

NOTICE

All drawings located at the end of the document.

**CLOSEOUT REPORT
FOR IHSS GROUP 300-1**

IHSS 300-128, Oil Burn Pit #1;
IHSS 300-134(N), Lithium Metal Site;
and IHSS 300-171, Solvent Burning Grounds



DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE

CEX-105-01

June 2003

1/77

**CLOSEOUT REPORT
FOR IHSS GROUP 300-1**

IHSS 300-128, Oil Burn Pit #1; IHSS 300-134(N), Lithium Metal Site; and
IHSS 300-171, Solvent Burning Grounds

Approval received from the Colorado Department of Public Health and Environment

().

Approval letter contained in the Administrative Record.

June 2003

TABLE OF CONTENTS

EXECUTIVE SUMMARY VI

1.0 INTRODUCTION 1

2.0 SITE CHARACTERIZATION 4

 2.1 IHSS 300-128, Oil Burn Pit #1 13

 2.2 IHSS 300-134(N), Lithium Metal Site..... 13

 2.3 IHSS 300-171, Solvent Burning Grounds..... 14

 2.4 Pre-Accelerated Action Characterization Data 15

 2.5 Accelerated Action Characterization Data..... 15

 2.6 Sums of Ratios and Area of Concern..... 31

3.0 ACCELERATED ACTION 34

 3.1 Removal Activities..... 35

4.0 CONFIRMATION SAMPLING..... 35

5.0 RCRA UNIT CLOSURE 35

6.0 SUBSURFACE SOIL RISK SCREEN 35

7.0 STEWARDSHIP ANALYSIS 37

 7.1 Current Site Conditions..... 37

 7.2 Near-Term Management Recommendations 37

 7.3 Long-Term Stewardship Recommendations..... 37

8.0 DEVIATIONS FROM THE ER RSOP 38

9.0 POST-REMEDATION CONDITIONS..... 38

10.0 WASTE MANAGEMENT 39

11.0 SITE RECLAMATION 39

12.0 NO LONGER REPRESENTATIVE SAMPLING LOCATIONS 43

13.0 DATA QUALITY ASSESSMENT 43

 13.1 Data Quality Assessment Process 43

 13.2 Verification and Validation of Results..... 44

 13.3 Summary of Data Quality 57

14.0 CONCLUSION 59

15.0 REFERENCES..... 59

3

LIST OF FIGURES

Figure 1 IHSS Group 300-1 Location Map.....	2
Figure 2 Group 300-1 IHSSs and Pre-Accelerated Action Sampling Results	3
Figure 3 Accelerated Action Surface Sampling Locations and Results at IHSS Group 300-1	16
Figure 4 Accelerated Action Subsurface Sampling Locations and Results at IHSS Group 300-1	17
Figure 5 IHSS Group 300-1 Area of Concern.....	33
Figure 6 Residual Surface Contamination at IHSS Group 300-1	40
Figure 7 Sums of Ratios for Radionuclides.....	42

LIST OF TABLES

Table 1 IHSS Group 300-1 Characterization Sampling Specifications	5
Table 2 Deviations From the IASAP Addendum.....	11
Table 3 IHSS Group 300-1 Accelerated Action Characterization Data.....	18
Table 4 RFCA Sums of Ratios Based on Radionuclide Concentrations.....	32
Table 5 Dates of Accelerated Action Activities.....	35
Table 6 Sums of Ratios Based on Pre-Accelerated and Accelerated Action Radionuclide Concentrations	41
Table 7 Laboratory Control Sample Evaluation.....	46
Table 8 Surrogate Recovery Summary	49
Table 9 Field Blank Summary.....	49
Table 10 Sample Matrix Spike Evaluation	49
Table 11 Sample Matrix Spike Duplicate Evaluation.....	52
Table 12 Field Duplicate Sample Frequency	55
Table 13 RPD Evaluation.....	55
Table 14 Validation and Verification Summary	58

LIST OF APPENDICES

- Appendix A – Project Photographs
- Appendix B – Correspondence

ENCLOSURE

Complete Data Set Compact Disc – Pre-accelerated Action and Accelerated Action Data

ACRONYMS

AL	action level
ALARA	As Low As Reasonably Achievable
AOC	Area of Concern
ASD	Analytical Services Division
BMP	best management practice
CAD/ROD	Corrective Action Decision/Record of Decision
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHWA	Colorado Hazardous Waste Act
CMS/FS	Corrective Measures Study/Feasibility Study
COC	contaminant of concern
cpm	counts per minute
CRA	Comprehensive Risk Assessment
DOE	U.S. Department of Energy
dpm/m ²	disintegrations per minute per square meter
DQA	Data Quality Assessment
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation
ft	feet
FY	Fiscal Year
HPGe	high-purity germanium
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company, L.L.C.
LCS	laboratory control sample
ug/kg	micrograms per kilogram
ug/L	micrograms per liter
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable
NCi/g	nanocurie per gram
NFAA	No Further Accelerated Action
NLR	No Longer Representative
PAC	Potential Area of Concern
POC	Point of Compliance
OPWL	Original Process Waste Lines
OU	Operable Unit
PARCCS	precision, accuracy, representativeness, completeness, comparability and sensitivity
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
POC	Point of Compliance
ppb	parts per billion
ppm	parts per million

QC	quality control
RADMS	Remedial Action Decision Management System
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RIN	report identification number
RL	reporting limit
RPD	relative percent difference
RSOP	RFCA Standard Operating Protocol
SAP	Sampling and Analysis Plan
SBD	sample beginning depth
SED	sample end depth
Site	Rocky Flats Environmental Technology Site
SOR	sum of ratios
SVOC	semivolatile organic compound
SWD	Soil Water Database
UBC	under building contamination
VOC	volatile organic compound
V&V	verification and validation
WRW	wildlife refuge worker
XRF	x-ray fluorescence

EXECUTIVE SUMMARY

This Closeout Report summarizes accelerated action activities conducted at Individual Hazardous Substance Site (IHSS) Group 300-1, which is located at the Rocky Flats Environmental Technology Site (RFETS). Activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan (IASAP), IASAP Addendum #IA-02-01, and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol for Routine Soil Remediation (ER RSOP). Notification of the planned characterization and removal activities was provided in ER RSOP Notification #02-10. This notification was written and approved using RFCA Tier I and Tier II Action Levels (ALs). However, this closeout report uses the proposed Wildlife Refuge Worker (WRW) and Ecological Receptor ALs to make remediation decisions.

Activities were conducted between August 27, 2002, and January 24, 2003, and involved the removal of concrete slabs, foundation walls, drain lines, and a sump associated with Building 335, and characterization. Characterization analytical results indicate that all soil concentrations are below the WRW ALs, except for one subsurface arsenic concentration. In addition, one surface soil lead concentration and one subsurface vinyl chloride concentration exceeded the ecological receptor ALs. Results of the data quality assessment (DQA) conducted confirmed that the data collected and used are adequate for decision-making.

Removal activities were consistent with and contributed to the ER RSOP overall long-term remedial action objectives (RAOs) for RFETS soil. The removal of concrete items, including the building sump, and drain lines contributed to the protection of human health and the environment, because potential sources of contamination were removed. These actions also minimized the need for long-term maintenance and institutional or engineering controls. In addition, best management practices (BMPs) were used to prevent the spread of contamination (for example, erosion and dust controls). Air monitoring data collected during the accelerated action did not indicate any exceedances.

The soil risk screen conducted as part of this accelerated action indicates no further accelerated action is required. The one elevated arsenic concentration was in the range of background concentrations historically seen at RFETS. Also, the potential for ecological receptors to become exposed to the elevated lead and vinyl chloride concentrations is considered very low. There is groundwater contamination in the area, and there may be multiple potential sources of this contamination. The groundwater contamination is considered part of the IA Plume, and this plume and any necessary remediation (e.g., groundwater treatment system) will be evaluated in a future decision document.

No IHSS group-specific, near-term management techniques are required because of environmental conditions. Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process. Fencing and signs restricting access will be posted to minimize disturbance to newly revegetated areas. Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls.

