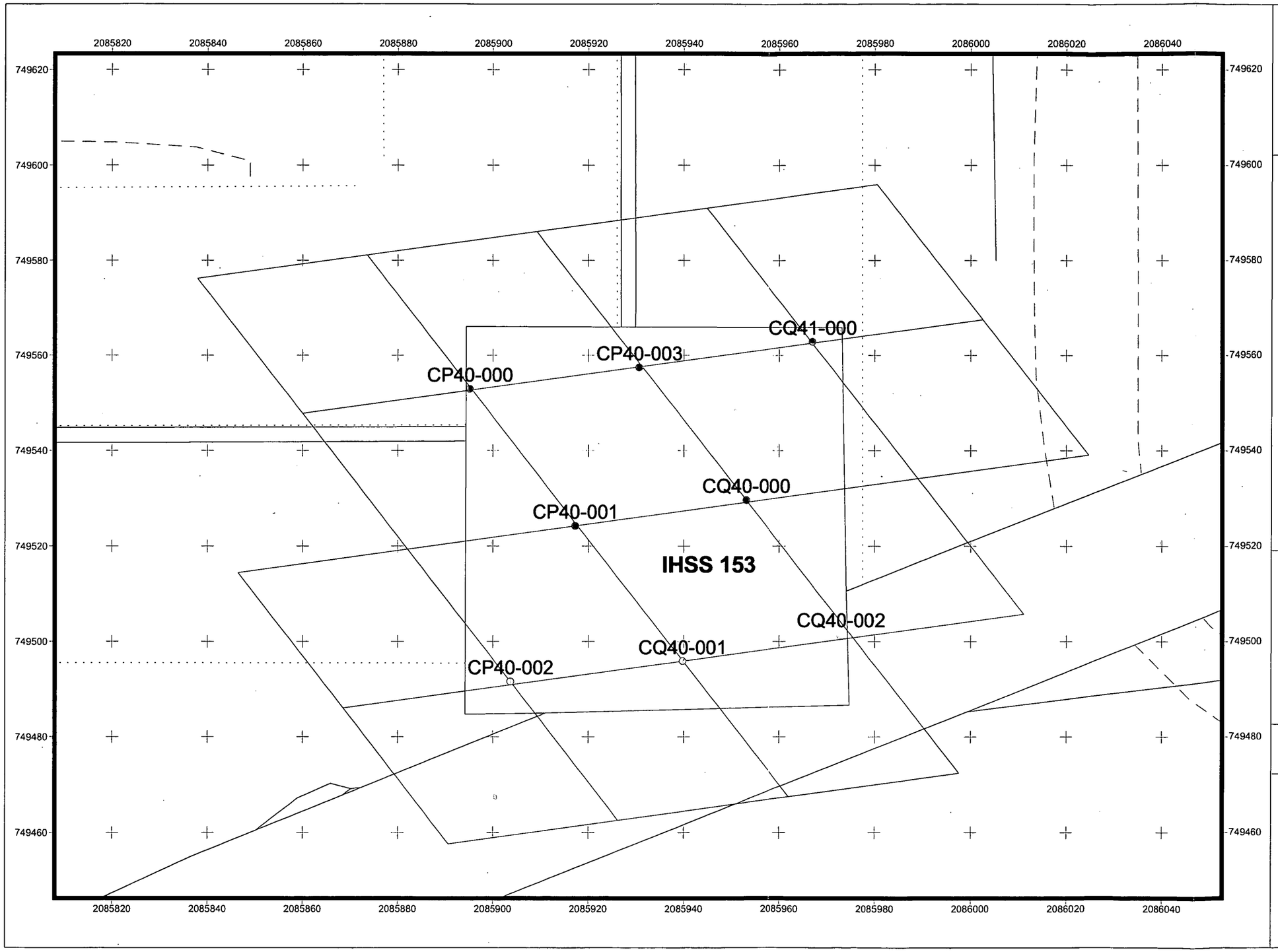

Figure 2B
FY 2002 Sampling Locations for IHSS Group 900-2; IHSS 153

KEY

- FY2002 Biased Sampling Locations
- FY2002 Statistical Sampling Locations
- BZ IHSS
- IA IHSS
- Random start 36-ft triangular grid line
- Dirt road
- Stream, ditch, or other drainage feature
- Fence
- Paved areas

Existing soil sampling locations (50-ft buffer)