The presence of radionuclides, metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs) in soil will be evaluated in the Sitewide Comprehensive Risk Assessment (CRA), which is part of the Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation (RFI/RI) and Corrective Measures Study/Feasibility Study (CMS/FS) that will be conducted for the Site. The need for and extent of any more general, long-term stewardship activities will also be evaluated in the RFI/RI and CMS/FS and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision (CAD/ROD), any post-closure Colorado Hazardous Waste Act (CHWA) permit that may be required, and any post-RFCA agreement.

No long-term stewardship activities are recommended for IHSS Group 300-1 beyond the generally applicable Site requirements that may be imposed on this area in the future. Institutional controls that will be used as appropriate for this area include prohibitions on construction of buildings in the IA, restrictions on excavation or other soil disturbance, and prohibitions on groundwater pumping in the area of IHSS Group 300-1.

No specific engineered controls or environmental monitoring are anticipated as a result of the conditions remaining in IHSS Group 300-1.

This Closeout Report and associated documentation will be retained as part of the Rocky Flats Administrative Record file. The specific long-term stewardship recommendations will also be summarized in the Rocky Flats Long-Term Stewardship Strategy.

Approval of this Closeout Report constitutes regulatory agency concurrence that this IHSS Group is a No Further Accelerated Action (NFAA) site. A NFAA decision is justified based on the following:

- 1) No accelerated action required by surface soil data;
- 2) No accelerated action required by the subsurface soil screen;
- 3) No accelerated action required by the stewardship evaluation; and
- 4) No accelerated action required by ALARA consideration (i.e., no elevated concentrations of radionuclides).

This information and NFAA determination will be documented in the Fiscal Year (FY) 03 Historical Release Report (HRR).

1.0 INTRODUCTION

This closeout report summarizes the accelerated action activities, including characterization, conducted at Individual Hazardous Substance Site (IHSS) Group 300-1 at the Rocky Flats Environmental Technology Site (RFETS or Site) in Golden, Colorado. IHSS Group 300-1 consists of the following IHSSs:

- 300-128, Oil Burn Pit #1;
- 300-134(N), Lithium Metal Site; and
- 300-171, Solvent Burning Grounds.

The location of IHSS Group 300-1 is shown on Figure 1 and the IHSSs are shown on Figure 2.

Accelerated action activities were planned and executed in accordance with the Industrial Area Sampling and Analysis Plan (IASAP; DOE 2001a), IASAP Addendum #IA-02-01 (DOE 2001b), and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002a). Notification of the planned activities was provided in ER RSOP Notification #02-10 (DOE 2002b), which was approved by the Colorado Department of Public Health and Environment (CDPHE) on October 24, 2002 (CDPHE 2002). This notification was written and approved using RFCA Tier I and Tier II Action Levels (ALs). However, this closeout report uses the proposed Wildlife Refuge Worker (WRW) and Ecological Receptor ALs to make remediation decisions (DOE et al 2002).

This report contains the information necessary to demonstrate attainment of cleanup objectives and final closure of IHSS Group 300-1, including:

- Site characterization information
 - Description of site characterization activities, and
 - Site characterization data, including data tables and maps;
- Site accelerated action information
 - Description of the accelerated action, including the rationale for the action and map of the target remediation area,
 - Map of the actual remediation area, including bounds of the excavation, and dates and durations of specific remedial activities, and
 - Photographs documenting site characterization, remediation, and reclamation activities;
- Confirmation sampling data (as applicable), including data tables and location maps, as well as a comparison of the confirmation data to applicable cleanup goals;

- Description of Resource Conservation and Recovery Act (RCRA) unit closure activities (as applicable);
- Description of deviations from the ER RSOP;
- Description of the soil risk screen;
- Description of near-term stewardship actions and long-term stewardship recommendations;
- Disposition of wastes;
- Site reclamation;
- Table of No Longer Representative (NLR) locations and sample numbers that have been remediated (as applicable). These data will be used to mark database records so they are not used in the Comprehensive Risk Assessment (CRA) or other Site analyses; and
- Data Quality Assessment (DQA), including comparison of confirmation data with project data quality objectives (DQOs).

Approval of this Closeout Report constitutes regulatory agency concurrence that this IHSS Group is a No Further Accelerated Action (NFAA) site. This information and NFAA determination will be documented in the Fiscal Year (FY) 03 Historical Release Report (HRR).

2.0 SITE CHARACTERIZATION

IHSS Group 300-1 characterization information consists of historical knowledge and analytical data. Historical information for the IHSSs was derived from previous studies (DOE 1992-2001, 2000 and 2001a) and is summarized in Sections 2.1 through 2.3. Analytical data for IHSS Group 300-1 (preaccelerated action and accelerated action data) are summarized in Sections 2.4 and 2.5. A compact disc that contains the complete data set is enclosed with this report. Quality assurance and quality control data are presented on a separate disc.

Accelerated action analytical data were collected in accordance with IASAP Addendum #IA-02-01 (DOE 2001b). Sampling specifications, including potential contaminants of concern (PCOCs) and media sampled, are presented in Table 1. Deviations from the IASAP Addendum are presented and explained in Table 2.

Table 1
IHSS Group 300-1 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Method	Offsite Laboratory Method
300-1	IHSS 300-128 – Oil Burn Pit #1	BW42-A000	2082010.432	749834.466	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A000	2082010.432	749834.466	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B000	2082010.432	749834.466	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B000	2082010.432	749834.466	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C000	2082010.432	749834.466	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		BW42-C000	2082010.432	749834.466	Subsurface Soil	2.5-4.5'	SVOCs	N/A	8270
		BV42-A000	2081935.622	749878.494	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BV42-A000	2081935.622	749878.494	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A001	2081996.654	749890.970	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A001	2081996.654	749890.970	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A002	2082004.073	749855.565	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A002	2082004.073	749855.565	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A003	2081969.342	749866.692	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
BW42-A003	2081969.342	749866.692	Surface Soil	0-0.5'	Metals	6200	6010		
BW42-A004	2081977.434	749831.624	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec		
BW42-A004	2081977.434	749831.624	Surface Soil	0-0.5'	Metals	6200	6010		
BW42-A005	2081943.041	749842.752	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec		
BW42-A005	2081943.041	749842.752	Surface Soil	0-0.5'	Metals	6200	6010		
BW42-A006	2081979.120	749872.762	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec		
BW42-A006	2081979.120	749872.762	Surface Soil	0-0.5'	Metals	6200	6010		
BV42-A001	2081889.764	749794.870	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec		
BV42-A001	2081889.764	749794.870	Surface Soil	0-0.5'	Metals	6200	6010		
BV42-A001	2081889.764	749794.870	Surface Soil	0-0.5'	SVOCs	N/A	8270		
BV42-B001	2081889.764	749794.870	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec		

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Method	Offsite Laboratory Method
		BV42-B001	2081889.764	749794.870	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BV42-B001	2081889.764	749794.870	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BV42-B001	2081889.764	749794.870	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BV42-C001	2081889.764	749794.870	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BV42-D001	2081889.764	749794.870	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BV42-E001	2081889.764	749794.870	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BV42-F001	2081889.764	749794.870	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BV42-G001	2081889.764	749794.870	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BV42-A002	2081916.402	749818.811	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BV42-A002	2081916.402	749818.811	Surface Soil	0-0.5'	Metals	6200	6010
		BV42-A002	2081916.402	749818.811	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BV42-B002	2081916.402	749818.811	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BV42-B002	2081916.402	749818.811	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BV42-B002	2081916.402	749818.811	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BV42-B002	2081916.402	749818.811	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BV42-C002	2081916.402	749818.811	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BV42-D002	2081916.402	749818.811	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BV42-E002	2081916.402	749818.811	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BV42-F002	2081916.402	749818.811	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BV42-G002	2081916.402	749818.811	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BV42-A003	2081923.484	749783.069	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BV42-A003	2081923.484	749783.069	Surface Soil	0-0.5'	Metals	6200	6010
		BV42-A003	2081923.484	749783.069	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BV42-B003	2081923.484	749783.069	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BV42-B003	2081923.484	749783.069	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BV42-B003	2081923.484	749783.069	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BV42-B003	2081923.484	749783.069	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BV42-C003	2081923.484	749783.069	Subsurface Soil	2.5-4.5'	VOCs	8270	8270

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Method	Offsite Laboratory Method
		BV42-D003	2081923.484	749783.069	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BV42-E003	2081923.484	749783.069	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BV42-F003	2081923.484	749783.069	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BV42-G003	2081923.484	749783.069	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BW42-A007	2081950.122	749807.684	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A007	2081950.122	749807.684	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A007	2081950.122	749807.684	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B007	2081950.122	749807.684	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B007	2081950.122	749807.684	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B007	2081950.122	749807.684	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B007	2081950.122	749807.684	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C007	2081950.122	749807.684	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BW42-D007	2081950.122	749807.684	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E007	2081950.122	749807.684	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F007	2081950.122	749807.684	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G007	2081950.122	749807.684	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BW42-A008	2081985.190	749796.893	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A008	2081985.190	749796.893	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A008	2081985.190	749796.893	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B008	2081985.190	749796.893	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B008	2081985.190	749796.893	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B008	2081985.190	749796.893	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B008	2081985.190	749796.893	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C008	2081985.190	749796.893	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BW42-D008	2081985.190	749796.893	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E008	2081985.190	749796.893	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F008	2081985.190	749796.893	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G008	2081985.190	749796.893	Subsurface Soil	8.5-10.5'	VOCs	8270	8270

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Method	Offsite Laboratory Method
		BW42-A009	2082019.246	749784.755	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A009	2082019.246	749784.755	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A009	2082019.246	749784.755	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B009	2082019.246	749784.755	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B009	2082019.246	749784.755	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B009	2082019.246	749784.755	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B009	2082019.246	749784.755	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C009	2082019.246	749784.755	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BW42-D009	2082019.246	749784.755	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E009	2082019.246	749784.755	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F009	2082019.246	749784.755	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G009	2082019.246	749784.755	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BW42-A010	2082011.828	749820.497	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A010	2082011.828	749820.497	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A010	2082011.828	749820.497	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B010	2082011.828	749820.497	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B010	2082011.828	749820.497	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B010	2082011.828	749820.497	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B010	2082011.828	749820.497	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C010	2082011.828	749820.497	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BW42-D010	2082011.828	749820.497	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E010	2082011.828	749820.497	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F010	2082011.828	749820.497	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G010	2082011.828	749820.497	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BW42-A011	2082053.303	749773.964	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A011	2082053.303	749773.964	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A011	2082053.303	749773.964	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B011	2082053.303	749773.964	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec

IHSS Group	IHSS/PAC/UBC Site	Location Code	Eastings	Northing	Media	Depth Interval	Analyte	Onsite Method	Offsite Laboratory Method
		BW42-B011	2082053.303	749773.964	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B011	2082053.303	749773.964	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B011	2082053.303	749773.964	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C011	2082053.303	749773.964	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BW42-D011	2082053.303	749773.964	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E011	2082053.303	749773.964	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F011	2082053.303	749773.964	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G011	2082053.303	749773.964	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BW42-A012	2082046.222	749809.370	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A012	2082046.222	749809.370	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A012	2082046.222	749809.370	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B012	2082046.222	749809.370	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B012	2082046.222	749809.370	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B012	2082046.222	749809.370	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B012	2082046.222	749809.370	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C012	2082046.222	749809.370	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BW42-D012	2082046.222	749809.370	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E012	2082046.222	749809.370	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F012	2082046.222	749809.370	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G012	2082046.222	749809.370	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BW42-A013	2082079.941	749798.242	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A013	2082079.941	749798.242	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A013	2082079.941	749798.242	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B013	2082079.941	749798.242	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B013	2082079.941	749798.242	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B013	2082079.941	749798.242	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B013	2082079.941	749798.242	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C013	2082079.941	749798.242	Subsurface Soil	2.5-4.5'	VOCs	8270	8270

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Method	Offsite Laboratory Method
		BW42-D013	2082079.941	749798.242	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E013	2082079.941	749798.242	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F013	2082079.941	749798.242	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G013	2082079.941	749798.242	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BW42-A014	2082072.523	749833.647	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A014	2082072.523	749833.647	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A014	2082072.523	749833.647	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B014	2082072.523	749833.647	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B014	2082072.523	749833.647	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B014	2082072.523	749833.647	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B014	2082072.523	749833.647	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C014	2082072.523	749833.647	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BW42-D014	2082072.523	749833.647	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E014	2082072.523	749833.647	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F014	2082072.523	749833.647	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G014	2082072.523	749833.647	Subsurface Soil	8.5-10.5'	VOCs	8270	8270
		BW42-A015	2082038.466	749844.438	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		BW42-A015	2082038.466	749844.438	Surface Soil	0-0.5'	Metals	6200	6010
		BW42-A015	2082038.466	749844.438	Surface Soil	0-0.5'	SVOCs	N/A	8270
		BW42-B015	2082038.466	749844.438	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		BW42-B015	2082038.466	749844.438	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		BW42-B015	2082038.466	749844.438	Subsurface Soil	0.5-2.5'	VOCs	8270	8270
		BW42-B015	2082038.466	749844.438	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270
		BW42-C015	2082038.466	749844.438	Subsurface Soil	2.5-4.5'	VOCs	8270	8270
		BW42-D015	2082038.466	749844.438	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-E015	2082038.466	749844.438	Subsurface Soil	4.5-6.5'	VOCs	8270	8270
		BW42-F015	2082038.466	749844.438	Subsurface Soil	6.5-8.5'	VOCs	8270	8270
		BW42-G015	2082038.466	749844.438	Subsurface Soil	8.5-10.5'	VOCs	8270	8270

Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Comment
IHSS 300-128 – Oil Burn Pit #1	BW42-000	2082010.432	749834.466	2082010	749834.3	No significant deviation
IHSS 300-134(N) – Lithium Metal Site	BV42-000	2081935.622	749878.494	2081936	749878.2	Because of asphalt thickness, surface soil was collected from 0.67 to 1.1 ft.
	BW42-001	2081996.654	749890.970	2081997	749890.9	Because of asphalt thickness, surface soil was collected from 0.67 to 1.1 ft.
	BW42-002	2082004.073	749855.565	2082004	749855.4	No significant deviation
	BW42-003	2081969.342	749866.692	2081969	749866.7	Because of asphalt thickness, surface soil was collected from 0.67 to 1.1 ft.
	BW42-004	2081977.434	749831.624	2081977	749831.7	No significant deviation
	BW42-005	2081943.041	749842.752	2081943	749842.7	No significant deviation
	BW42-006	2081979.120	749872.762	2081979	749872.8	Because of asphalt thickness, surface soil was collected from 0.67 to 1.1 ft.
	BW42-017	NA	NA	2081978.4	749872.3	Sampling location added.
	BW42-019	NA	NA	2081978.4	749872.3	Sampling location added.
	BW42-021	NA	NA	2081977.4	749831.6	Sampling location added.
	BW42-022	NA	NA	2081943	749842.8	Sampling location added.
IHSS 300-171 – Solvent Burning Grounds	BV42-001	2081889.764	749794.870	2081890	749794.9	No significant deviation
	BV42-002	2081916.402	749818.811	2081916	749797.8	Relocated due to utility, structure, or other obstruction. Refusal of sampling equipment occurred short of max. depth.
	BV42-003	2081923.484	749783.069	2081923	749783	No significant deviation
	BV42-004	NA	NA	2081878.595	749812.301	Sampling location added.
	BV42-005	NA	NA	2081871.146	74821.159	Sampling location added.
	BW42-007	2081950.122	749807.684	2081950	749795.3	Relocated due to utility, structure, or other obstruction. Refusal of sampling equipment occurred short of max. depth. Sample not collected from last planned interval.
	BW42-008	2081985.190	749796.893	2081985	749796.8	No significant deviation

IHSS/PAC/ UBC Site	Location	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Comment
	BW42-009	2082019.246	749784.755	2082019	749784.6	Relocated due to utility, structure, or other obstruction.
	BW42-010	2082011.828	749820.497	2082012	749820.5	No significant deviation
	BW42-011	2082053.303	749773.964	2082056	749774	Relocated due to utility, structure, or other obstruction.
	BW42-012	2082046.222	749809.370	2082032	749810.1	No significant deviation
	BW42-013	2082079.941	749798.242	2082080	749798.1	Because of asphalt thickness, surface soil was collected from 0.67 to 1.1 ft.
	BW42-014	2082072.523	749833.647	2082073	749833.6	Because of asphalt thickness, surface soil was collected from 0.67 to 1.1 ft. Sample not collected from the last planned interval.
	BW42-015	2082038.466	749844.438	2082035	749832.7	Relocated due to utility, structure, or other obstruction.
	BW42-017	NA	NA	2081978.4	749872.3	Sampling location added; same as BW42-019.
	BW42-018	NA	NA	2081980.845	749802.907	Sampling location added.
	BW42-019	NA	NA	2081978.4	749872.3	Sampling location added; same as BW42-017.
	BW42-020	NA	NA	2081964.519	749801.165	Sampling location added.
	BW42-023	NA	NA	2082011.832	749820.5	Sampling location added.