- Both subsurface and surface soil
- Subsurface soil
- Surface soil

N

Scale =1:200

20 0 20 40 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

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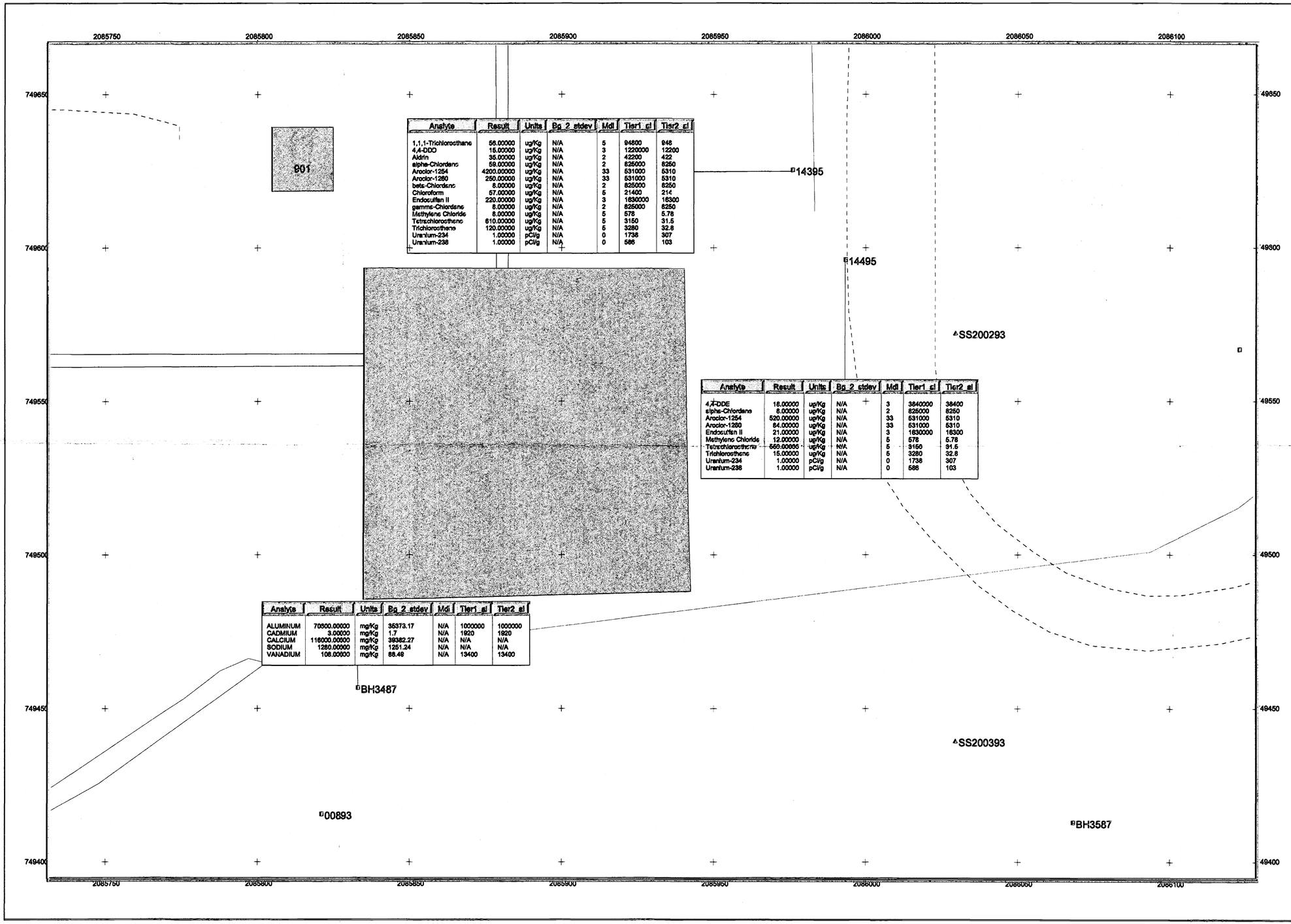
153.apr April 2002

10



Analyte	Result	Units	Bg 2 stdev	Mdl	Tier1 cl	Tier2 cl
1,1,1-Trichloroethane	56.00000	ug/Kg	N/A	5	94800	948
4,4-DDD	15.00000	ug/Kg	N/A	3	1220000	12200
Aldrin	35.00000	ug/Kg	N/A	2	42200	422
alpha-Chlordane	59.00000	ug/Kg	N/A	2	825000	8250
Aroclor-1254	4200.00000	ug/Kg	N/A	33	531000	5310
Aroclor-1260	250.00000	ug/Kg	N/A	33	531000	5310
beta-Chlordane	8.00000	ug/Kg	N/A	2	825000	8250
Chloroform	57.00000	ug/Kg	N/A	5	21400	214
Endosulfan II	220.00000	ug/Kg	N/A	3	1630000	16300
gamma-Chlordane	8.00000	ug/Kg	N/A	2	825000	8250
Methylene Chloride	8.00000	ug/Kg	N/A	5	578	5.78
Tetrachloroethene	610.00000	ug/Kg	N/A	5	3150	31.5
Trichloroethene	120.00000	ug/Kg	N/A	5	3280	32.8
Uranium-234	1.00000	pCi/g	N/A	0	1738	307
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg 2 stdev	Mdl	Tier1 cl	Tier2 cl
4,4-DDE	18.00000	ug/Kg	N/A	3	3840000	38400
alpha-Chlordane	8.00000	ug/Kg	N/A	2	825000	8250
Aroclor-1254	520.00000	ug/Kg	N/A	33	531000	5310
Aroclor-1260	64.00000	ug/Kg	N/A	33	531000	5310
Endosulfan II	21.00000	ug/Kg	N/A	3	1630000	16300
Methylene Chloride	12.00000	ug/Kg	N/A	5	578	5.78
Tetrachloroethene	550.00000	ug/Kg	N/A	5	3150	31.5
Trichloroethene	15.00000	ug/Kg	N/A	5	3280	32.8
Uranium-234	1.00000	pCi/g	N/A	0	1738	307
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg 2 stdev	Mdl	Tier1 cl	Tier2 cl
ALUMINUM	70500.00000	mg/Kg	35373.17	N/A	1000000	1000000
CADMIUM	3.00000	mg/Kg	1.7	N/A	1920	1920
CALCIUM	116000.00000	mg/Kg	39382.27	N/A	N/A	N/A
SODIUM	1280.00000	mg/Kg	1251.24	N/A	N/A	N/A
VANADIUM	108.00000	mg/Kg	88.49	N/A	13400	13400

Figure 2A
Location of Existing Sample Results Above Detection Limits or Background Levels for IHSS 153 (Oil Burn Pit NO. 2)

KEY

- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil

N

Scale = 1:150

10 0 10 20 30 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

WATERSTONE
Environmental Hydrology and Engineering, Inc.