2.1 IHSS 300-128, Oil Burn Pit #1

On August 18, 1956, an experiment was conducted that involved burning contaminated oil from Buildings 444 and 881 in an area referred to as the "garage oil-burning pit". Barrels were dumped on the south side of a pit located north of Building 331 and ignited. At one point, rocks were thrown into the oil to agitate the surface to facilitate burning. Reports documenting the incident conflict as to the exact amount that was burned on that day. A Health Physics Report from 1956, which details the incident, indicates that six drums were dumped into the pit (an estimated 200 gallons). Other reports state that 10 drums of waste oil were burned.

Prior to the burning, several high-volume air samplers were started to obtain background data; however, not all the samplers were started at the same time, and several were not started for approximately 1 hour after the fire had been initially ignited. The report also documents the refueling and failure of a generator that was powering many of the samplers. One sampler was placed in the path of the "black plume," which was moving at a 30-degree angle and rising to a height of 40 to 100 feet. The plume moved in the general direction of Building 123.

Filters from air samplers monitoring the experiment yielded alpha radiation readings ranging from 0.1 disintegration per minute per square meter (dpm/m²) to 30 dpm/m². The low reading was taken from the roof of Building 123 and the high reading was taken approximately 60 feet south of the burning pit directly in the smoke plume.

A direct survey was conducted of the soil and oil residue within the pit. Two spots along the southern bank of the pit where the oil was dumped had meter readings of 500 and 750 counts per minute (cpm) alpha activity. Soil samples were collected but the results are unknown.

After the burning operation, the residue was left in place and the pit was backfilled. It is not known when the backfilling took place. The residues were not removed prior to further construction in the area.

2.2 IHSS 300-134(N), Lithium Metal Site

Reactive metal disposal was conducted in two locations north of Building 331. The first site coincides with IHSS 134; however, the boundaries were enlarged. Detailed review of aerial photographs indicates that part of the site is now covered by Sage Avenue. The second site is located in the corner formed by the L-shape of Building 331. Part of the roof and adjacent parking lot are included.

Many documents indicate that lithium was burned in this area; however, interviews with RFETS Fire Department employees present during these activities contradict this. They indicated that although some small amounts of lithium may have been destroyed at this location, magnesium was the primary constituent of concern. Inspection of U.S. Environmental Protection Agency (EPA) aerial photographs reveals the presence of two pond-like structures roughly 250 feet north of Building 331. The westernmost pond

measures 30 by 40 feet, and the eastern pond is 15 by 20 feet. Documents describing the operations indicate various-size ponds.

The area impacted by these activities lies north of Building 335. The site was originally located in a depression north of Building 331 and west of Building 553. Sage Avenue was constructed over part of Potential Area of Concern (PAC) 300-134.N during the late 1960s and early 1970s. Building 335 was built over the southern part of the site at approximately the same time.

Photographs taken in 1966 show a white residue coating the depression where the metal destruction took place. Other photos taken from a distance show a dense black cloud coming from this area. It is not known whether the smoke plume was the result of metal destruction or a grass fire, which was often caused by the burning activities.

Analyses of surface soil samples during the Operable Unit (OU) 13 Phase I RCRA Facility Investigation/Remedial Investigation (RFI/RI) indicated that americium-241 and plutonium-239/240 activities were detected above background. Soil gas samples were also collected and analyzed. These data are available in the IA Data Summary Report (DOE 2000).

2.3 IHSS 300-171, Solvent Burning Grounds

Building 335 was used for training fire department personnel. The original, pre-constructed building was placed in an area north of Building 331 after the 1969 fire (PAC 700-150.7). Experiments took place to test heat and water effects on different types of materials (for example, filter plenums). Filter plenum tests were conducted inside the building and provided smoky, cramped, fire-fighting experience. One incident of burning was on June 9, 1972, when steel beams were tested in a fire by burning diesel oil in an open pit.

Other types of training included the use of a large cross-shaped pan or a smaller square pan into which diesel fuel was placed and ignited. Most of the fuel was burned during the process although some was allowed to remain in the pan and mix with rainwater. The mixture was then dumped onto the ground. RFETS Clean Water Act Division personnel conducted an inspection on December 11, 1990. The large cross-shaped pan was found to have holes in it and oil-contaminated soil was present around the pans. The contamination was thought to have spread to a nearby catch basin (storm drain) where an oily sheen could be seen on the surface of the standing water. Running water in a nearby ditch had no visible sheen.

Recent training was conducted by the use of a "tree" constructed of metal that allowed propane to escape from the "branches" of the tree. A large quantity of water was used during this process that was allowed to flow into the storm drain.

At a site visit conducted on November 21, 1991, the cross-shaped pan was present but covered. The water standing in the storm drain (catch basin) still had an oily sheen on the surface. There was no evidence of soil contamination. Building 335 had a visible black residue along the top of the large, east-facing door.

When this area was first used for training purposes, magnesium chips coated with a water-soluble material were burned. Diesel fuel was the main material used, and gasoline was used to ignite the diesel fuel. The firefighters may have also used waste solvents.

No documentation was found, and interviewees were unaware of any type of soil removal prior to construction of Building 335. No soil or air sampling was conducted, based on the knowledge of one RFETS Fire Department employee.

Analyses of soil samples during the OU 13 Phase I RFI/RI indicated that calcium, copper, iron, magnesium, sodium, nickel, and strontium concentrations were detected above background. Soil gas samples were also collected and analyzed. These data are available in the IA Data Summary Report (DOE 2000).

2.4 Pre-Accelerated Action Characterization Data

Preaccelerated action soil sampling locations and analytical results for IHSS Group 300-1 are presented on Figure 2. Only results greater than background means plus two standard deviations or reporting limits (RLs) are shown. The soil data indicate that all contaminant concentrations are below the proposed RFCA Wildlife Refuge Worker (WRW) action levels (ALs). Elevated volatile organic compound (VOC) concentrations were detected in soil-gas samples collected from IHSS 300-134(N) in 1995 as part of the RCRA Facility Investigation/Remedial Investigation (RFI/RI) for Operable Unit 13 (Kaiser-Hill 1995). In addition, sludge containing high levels of methylene chloride, trichloroethene and tetrachloroethene was encountered in the same area during subsequent sampling (DOE 2000).

2.5 Accelerated Action Characterization Data

Accelerated action soil sampling locations and analytical results for IHSS Group 300-1 are presented on Figures 3 and 4 and in Table 3. Only results greater than background means plus two standard deviations or RLs are shown. Data indicate that all contaminant concentrations are below proposed RFCA WRW ALs, except for one subsurface soil location in IHSS 300-171 with an elevated arsenic concentration. The arsenic concentration at Location BV42-003 (between 0.5 and 2.5 feet) was 29.3 mg/kg, and the AL is 22.2 mg/kg. No contaminant concentrations in the sample collected at the stained area (near southwestern corner of building slab – BW42-008) exceeded the proposed WRW ALs. Sample locations BW42-017 and BW42-019 are located where the elevated VOC concentrations were detected in soil-gas samples and the sludge was found. The raw data, as of June 4, 2003, are provided on the enclosed compact disc.