Prepared for:

KAISER-HILL COMPANY

postings-02.apr May 2002

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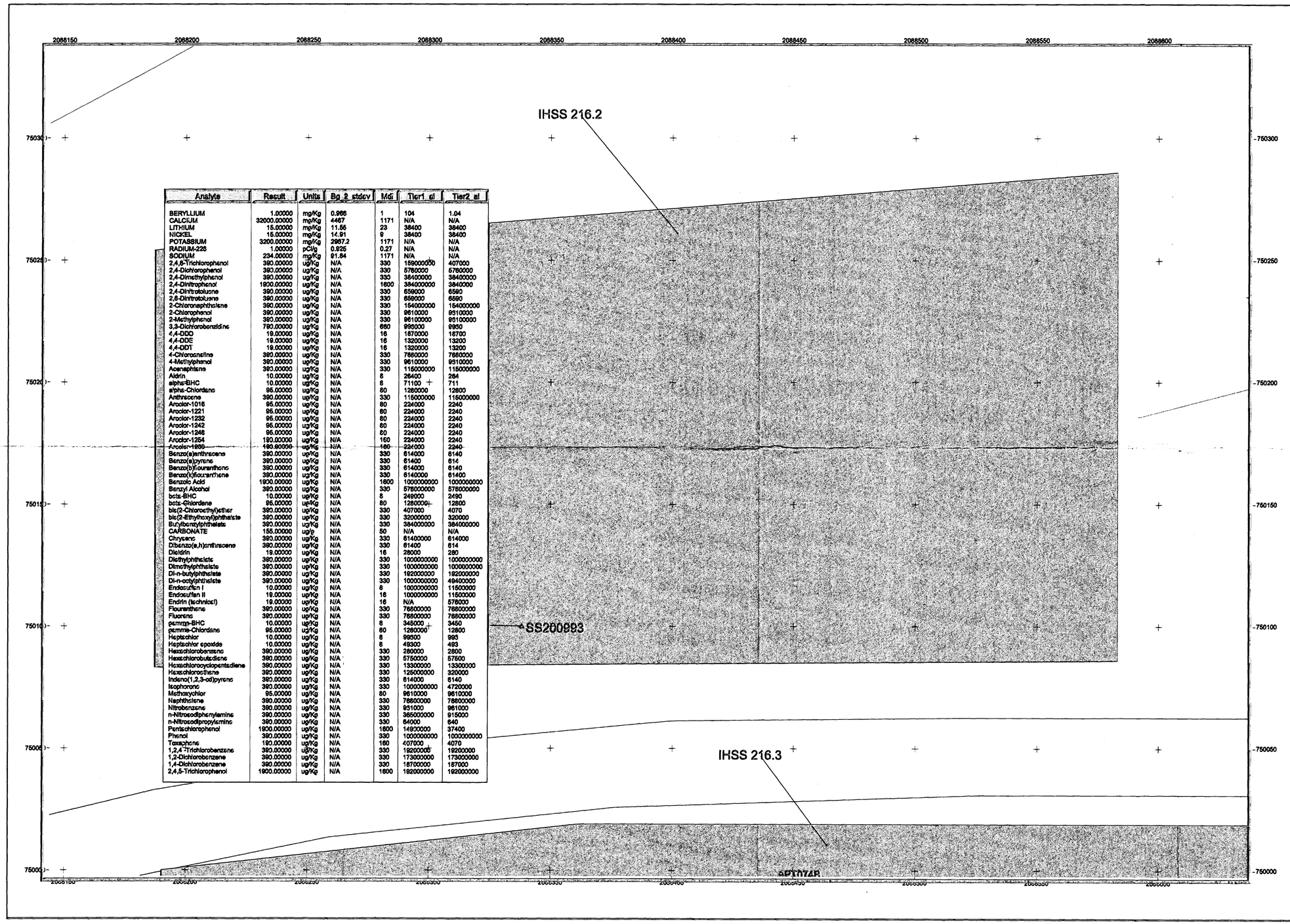
1 of 4