No action was taken to remove the soil with the elevated arsenic concentration. The detected concentration was in the range of background concentrations historically seen at RFETS. Refer to ER Regulatory Contact Record dated December 17, 2002, included in Appendix B.

One surface soil lead concentration at Location BW42-007 exceeded the proposed ecological receptor AL. The detected concentration was 202 mg/kg, and the proposed ecological receptor AL is 97.7 mg/kg. This contamination appears to be very localized (i.e., no other nearby location contained elevated lead concentrations). The area also has

Table 3
IHSS Group 300-1 Accelerated Action Characterization Data

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BV42-000	0	0.5	Barium	150	141.26	1060	26400	--	mg/kg
BV42-000	0	0.5	Copper	300	18.06	57.5	40900	--	mg/kg
BV42-000	0	0.5	Iron	2500	18037	30400	307000	--	mg/kg
BV42-000	0	0.5	Manganese	200	365.08	514	3480	--	mg/kg
BV42-000	0	0.5	Nickel	60	14.91	27.3	20400	--	mg/kg
BV42-000	0	0.5	Strontium	250	48.94	331	613000	--	mg/kg
BV42-000	0	0.5	U-235	1	0.0939	0.2	8	--	pCi/g
BV42-000	0	0.5	Vanadium	100	45.59	104	7150	292	mg/kg
BV42-000	0	0.5	Zinc	50	73.76	81.4	307000	--	mg/kg
BV42-001	0	0.5	Barium	150	141.26	755	26400	--	mg/kg
BV42-001	0	0.5	Benzo(a)Anthracene	41	NA	44	34900	--	ug/kg
BV42-001	0	0.5	Benzo(a)Pyrene	53	NA	56	3490	--	ug/kg
BV42-001	0	0.5	Chrysene	35	NA	52	3490000	--	ug/kg
BV42-001	0	0.5	Copper	300	18.06	30	40900	--	mg/kg
BV42-001	0	0.5	Fluoranthene	41	NA	110	27200000	--	ug/kg
BV42-001	0	0.5	Iron	2500	18037	24700	307000	--	mg/kg
BV42-001	0	0.5	Manganese	200	365.08	448	3480	--	mg/kg
BV42-001	0	0.5	Nickel	60	14.91	24	20400	--	mg/kg
BV42-001	0	0.5	Pyrene	58	NA	110	22100000	--	ug/kg
BV42-001	0	0.5	Strontium	250	48.94	220	613000	--	mg/kg
BV42-001	0	0.5	U-235	1	0.0939	0.16	8	--	pCi/g
BV42-001	0	0.5	Vanadium	100	45.59	105	7150	292	mg/kg
BV42-001	0	0.5	Zinc	50	73.76	200	307000	--	mg/kg
BV42-001	0.5	2.5	Barium	150	289.38	567	26400	--	mg/kg
BV42-001	0.5	2.5	Copper	300	38.21	64	40900	--	mg/kg
BV42-001	0.5	2.5	U-235	1	0.12	0.2	8	--	pCi/g
BV42-001	0.5	2.5	Vanadium	100	88.49	197	7150	292	mg/kg
BV42-001	2.5	4.5	2-Butanone	5.5	NA	5.7	1.92E+08	433000	ug/kg
BV42-001	2.5	4.5	Acetone	5.4	NA	32	1.02E+08	211000	ug/kg
BV42-002	0	0.5	Arsenic	25	10.09	11.5	22.2	--	mg/kg
BV42-002	0	0.5	Barium	150	141.26	793	26400	--	mg/kg
BV42-002	0	0.5	Copper	300	18.06	76.4	40900	--	mg/kg
BV42-002	0	0.5	Iron	2500	18037	31700	307000	--	mg/kg
BV42-002	0	0.5	Lead	20	54.62	66.9	1000	97.7	mg/kg
BV42-002	0	0.5	Manganese	200	365.08	642	3480	--	mg/kg
BV42-002	0	0.5	Nickel	60	14.91	34.1	20400	--	mg/kg
BV42-002	0	0.5	Strontium	250	48.94	203	613000	--	mg/kg
BV42-002	0	0.5	Vanadium	100	45.59	146	7150	292	mg/kg
BV42-002	0	0.5	Zinc	50	73.76	354	307000	--	mg/kg
BV42-002	0.5	1.1	Barium	150	289.38	820	26400	--	mg/kg
BV42-002	0.5	1.1	Copper	300	38.21	57.5	40900	--	mg/kg
BV42-002	0.5	1.1	Lead	20	24.97	68.3	1000	97.7	mg/kg
BV42-002	0.5	1.1	Strontium	250	211.38	222	613000	--	mg/kg

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BV42-002	0.5	1.1	Vanadium	100	88.49	120	7150	292	mg/kg
BV42-002	0.5	1.1	Zinc	50	139.1	350	307000	--	mg/kg
BV42-003	0	0.5	Arsenic	25	10.09	17	22.2	--	mg/kg
BV42-003	0	0.5	Barium	150	141.26	878	26400	--	mg/kg
BV42-003	0	0.5	Copper	300	18.06	67	40900	--	mg/kg
BV42-003	0	0.5	Iron	2500	18037	41700	307000	--	mg/kg
BV42-003	0	0.5	Lead	20	54.62	77.7	1000	97.7	mg/kg
BV42-003	0	0.5	Manganese	200	365.08	1490	3480	--	mg/kg
BV42-003	0	0.5	Nickel	60	14.91	47	20400	--	mg/kg
BV42-003	0	0.5	Selenium	20	1.224	1.6	5110	--	mg/kg
BV42-003	0	0.5	Strontium	250	48.94	220	613000	--	mg/kg
BV42-003	0	0.5	U-235	1	0.0939	0.17	8	--	pCi/g
BV42-003	0	0.5	Vanadium	100	45.59	152	7150	292	mg/kg
BV42-003	0.5	2.5	Am-241	4	0.02	0.2	76	--	pCi/g
BV42-003	0.5	2.5	Arsenic	25	13.14	29.3	22.2	--	mg/kg
BV42-003	0.5	2.5	Barium	150	289.38	789	26400	--	mg/kg
BV42-003	0.5	2.5	Copper	300	38.21	150	40900	--	mg/kg
BV42-003	0.5	2.5	Iron	2500	41046.52	67700	307000	--	mg/kg
BV42-003	0.5	2.5	Methylene Chloride	0.86	NA	1.1	2530000	39500	ug/kg
BV42-003	0.5	2.5	Nickel	60	62.21	74.7	20400	--	mg/kg
BV42-003	0.5	2.5	Pu 239/240	0.005	0.066	0.2	116/50	--	pCi/g
BV42-003	0.5	2.5	Vanadium	100	88.49	262	7150	292	mg/kg
BV42-003	2.5	4.5	Acetone	5.1	NA	7.2	1.02E+08	211000	ug/kg
BV42-003	2.5	4.5	Methylene Chloride	0.89	NA	1.4	2530000	39500	ug/kg
BV42-003	4.5	6.5	Methylene Chloride	0.92	NA	1.4	2530000	39500	ug/kg
BV42-003	6.5	8.5	Methylene Chloride	0.9	NA	1.6	2530000	39500	ug/kg
BV42-003	8.5	10.5	2-Butanone	5.3	NA	12	1.92E+08	433000	ug/kg
BV42-003	8.5	10.5	Acetone	5.2	NA	95	1.02E+08	211000	ug/kg
BV42-003	8.5	10.5	Methylene Chloride	0.9	NA	1.4	2530000	39500	ug/kg
BV42-004	1	1.8	Anthracene	79	NA	240	2.04E+08	--	ug/kg
BV42-004	1	1.8	Arsenic	25	13.14	13.2	22.2	--	mg/kg
BV42-004	1	1.8	Barium	150	289.38	830	26400	--	mg/kg
BV42-004	1	1.8	Benzo(a)Anthracene	47	NA	50	34900	--	ug/kg
BV42-004	1	1.8	Chrysene	41	NA	55	3490000	--	ug/kg
BV42-004	1	1.8	Copper	300	38.21	39.8	40900	--	mg/kg
BV42-004	1	1.8	Fluoranthene	47	NA	260	27200000	--	ug/kg
BV42-004	1	1.8	Lead	20	24.97	29.1	1000	97.7	mg/kg
BV42-004	1	1.8	Pyrene	68	NA	330	22100000	--	ug/kg
BV42-004	1	1.8	Strontium	250	211.38	213	613000	--	mg/kg
BV42-004	1	1.8	Vanadium	100	88.49	150	7150	292	mg/kg
BV42-005	4	4.5	Acenaphthene	57	NA	70	40800000	--	ug/kg
BV42-005	4	4.5	Anthracene	82	NA	280	2.04E+08	--	ug/kg
BV42-005	4	4.5	Barium	150	289.38	775	26400	--	mg/kg
BV42-005	4	4.5	Benzo(a)Anthracene	49	NA	190	34900	--	ug/kg
BV42-005	4	4.5	Benzo(a)Pyrene	64	NA	170	3490	--	ug/kg
BV42-005	4	4.5	Benzo(b)Fluoranthene	79	NA	150	34900	--	ug/kg