Analyte	Result	Units	Bg 2 stdev	Mdl	Tier1 al	Tier2 al
BERYLLIUM	1.00000	mg/Kg	0.966	1	104	1.04
CALCIUM	32000.00000	mg/Kg	4467	1171	N/A	N/A
LITHIUM	15.00000	mg/Kg	11.55	23	38400	38400
NICKEL	15.00000	mg/Kg	14.91	9	38400	38400
POTASSIUM	3200.00000	mg/Kg	2967.2	1171	N/A	N/A
RADIUM-226	1.00000	pCi/g	0.925	0.27	N/A	N/A
SODIUM	234.00000	mg/Kg	91.84	1171	N/A	N/A
2,4,6-Trichlorophenol	390.00000	ug/Kg	N/A	330	159000000	407000
2,4-Dichlorophenol	390.00000	ug/Kg	N/A	330	5760000	5760000
2,4-Dimethylphenol	390.00000	ug/Kg	N/A	330	38400000	38400000
2,4-Dinitrophenol	1900.00000	ug/Kg	N/A	1600	384000000	3840000
2,4-Dinitrotoluene	390.00000	ug/Kg	N/A	330	659000	6590
2,6-Dinitrotoluene	390.00000	ug/Kg	N/A	330	659000	6590
2-Chloronaphthalene	390.00000	ug/Kg	N/A	330	154000000	154000000
2-Chlorophenol	390.00000	ug/Kg	N/A	330	9610000	9610000
2-Methylphenol	390.00000	ug/Kg	N/A	330	96100000	96100000
3,3-Dichlorobenzidine	780.00000	ug/Kg	N/A	660	995000	9950
4,4-DDD	19.00000	ug/Kg	N/A	16	1870000	18700
4,4-DDE	19.00000	ug/Kg	N/A	16	1320000	13200
4,4-DDT	19.00000	ug/Kg	N/A	16	1320000	13200
4-Chloroaniline	390.00000	ug/Kg	N/A	330	7680000	7680000
4-Methylphenol	390.00000	ug/Kg	N/A	330	9610000	9610000
Acenaphthene	390.00000	ug/Kg	N/A	330	115000000	115000000
Aldrin	10.00000	ug/Kg	N/A	8	26400	264
alpha-BHC	10.00000	ug/Kg	N/A	8	71100	711
alpha-Chlordane	95.00000	ug/Kg	N/A	80	1280000	12800
Anthracene	390.00000	ug/Kg	N/A	330	115000000	115000000
Aroclor-1016	95.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1221	95.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1232	95.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1242	95.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1248	95.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1254	190.00000	ug/Kg	N/A	160	224000	2240
Aroclor-1260	190.00000	ug/Kg	N/A	160	224000	2240
Benzo(a)anthracene	390.00000	ug/Kg	N/A	330	614000	6140
Benzo(a)pyrene	390.00000	ug/Kg	N/A	330	61400	614
Benzo(b)fluoranthene	390.00000	ug/Kg	N/A	330	614000	6140
Benzo(k)fluoranthene	390.00000	ug/Kg	N/A	330	6140000	61400
Benzoic Acid	1900.00000	ug/Kg	N/A	1600	1000000000	1000000000
Benzyl Alcohol	390.00000	ug/Kg	N/A	330	576000000	576000000
beta-BHC	10.00000	ug/Kg	N/A	8	249000	2490
beta-Chlordane	95.00000	ug/Kg	N/A	80	1280000	12800
bis(2-Chloroethyl)ether	390.00000	ug/Kg	N/A	330	407000	4070
bis(2-Ethylhexyl)phthalate	390.00000	ug/Kg	N/A	330	32000000	320000
Butylbenzylphthalate	390.00000	ug/Kg	N/A	330	384000000	384000000
CARBONATE	155.00000	ug/g	N/A	50	N/A	N/A
Chrysene	390.00000	ug/Kg	N/A	330	61400000	614000
Dibenzo(a,h)anthracene	390.00000	ug/Kg	N/A	330	61400	614
Dieldrin	19.00000	ug/Kg	N/A	16	28000	280
Diethylphthalate	390.00000	ug/Kg	N/A	330	1000000000	1000000000
Dimethylphthalate	390.00000	ug/Kg	N/A	330	1000000000	1000000000
Di-n-butylphthalate	390.00000	ug/Kg	N/A	330	192000000	192000000
Di-n-octylphthalate	390.00000	ug/Kg	N/A	330	1000000000	49400000
Endosulfan I	10.00000	ug/Kg	N/A	8	1000000000	11500000
Endosulfan II	19.00000	ug/Kg	N/A	16	1000000000	11500000
Endrin (technical)	19.00000	ug/Kg	N/A	16	N/A	576000
Fluoranthene	390.00000	ug/Kg	N/A	330	76800000	76800000
Fluorene	390.00000	ug/Kg	N/A	330	76800000	76800000
gamma-BHC	10.00000	ug/Kg	N/A	8	345000	3450
gamma-Chlordane	95.00000	ug/Kg	N/A	80	1280000	12800
Heptachlor	10.00000	ug/Kg	N/A	8	99500	995
Heptachlor epoxide	10.00000	ug/Kg	N/A	8	49300	493
Hexachlorobenzene	390.00000	ug/Kg	N/A	330	280000	2800
Hexachlorobutadiene	390.00000	ug/Kg	N/A	330	5750000	57500
Hexachlorocyclopentadiene	390.00000	ug/Kg	N/A	330	13300000	13300000
Hexachloroethane	390.00000	ug/Kg	N/A	330	125000000	320000
Indeno(1,2,3-cd)pyrene	390.00000	ug/Kg	N/A	330	614000	6140
Isophorone	390.00000	ug/Kg	N/A	330	1000000000	4720000
Methoxychlor	95.00000	ug/Kg	N/A	80	9610000	9610000
Naphthalene	390.00000	ug/Kg	N/A	330	76800000	76800000
Nitrobenzene	390.00000	ug/Kg	N/A	330	951000	951000
n-Nitrosodiphenylamine	390.00000	ug/Kg	N/A	330	365000000	915000
n-Nitrosodipropylamine	390.00000	ug/Kg	N/A	330	64000	640
Pentachlorophenol	1900.00000	ug/Kg	N/A	1600	14900000	37400
Phenol	390.00000	ug/Kg	N/A	330	1000000000	1000000000
Toxaphene	190.00000	ug/Kg	N/A	160	407000	4070
1,2,4-Trichlorobenzene	390.00000	ug/Kg	N/A	330	19200000	19200000
1,2-Dichlorobenzene	390.00000	ug/Kg	N/A	330	173000000	173000000
1,4-Dichlorobenzene	390.00000	ug/Kg	N/A	330	18700000	187000
2,4,5-Trichlorophenol	1900.00000	ug/Kg	N/A	1600	192000000	192000000

Figure 4-A

Location of Existing Sample Results Above Detection Limits or Background Levels for IHSS 216.2

KEY

- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil

N

Scale = 1:250

20 0 20 40 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

WATERSTONE
Environmental Hydrology and Engineering, Inc.

Prepared for:

KAISER-HILL COMPANY

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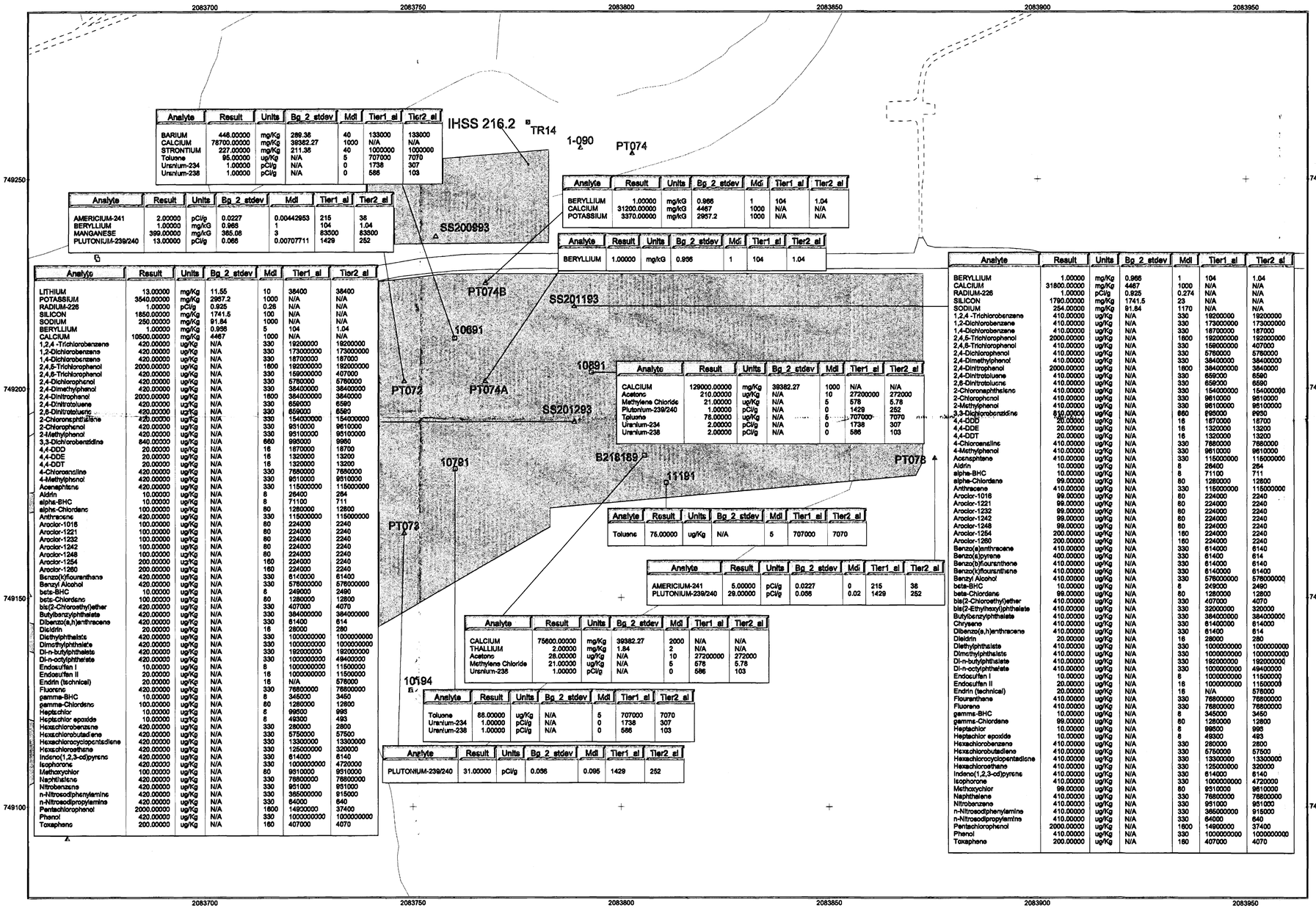
2 of 4



Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
BARIUM	446.00000	mg/Kg	289.36	40	133000	133000
CALCIUM	78700.00000	mg/Kg	39382.27	1000	N/A	N/A
STRONTIUM	227.00000	mg/Kg	211.36	40	1000000	1000000
Toluene	95.00000	ug/Kg	N/A	5	707000	7070
Uranium-234	1.00000	pCi/g	N/A	0	1738	307
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
AMERICIUM-241	2.00000	pCi/g	0.0227	0.00442953	215	38
BERYLLIUM	1.00000	mg/kG	0.966	1	104	1.04
MANGANESE	399.00000	mg/kG	365.06	3	83500	83500
PLUTONIUM-239/240	13.00000	pCi/g	0.066	0.00707711	1429	252