27

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BV42-005	4	4.5	Benzo(b)Fluoranthene	85	NA	170	349000	--	ug/kg
BV42-005	4	4.5	Bis(2-Ethylhexyl)Phthalate	88	NA	130	1970000	--	ug/kg
BV42-005	4	4.5	Chrysene	43	NA	220	3490000	--	ug/kg
BV42-005	4	4.5	Copper	300	38.21	48	40900	--	mg/kg
BV42-005	4	4.5	Fluoranthene	49	NA	470	27200000	--	ug/kg
BV42-005	4	4.5	Indeno(1,2,3-Cd)Pyrene	55	NA	120	34900	--	ug/kg
BV42-005	4	4.5	Lead	20	24.97	48	1000	97.7	mg/kg
BV42-005	4	4.5	Pyrene	70	NA	490	22100000	--	ug/kg
BV42-005	4	4.5	Zinc	50	139.1	1010	307000	--	mg/kg
BW42-000	0	0.5	Anthracene	90	NA	160	2.04E+08	--	ug/kg
BW42-000	0	0.5	Benzo(a)Anthracene	54	NA	320	34900	--	ug/kg
BW42-000	0	0.5	Benzo(a)Pyrene	71	NA	280	3490	--	ug/kg
BW42-000	0	0.5	Benzo(b)Fluoranthene	87	NA	270	34900	--	ug/kg
BW42-000	0	0.5	Benzo(b)Fluoranthene	94	NA	250	349000	--	ug/kg
BW42-000	0	0.5	Chrysene	47	NA	390	3490000	--	ug/kg
BW42-000	0	0.5	Di-N-Octyl Phthalate	72	NA	7500	14700000	--	ug/kg
BW42-000	0	0.5	Fluoranthene	54	NA	760	27200000	--	ug/kg
BW42-000	0	0.5	Indeno(1,2,3-Cd)Pyrene	61	NA	130	34900	--	ug/kg
BW42-000	0	0.5	Pyrene	77	NA	690	22100000	--	ug/kg
BW42-000	0	0.5	U-235	1	0.0939	0.1	8	--	pCi/g
BW42-000	0.5	2.5	Anthracene	86	NA	180	2.04E+08	--	ug/kg
BW42-000	0.5	2.5	Benzo(a)Anthracene	52	NA	210	34900	--	ug/kg
BW42-000	0.5	2.5	Benzo(a)Pyrene	68	NA	270	3490	--	ug/kg
BW42-000	0.5	2.5	Benzo(b)Fluoranthene	84	NA	220	34900	--	ug/kg
BW42-000	0.5	2.5	Benzo(k)Fluoranthene	90	NA	250	349000	--	ug/kg
BW42-000	0.5	2.5	Chrysene	45	NA	260	3490000	--	ug/kg
BW42-000	0.5	2.5	Di-N-Octyl Phthalate	69	NA	6000	14700000	--	ug/kg
BW42-000	0.5	2.5	Fluoranthene	52	NA	760	27200000	--	ug/kg
BW42-000	0.5	2.5	Indeno(1,2,3-Cd)Pyrene	58	NA	140	34900	--	ug/kg
BW42-000	0.5	2.5	Pyrene	74	NA	490	22100000	--	ug/kg
BW42-000	0.5	2.5	U-235	1	0.12	0.3	8	--	pCi/g
BW42-001	0.67	1.08	Barium	150	289.38	916	26400	--	mg/kg
BW42-001	0.67	1.08	Copper	300	38.21	141	40900	--	mg/kg
BW42-001	0.67	1.08	Iron	2500	41046.52	59000	307000	--	mg/kg
BW42-001	0.67	1.08	Manganese	200	901.62	1640	3480	--	mg/ky
BW42-001	0.67	1.08	Nickel	60	62.21	87	20400	--	mg/kg
BW42-001	0.67	1.08	Strontium	250	211.38	656	613000	--	mg/kg
BW42-001	0.67	1.08	Vanadium	100	88.49	175	7150	292	mg/kg
BW42-002	0	0.5	Barium	150	141.26	772	26400	--	mg/kg
BW42-002	0	0.5	Copper	300	18.06	33.1	40900	--	mg/kg
BW42-002	0	0.5	Iron	2500	18037	25300	307000	--	mg/kg
BW42-002	0	0.5	Manganese	200	365.08	456	3480	--	mg/kg
BW42-002	0	0.5	Nickel	60	14.91	30.9	20400	--	mg/kg
BW42-002	0	0.5	Strontium	250	48.94	207	613000	--	mg/kg
BW42-002	0	0.5	Vanadium	100	45.59	86	7150	292	mg/kg
BW42-002	0	0.5	Zinc	50	73.76	95.1	307000	--	mg/kg

28

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-003	0	0.5	Antimony	35	NA	12.6	409	--	mg/kg
BW42-003	0	0.5	Barium	150	141.26	789	26400	--	mg/kg
BW42-003	0	0.5	Copper	300	18.06	39	40900	--	mg/kg
BW42-003	0	0.5	Iron	2500	18037	19400	307000	--	mg/kg
BW42-003	0	0.5	Nickel	60	14.91	15.5	20400	--	mg/kg
BW42-003	0	0.5	Strontium	250	48.94	247	613000	--	mg/kg
BW42-003	0	0.5	U-235	1	0.0939	0.4	8	--	pCi/g
BW42-003	0	0.5	Vanadium	100	45.59	67.5	7150	292	mg/kg
BW42-004	0	0.5	Arsenic	25	10.09	12.6	22.2	--	mg/kg
BW42-004	0	0.5	Barium	150	141.26	810	26400	--	mg/kg
BW42-004	0	0.5	Copper	300	18.06	71.4	40900	--	mg/kg
BW42-004	0	0.5	Iron	2500	18037	53100	307000	--	mg/kg
BW42-004	0	0.5	Lead	20	54.62	67.3	1000	97.7	mg/kg
BW42-004	0	0.5	Manganese	200	365.08	1210	3480	--	mg/kg
BW42-004	0	0.5	Nickel	60	14.91	57.3	20400	--	mg/kg
BW42-004	0	0.5	Strontium	250	48.94	320	613000	--	mg/kg
BW42-004	0	0.5	U-235	1	0.0939	0.2	8	--	pCi/g
BW42-004	0	0.5	Vanadium	100	45.59	211	7150	292	mg/kg
BW42-004	0	0.5	Zinc	50	73.76	327	307000	--	mg/kg
BW42-005	0	0.5	Barium	150	141.26	740	26400	--	mg/kg
BW42-005	0	0.5	Copper	300	18.06	50.7	40900	--	mg/kg
BW42-005	0	0.5	Iron	2500	18037	35800	307000	--	mg/kg
BW42-005	0	0.5	Manganese	200	365.08	604	3480	--	mg/kg
BW42-005	0	0.5	Nickel	60	14.91	40.1	20400	--	mg/kg
BW42-005	0	0.5	Strontium	250	48.94	212	613000	--	mg/kg
BW42-005	0	0.5	U-235	1	0.0939	0.2	8	--	pCi/g
BW42-005	0	0.5	Vanadium	100	45.59	133	7150	292	mg/kg
BW42-005	0	0.5	Zinc	50	73.76	462	307000	--	mg/kg
BW42-006	0	0.5	Barium	150	141.26	906	26400	--	mg/kg
BW42-006	0	0.5	Copper	300	18.06	64.1	40900	--	mg/kg
BW42-006	0	0.5	Iron	2500	18037	29500	307000	--	mg/kg
BW42-006	0	0.5	Manganese	200	365.08	494	3480	--	mg/kg
BW42-006	0	0.5	Nickel	60	14.91	30.3	20400	--	mg/kg
BW42-006	0	0.5	Strontium	250	48.94	291	613000	--	mg/kg
BW42-006	0	0.5	U-235	1	0.0939	0.3	8	--	pCi/g
BW42-006	0	0.5	Vanadium	100	45.59	98.9	7150	292	mg/kg
BW42-006	0	0.5	Zinc	50	73.76	82.2	307000	--	mg/kg
BW42-007	0	0.5	Arsenic	25	10.09	19	22.2	--	mg/kg
BW42-007	0	0.5	Barium	150	141.26	932	26400	--	mg/kg
BW42-007	0	0.5	Benzo(a)Anthracene	41	NA	77	34900	--	ug/kg
BW42-007	0	0.5	Benzo(a)Pyrene	98	NA	100	3490	--	ug/kg
BW42-007	0	0.5	Benzo(k)Fluoranthene	97	NA	110	349000	--	ug/kg
BW42-007	0	0.5	Cadmium	85	1.612	2.8	962	--	mg/kg
BW42-007	0	0.5	Chrysene	56	NA	110	3490000	--	ug/kg
BW42-007	0	0.5	Copper	300	18.06	83	40900	--	mg/kg
BW42-007	0	0.5	Fluoranthene	88	NA	210	27200000	--	ug/kg