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
LITHIUM	13.00000	mg/Kg	11.55	10	38400	38400
POTASSIUM	3540.00000	mg/Kg	2957.2	1000	N/A	N/A
RADIUM-226	1.00000	pCi/g	0.925	0.26	N/A	N/A
SILICON	1850.00000	mg/Kg	1741.5	100	N/A	N/A
SODIUM	250.00000	mg/Kg	91.84	1000	N/A	N/A
BERYLLIUM	1.00000	mg/Kg	0.966	5	104	1.04
CALCIUM	10500.00000	mg/Kg	4467	1000	N/A	N/A
1,2,4 -Trichlorobenzene	420.00000	ug/Kg	N/A	330	19200000	19200000
1,2-Dichlorobenzene	420.00000	ug/Kg	N/A	330	173000000	173000000
1,4-Dichlorobenzene	420.00000	ug/Kg	N/A	330	18700000	187000
2,4,5-Trichlorophenol	2000.00000	ug/Kg	N/A	1600	192000000	192000000
2,4,6-Trichlorophenol	420.00000	ug/Kg	N/A	330	159000000	407000
2,4-Dichlorophenol	420.00000	ug/Kg	N/A	330	5780000	5780000
2,4-Dimethylphenol	420.00000	ug/Kg	N/A	330	38400000	38400000
2,4-Dinitrophenol	2000.00000	ug/Kg	N/A	1600	384000000	3840000
2,4-Dinitrotoluene	420.00000	ug/Kg	N/A	330	659000	6590
2,6-Dinitrotoluene	420.00000	ug/Kg	N/A	330	659000	6590
2-Chloronaphthalene	420.00000	ug/Kg	N/A	330	154000000	154000000
2-Chlorophenol	420.00000	ug/Kg	N/A	330	9510000	9510000
2-Methylphenol	420.00000	ug/Kg	N/A	330	95100000	9510000
3,3-Dichlorobenzidine	840.00000	ug/Kg	N/A	660	995000	9960
4,4-DDD	20.00000	ug/Kg	N/A	16	1870000	18700
4,4-DDE	20.00000	ug/Kg	N/A	16	1320000	13200
4,4-DDT	20.00000	ug/Kg	N/A	16	1320000	13200
4-Chloroaniline	420.00000	ug/Kg	N/A	330	7680000	7680000
4-Methylphenol	420.00000	ug/Kg	N/A	330	9510000	9510000
Acenaphthene	420.00000	ug/Kg	N/A	330	115000000	115000000
Aldrin	10.00000	ug/Kg	N/A	8	26400	264
alpha-BHC	10.00000	ug/Kg	N/A	8	71100	711
alpha-Chlordane	100.00000	ug/Kg	N/A	80	1280000	12800
Anthracene	420.00000	ug/Kg	N/A	330	115000000	115000000
Aroclor-1016	100.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1221	100.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1232	100.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1242	100.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1248	100.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1254	200.00000	ug/Kg	N/A	160	224000	2240
Aroclor-1260	200.00000	ug/Kg	N/A	160	224000	2240
Benzo(k)fluoranthene	420.00000	ug/Kg	N/A	330	6140000	61400
Benzyl Alcohol	420.00000	ug/Kg	N/A	330	576000000	576000000
beta-BHC	10.00000	ug/Kg	N/A	8	249000	2490
beta-Chlordane	100.00000	ug/Kg	N/A	80	1280000	12800
bis(2-Chloroethyl)ether	420.00000	ug/Kg	N/A	330	407000	4070
Butylbenzylphthalate	420.00000	ug/Kg	N/A	330	384000000	384000000
Dibenzo(a,h)anthracene	420.00000	ug/Kg	N/A	330	61400	614
Dieldrin	20.00000	ug/Kg	N/A	16	28000	280
Diethylphthalate	420.00000	ug/Kg	N/A	330	1000000000	1000000000
Dimethylphthalate	420.00000	ug/Kg	N/A	330	1000000000	1000000000
Di-n-butylphthalate	420.00000	ug/Kg	N/A	330	192000000	192000000
Di-n-octylphthalate	420.00000	ug/Kg	N/A	330	1000000000	49400000
Endosulfan I	10.00000	ug/Kg	N/A	8	1000000000	11500000
Endosulfan II	20.00000	ug/Kg	N/A	16	1000000000	11500000
Endrin (technical)	20.00000	ug/Kg	N/A	16	N/A	576000
Fluorene	420.00000	ug/Kg	N/A	330	76800000	76800000
gamma-BHC	10.00000	ug/Kg	N/A	8	345000	3450
gamma-Chlordane	100.00000	ug/Kg	N/A	80	1280000	12800
Heptachlor	10.00000	ug/Kg	N/A	8	99500	995
Heptachlor epoxide	10.00000	ug/Kg	N/A	8	49300	493
Hexachlorobenzene	420.00000	ug/Kg	N/A	330	280000	2800
Hexachlorobutadiene	420.00000	ug/Kg	N/A	330	5750000	57500
Hexachlorocyclopentadiene	420.00000	ug/Kg	N/A	330	13300000	13300000
Hexachloroethane	420.00000	ug/Kg	N/A	330	125000000	320000
Indeno(1,2,3-cd)pyrene	420.00000	ug/Kg	N/A	330	614000	6140
Isophorone	420.00000	ug/Kg	N/A	330	1000000000	4720000
Methoxychlor	100.00000	ug/Kg	N/A	80	9510000	9510000
Naphthalene	420.00000	ug/Kg	N/A	330	76800000	76800000
Nitrobenzene	420.00000	ug/Kg	N/A	330	951000	951000
n-Nitrosodiphenylamine	420.00000	ug/Kg	N/A	330	365000000	915000
n-Nitrosodipropylamine	420.00000	ug/Kg	N/A	330	64000	640
Pentachlorophenol	2000.00000	ug/Kg	N/A	1600	14900000	37400
Phenol	420.00000	ug/Kg	N/A	330	1000000000	1000000000
Toxaphene	200.00000	ug/Kg	N/A	160	407000	4070

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
BERYLLIUM	1.00000	mg/kG	0.966	1	104	1.04
CALCIUM	31200.00000	mg/kG	4467	1000	N/A	N/A
POTASSIUM	3370.00000	mg/kG	2957.2	1000	N/A	N/A

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
BERYLLIUM	1.00000	mg/kG	0.966	1	104	1.04

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
BERYLLIUM	1.00000	mg/Kg	0.966	1	104	1.04
CALCIUM	31800.00000	mg/Kg	4467	1000	N/A	N/A
RADIUM-226	1.00000	pCi/g	0.925	0.274	N/A	N/A
SILICON	1790.00000	mg/Kg	1741.5	23	N/A	N/A
SODIUM	254.00000	mg/Kg	91.84	1170	N/A	N/A
1,2,4 -Trichlorobenzene	410.00000	ug/Kg	N/A	330	19200000	19200000
1,2-Dichlorobenzene	410.00000	ug/Kg	N/A	330	173000000	173000000
1,4-Dichlorobenzene	410.00000	ug/Kg	N/A	330	18700000	187000
2,4,5-Trichlorophenol	2000.00000	ug/Kg	N/A	1600	192000000	192000000
2,4,6-Trichlorophenol	410.00000	ug/Kg	N/A	330	159000000	407000
2,4-Dichlorophenol	410.00000	ug/Kg	N/A	330	5780000	5780000
2,4-Dimethylphenol	410.00000	ug/Kg	N/A	330	38400000	38400000
2,4-Dinitrophenol	2000.00000	ug/Kg	N/A	1600	384000000	3840000
2,4-Dinitrotoluene	410.00000	ug/Kg	N/A	330	659000	6590
2,6-Dinitrotoluene	410.00000	ug/Kg	N/A	330	659000	6590
2-Chloronaphthalene	410.00000	ug/Kg	N/A	330	154000000	154000000
2-Chlorophenol	410.00000	ug/Kg	N/A	330	9510000	9510000
2-Methylphenol	410.00000	ug/Kg	N/A	330	95100000	9510000
3,3-Dichlorobenzidine	810.00000	ug/Kg	N/A	660	995000	9950
4,4-DDD	20.00000	ug/Kg	N/A	16	1870000	18700
4,4-DDE	20.00000	ug/Kg	N/A	16	1320000	13200
4,4-DDT	20.00000	ug/Kg	N/A	16	1320000	13200
4-Chloroaniline	410.00000	ug/Kg	N/A	330	7680000	7680000
4-Methylphenol	410.00000	ug/Kg	N/A	330	9510000	9510000
Acenaphthene	410.00000	ug/Kg	N/A	330	115000000	115000000
Aldrin	10.00000	ug/Kg	N/A	8	26400	264
alpha-BHC	10.00000	ug/Kg	N/A	8	71100	711
alpha-Chlordane	99.00000	ug/Kg	N/A	80	1280000	12800
Anthracene	410.00000	ug/Kg	N/A	330	115000000	115000000
Aroclor-1016	99.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1221	99.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1232	99.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1242	99.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1248	99.00000	ug/Kg	N/A	80	224000	2240
Aroclor-1254	200.00000	ug/Kg	N/A	160	224000	2240
Aroclor-1260	200.00000	ug/Kg	N/A	160	224000	2240
Benzo(a)anthracene	410.00000	ug/Kg	N/A	330	61400	6140
Benzo(a)pyrene	400.00000	ug/Kg	N/A	330	61400	614
Benzo(b)fluoranthene	410.00000	ug/Kg	N/A	330	61400	6140
Benzo(k)fluoranthene	410.00000	ug/Kg	N/A	330	6140000	61400
Benzyl Alcohol	410.00000	ug/Kg	N/A	330	576000000	576000000
beta-BHC	10.00000	ug/Kg	N/A	8	249000	2490
beta-Chlordane	99.00000	ug/Kg	N/A	80	1280000	12800
bis(2-Chloroethyl)ether	410.00000	ug/Kg	N/A	330	407000	4070
bis(2-Ethylhexyl)phthalate	410.00000	ug/Kg	N/A	330	32000000	320000
Butylbenzylphthalate	410.00000	ug/Kg	N/A	330	384000000	384000000
Chrysene	410.00000	ug/Kg	N/A	330	61400000	614000
Dibenzo(a,h)anthracene	410.00000	ug/Kg	N/A	330	61400	614
Dieldrin	20.00000	ug/Kg	N/A	16	28000	280
Diethylphthalate	410.00000	ug/Kg	N/A	330	1000000000	1000000000
Dimethylphthalate	410.00000	ug/Kg	N/A	330	1000000000	1000000000
Di-n-butylphthalate	410.00000	ug/Kg	N/A	330	192000000	192000000
Di-n-octylphthalate	410.00000	ug/Kg	N/A	330	1000000000	49400000
Endosulfan I	10.00000	ug/Kg	N/A	8	1000000000	11500000
Endosulfan II	20.00000	ug/Kg	N/A	16	1000000000	11500000
Endrin (technical)	20.00000	ug/Kg	N/A	16	N/A	576000
Fluoranthene	410.00000	ug/Kg	N/A	330	76800000	76800000
Fluorene	410.00000	ug/Kg	N/A	330	76800000	76800000
gamma-BHC	10.00000	ug/Kg	N/A	8	345000	3450
gamma-Chlordane	99.00000	ug/Kg	N/A	80	1280000	12800
Heptachlor	10.00000	ug/Kg	N/A	8	99500	995
Heptachlor epoxide	10.00000	ug/Kg	N/A	8	49300	493
Hexachlorobenzene	410.00000	ug/Kg	N/A	330	280000	2800
Hexachlorobutadiene	410.00000	ug/Kg	N/A	330	5750000	57500
Hexachlorocyclopentadiene	410.00000	ug/Kg	N/A	330	13300000	13300000
Hexachloroethane	410.00000	ug/Kg	N/A	330	125000000	320000
Indeno(1,2,3-cd)pyrene	410.00000	ug/Kg	N/A	330	614000	6140
Isophorone	410.00000	ug/Kg	N/A	330	1000000000	4720000
Methoxychlor	99.00000	ug/Kg	N/A	80	9510000	9510000
Naphthalene	410.00000	ug/Kg	N/A	330	76800000	76800000
Nitrobenzene	410.00000	ug/Kg	N/A	330	951000	951000
n-Nitrosodiphenylamine	410.00000	ug/Kg	N/A	330	365000000	915000
n-Nitrosodipropylamine	410.00000	ug/Kg	N/A	330	64000	640
Pentachlorophenol	2000.00000	ug/Kg	N/A	1600	14900000	37400
Phenol	410.00000	ug/Kg	N/A	330	1000000000	1000000000
Toxaphene	200.00000	ug/Kg	N/A	160	407000	4070

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
CALCIUM	129000.00000	mg/Kg	39382.27	1000	N/A	N/A
Acetone	210.00000	ug/Kg	N/A	10	27200000	272000
Methylene Chloride	21.00000	ug/Kg	N/A	5	578	5.78
Plutonium-239/240	1.00000	pCi/g	N/A	0	1429	252
Toluene	78.00000	ug/Kg	N/A	5	707000	7070
Uranium-234	2.00000	pCi/g	N/A	0	1738	307
Uranium-238	2.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
Toluene	75.00000	ug/Kg	N/A	5	707000	7070

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
AMERICIUM-241	5.00000	pCi/g	0.0227	0	215	38
PLUTONIUM-239/240	28.00000	pCi/g	0.066	0.02	1429	252

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
CALCIUM	75600.00000	mg/Kg	39382.27	2000	N/A	N/A
THALLIUM	2.00000	mg/Kg	1.84	2	N/A	N/A
Acetone	28.00000	ug/Kg	N/A	10	27200000	272000
Methylene Chloride	21.00000	ug/Kg	N/A	5	578	5.78
Uranium-235	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
Toluene	88.00000	ug/Kg	N/A	5	707000	7070
Uranium-234	1.00000	pCi/g	N/A	0	1738	307
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_al	Tier2_al
PLUTONIUM-239/240	31.00000	pCi/g	0.066	0.095	1429	252

Figure 5A
Location of Existing Sample Results Above Detection Limits or Background Levels for IHSS 216.3 (East Spray Field - South Area)

KEY

- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil

N

Scale = 1:1400

100 0 100 200 300 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

WATERSTONE
Environmental Hydrology and Engineering, Inc.