29

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-007	0	0.5	Indeno(1,2,3-Cd)Pyrene	50	NA	91	34900	--	ug/kg
BW42-007	0	0.5	Iron	2500	18037	58200	307000	--	mg/kg
BW42-007	0	0.5	Lead	20	54.62	202	1000	97.7	mg/kg
BW42-007	0	0.5	Manganese	200	365.08	1050	3480	--	mg/kg
BW42-007	0	0.5	Nickel	60	14.91	60	20400	--	mg/kg
BW42-007	0	0.5	Pyrene	42	NA	220	22100000	--	ug/kg
BW42-007	0	0.5	Strontium	250	48.94	210	613000	--	mg/kg
BW42-007	0	0.5	U-235	1	0.0939	0.2	8	--	pCi/g
BW42-007	0	0.5	Vanadium	100	45.59	269	7150	292	mg/kg
BW42-007	0	0.5	Zinc	50	73.76	346	307000	--	mg/kg
BW42-007	0.5	2.5	Arsenic	25	13.14	18	22.2	--	mg/kg
BW42-007	0.5	2.5	Barium	150	289.38	499	26400	--	mg/kg
BW42-007	0.5	2.5	Copper	300	38.21	49	40900	--	mg/kg
BW42-007	0.5	2.5	Lead	20	24.97	35.5	1000	97.7	mg/kg
BW42-007	0.5	2.5	Methylene Chloride	0.89	NA	1.3	2530000	39500	ug/kg
BW42-007	0.5	2.5	Tetrachloroethene	1.1	NA	2	615000	--	ug/kg
BW42-007	0.5	2.5	Toluene	0.87	NA	1.3	31300000	329000	ug/kg
BW42-007	0.5	2.5	U-235	1	0.12	0.2	8	--	pCi/g
BW42-007	0.5	2.5	Vanadium	100	88.49	197	7150	292	mg/kg
BW42-007	2.5	4.5	2-Butanone	5.3	NA	9	1.92E+08	433000	ug/kg
BW42-007	2.5	4.5	Acetone	5.1	NA	53	1.02E+08	211000	ug/kg
BW42-007	2.5	4.5	Methylene Chloride	0.89	NA	1.4	2530000	39500	ug/kg
BW42-007	4.5	6.5	Methylene Chloride	0.86	NA	1.2	2530000	39500	ug/kg
BW42-007	6.5	8	Methylene Chloride	0.89	NA	1.2	2530000	39500	ug/kg
BW42-008	0	0.5	Arsenic	25	10.09	15	22.2	--	mg/kg
BW42-008	0	0.5	Barium	150	141.26	835	26400	--	mg/kg
BW42-008	0	0.5	Benzo(a)Anthracene	40	NA	82	34900	--	ug/kg
BW42-008	0	0.5	Chrysene	55	NA	97	3490000	--	ug/kg
BW42-008	0	0.5	Copper	300	18.06	51	40900	--	mg/kg
BW42-008	0	0.5	Fluoranthene	87	NA	180	27200000	--	ug/kg
BW42-008	0	0.5	Indeno(1,2,3-Cd)Pyrene	50	NA	65	34900	--	ug/kg
BW42-008	0	0.5	Iron	2500	18037	31700	307000	--	mg/kg
BW42-008	0	0.5	Lead	20	54.62	73.4	1000	97.7	mg/kg
BW42-008	0	0.5	Manganese	200	365.08	767	3480	--	mg/kg
BW42-008	0	0.5	Nickel	60	14.91	32	20400	--	mg/kg
BW42-008	0	0.5	Pyrene	41	NA	220	22100000	--	ug/kg
BW42-008	0	0.5	Strontium	250	48.94	472	613000	--	mg/kg
BW42-008	0	0.5	Vanadium	100	45.59	113	7150	292	mg/kg
BW42-008	0	0.5	Zinc	50	73.76	160	307000	--	mg/kg
BW42-008	0.5	2.5	Barium	150	289.38	773	26400	--	mg/kg
BW42-008	0.5	2.5	Copper	300	38.21	55	40900	--	mg/kg
BW42-008	0.5	2.5	Lead	20	24.97	28.7	1000	97.7	mg/kg
BW42-008	0.5	2.5	Methylene Chloride	0.85	NA	1.1	2530000	39500	ug/kg
BW42-008	0.5	2.5	Strontium	250	211.38	230	613000	--	mg/kg
BW42-008	0.5	2.5	U-235	1	0.12	0.28	8	--	pCi/g
BW42-008	0.5	2.5	Vanadium	100	88.49	109	7150	292	mg/kg