Prepared for:

KAISER-HILL COMPANY

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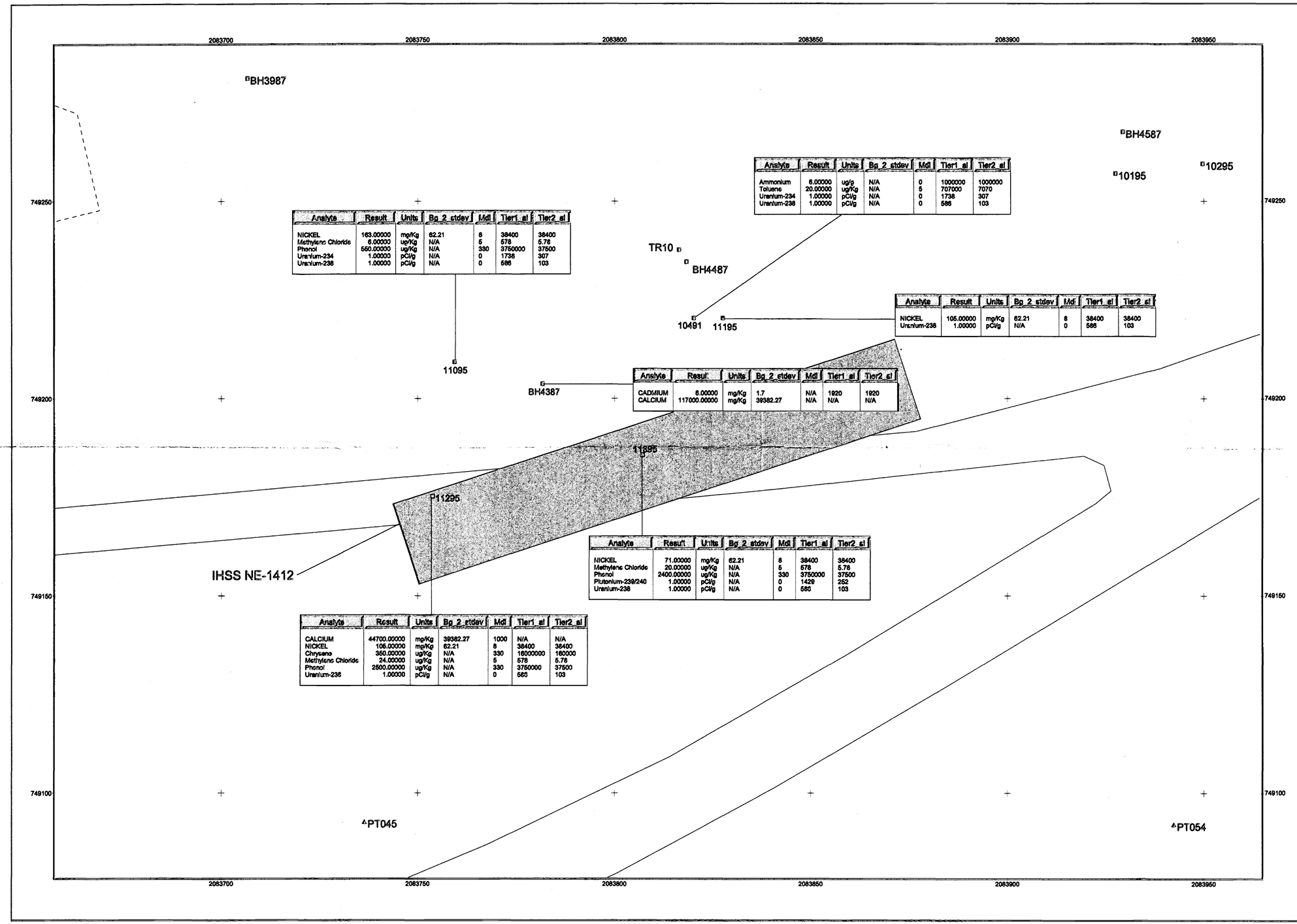

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_sl	Tier2_sl
NICKEL	163.00000	mg/Kg	62.21	8	38400	38400
Methylene Chloride	6.00000	ug/Kg	N/A	5	578	5.78
Phenol	550.00000	ug/Kg	N/A	330	3750000	37500
Uranium-234	1.00000	pCi/g	N/A	0	1738	307
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_sl	Tier2_sl
Ammonium	6.00000	ug/g	N/A	0	1000000	1000000
Toluene	20.00000	ug/Kg	N/A	5	707000	7070
Uranium-234	1.00000	pCi/g	N/A	0	1738	307
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_sl	Tier2_sl
NICKEL	105.00000	mg/Kg	62.21	8	38400	38400
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_sl	Tier2_sl
CADMIUM	6.00000	mg/Kg	1.7	N/A	1920	1920
CALCIUM	117000.00000	mg/Kg	39382.27	N/A	N/A	N/A

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_sl	Tier2_sl
NICKEL	71.00000	mg/Kg	62.21	8	38400	38400
Methylene Chloride	20.00000	ug/Kg	N/A	5	578	5.78
Phenol	2400.00000	ug/Kg	N/A	330	3750000	37500
Plutonium-239/240	1.00000	pCi/g	N/A	0	1429	252
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Analyte	Result	Units	Bg_2_stdev	Mdl	Tier1_sl	Tier2_sl
CALCIUM	44700.00000	mg/Kg	39382.27	1000	N/A	N/A
NICKEL	105.00000	mg/Kg	62.21	8	38400	38400
Chrysene	350.00000	ug/Kg	N/A	330	16000000	160000
Methylene Chloride	24.00000	ug/Kg	N/A	5	578	5.78
Phenol	2500.00000	ug/Kg	N/A	330	3750000	37500
Uranium-238	1.00000	pCi/g	N/A	0	586	103

Figure 6A
Location of Existing Sample Results Above Detection Limits or Background Levels for NE-1412 (Trench T-12

KEY

- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil

N

Scale = 1:250

20 0 20 40 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

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