30

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-008	0.5	2.5	Zinc	50	139.1	150	307000	--	mg/kg
BW42-008	2.5	4.5	Methylene Chloride	0.93	NA	1.3	2530000	39500	ug/kg
BW42-008	4.5	6.5	Methylene Chloride	0.9	NA	1.6	2530000	39500	ug/kg
BW42-008	6.5	8.5	Acetone	5.4	NA	8.1	1.02E+08	211000	ug/kg
BW42-008	6.5	8.5	Methylene Chloride	0.94	NA	1.5	2530000	39500	ug/kg
BW42-008	8.5	10.5	Methylene Chloride	0.88	NA	1.3	2530000	39500	ug/kg
BW42-009	0	0.5	Arsenic	25	10.09	13	22.2	--	mg/kg
BW42-009	0	0.5	Barium	150	141.26	886	26400	--	mg/kg
BW42-009	0	0.5	Copper	300	18.06	69	40900	--	mg/kg
BW42-009	0	0.5	Iron	2500	18037	25500	307000	--	mg/kg
BW42-009	0	0.5	Manganese	200	365.08	482	3480	--	mg/kg
BW42-009	0	0.5	Nickel	60	14.91	25	20400	--	mg/kg
BW42-009	0	0.5	Strontium	250	48.94	253	613000	--	mg/kg
BW42-009	0	0.5	Vanadium	100	45.59	89	7150	292	mg/kg
BW42-009	0	0.5	Zinc	50	73.76	120	307000	--	mg/kg
BW42-009	0.5	2.5	Arsenic	25	13.14	15	22.2	--	mg/kg
BW42-009	0.5	2.5	Barium	150	289.38	1010	26400	--	mg/kg
BW42-009	0.5	2.5	Benzo(a)Anthracene	40	NA	67	34900	--	ug/kg
BW42-009	0.5	2.5	Chrysene	54	NA	70	3490000	--	ug/kg
BW42-009	0.5	2.5	Copper	300	38.21	39	40900	--	mg/kg
BW42-009	0.5	2.5	Lead	20	24.97	39.4	1000	97.7	mg/kg
BW42-009	0.5	2.5	Methylene Chloride	0.82	NA	0.93	2530000	39500	ug/kg
BW42-009	0.5	2.5	Pyrene	41	NA	98	22100000	--	ug/kg
BW42-009	0.5	2.5	Strontium	250	211.38	259	613000	--	mg/kg
BW42-009	0.5	2.5	U-235	1	0.12	0.3	8	--	pCi/g
BW42-009	2.5	4.5	Acetone	5	NA	34	1.02E+08	211000	ug/kg
BW42-009	2.5	4.5	Methylene Chloride	0.87	NA	0.94	2530000	39500	ug/kg
BW42-009	4.5	6.5	Acetone	5.4	NA	8.7	1.02E+08	211000	ug/kg
BW42-009	4.5	6.5	Methylene Chloride	0.93	NA	1.3	2530000	39500	ug/kg
BW42-009	6.5	8.5	Acetone	4.9	NA	8.1	1.02E+08	211000	ug/kg
BW42-009	6.5	8.5	Methylene Chloride	0.86	NA	1.1	2530000	39500	ug/kg
BW42-009	8.5	10	Methylene Chloride	0.87	NA	1.2	2530000	39500	ug/kg
BW42-010	0	0.5	Arsenic	25	10.09	15	22.2	--	mg/kg
BW42-010	0	0.5	Barium	150	141.26	663	26400	--	mg/kg
BW42-010	0	0.5	Chrysene	35	NA	42	3490000	--	ug/kg
BW42-010	0	0.5	Copper	300	18.06	67	40900	--	mg/kg
BW42-010	0	0.5	Fluoranthene	41	NA	80	27200000	--	ug/kg
BW42-010	0	0.5	Iron	2500	18037	25900	307000	--	mg/kg
BW42-010	0	0.5	Manganese	200	365.08	628	3480	--	mg/kg
BW42-010	0	0.5	Nickel	60	14.91	24	20400	--	mg/kg
BW42-010	0	0.5	Pyrene	58	NA	70	22100000	--	ug/kg
BW42-010	0	0.5	Strontium	250	48.94	365	613000	--	mg/kg
BW42-010	0	0.5	U-235	1	0.0939	0.21	8	--	pCi/g
BW42-010	0	0.5	Vanadium	100	45.59	119	7150	292	mg/kg
BW42-010	0	0.5	Zinc	50	73.76	78	307000	--	mg/kg
BW42-010	0.5	2.5	Barium	150	289.38	843	26400	--	mg/kg

31

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-010	0.5	2.5	Copper	300	38.21	130	40900	--	mg/kg
BW42-010	0.5	2.5	Fluoranthene	41	NA	67	27200000	--	ug/kg
BW42-010	0.5	2.5	Iron	2500	41046.52	70900	307000	--	mg/kg
BW42-010	0.5	2.5	Manganese	200	901.62	1620	3480	--	mg/kg
BW42-010	0.5	2.5	Pyrene	59	NA	70	22100000	--	ug/kg
BW42-010	0.5	2.5	Strontium	250	211.38	358	613000	--	mg/kg
BW42-010	0.5	2.5	Tetrachloroethene	1.1	NA	8.1	615000	--	ug/kg
BW42-010	0.5	2.5	U-235	1	0.12	0.3	8	--	pCi/g
BW42-010	0.5	2.5	Vanadium	100	88.49	279	7150	292	mg/kg
BW42-010	0.5	2.5	Zinc	50	139.1	200	307000	--	mg/kg
BW42-010	4.5	6.5	2-Butanone	5.3	NA	10	1.92E+08	433000	ug/kg
BW42-010	4.5	6.5	Acetone	5.2	NA	66	1.02E+08	211000	ug/kg
BW42-011	0	0.5	Barium	150	141.26	854	26400	--	mg/kg
BW42-011	0	0.5	Benzo(a)Anthracene	40	NA	170	34900	--	ug/kg
BW42-011	0	0.5	Benzo(a)Pyrene	96	NA	180	3490	--	ug/kg
BW42-011	0	0.5	Benzo(b)Fluoranthene	100	NA	160	34900	--	ug/kg
BW42-011	0	0.5	Benzo(k)Fluoranthene	95	NA	170	349000	--	ug/kg
BW42-011	0	0.5	Chrysene	54	NA	190	3490000	--	ug/kg
BW42-011	0	0.5	Copper	300	18.06	48	40900	--	mg/kg
BW42-011	0	0.5	Fluoranthene	85	NA	290	27200000	--	ug/kg
BW42-011	0	0.5	Indeno(1,2,3-Cd)Pyrene	49	NA	130	34900	--	ug/kg
BW42-011	0	0.5	Iron	2500	18037	22800	307000	--	mg/kg
BW42-011	0	0.5	Manganese	200	365.08	504	3480	--	mg/kg
BW42-011	0	0.5	Nickel	60	14.91	20	20400	--	mg/kg
BW42-011	0	0.5	Pyrene	41	NA	270	22100000	--	ug/kg
BW42-011	0	0.5	Strontium	250	48.94	250	613000	--	mg/kg
BW42-011	0	0.5	Vanadium	100	45.59	93	7150	292	mg/kg
BW42-011	0	0.5	Zinc	50	73.76	100	307000	--	mg/kg
BW42-011	0.5	2.5	2-Butanone	5.1	NA	17	1.92E+08	433000	ug/kg
BW42-011	0.5	2.5	Acetone	5	NA	100	1.02E+08	211000	ug/kg
BW42-011	0.5	2.5	Arsenic	25	13.14	14	22.2	--	mg/kg
BW42-011	0.5	2.5	Barium	150	289.38	868	26400	--	mg/kg
BW42-011	0.5	2.5	Copper	300	38.21	52	40900	--	mg/kg
BW42-011	0.5	2.5	Lead	20	24.97	26	1000	97.7	mg/kg
BW42-011	0.5	2.5	Methylene Chloride	0.87	NA	0.9	2530000	39500	ug/kg
BW42-011	0.5	2.5	Pyrene	43	NA	63	22100000	--	ug/kg
BW42-011	0.5	2.5	U-235	1	0.12	0.15	8	--	pCi/g
BW42-011	0.5	2.5	Vanadium	100	88.49	177	7150	292	mg/kg
BW42-011	2.5	4.5	2-Butanone	5.2	NA	7.8	1.92E+08	433000	ug/kg
BW42-011	2.5	4.5	Acetone	5	NA	57	1.02E+08	211000	ug/kg
BW42-011	2.5	4.5	Methylene Chloride	0.88	NA	0.89	2530000	39500	ug/kg
BW42-011	4.5	6.5	Methylene Chloride	0.87	NA	0.91	2530000	39500	ug/kg
BW42-011	6.5	8	Methylene Chloride	0.88	NA	0.93	2530000	39500	ug/kg
BW42-012	0	0.5	Barium	150	141.26	882	26400	--	mg/kg
BW42-012	0	0.5	Benzo(a)Anthracene	39	NA	53	34900	--	ug/kg
BW42-012	0	0.5	Bis(2-Ethylhexyl)Phthalate	69	NA	140	1970000	--	ug/kg

32

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-012	0	0.5	Chrysene	53	NA	91	3490000	--	ug/kg
BW42-012	0	0.5	Copper	300	18.06	42	40900	--	mg/kg
BW42-012	0	0.5	Fluoranthene	84	NA	130	27200000	--	ug/kg
BW42-012	0	0.5	Iron	2500	18037	29700	307000	--	mg/kg
BW42-012	0	0.5	Lead	20	54.62	62	1000	97.7	mg/kg
BW42-012	0	0.5	Manganese	200	365.08	512	3480	--	mg/kg
BW42-012	0	0.5	Nickel	60	14.91	31	20400	--	mg/kg
BW42-012	0	0.5	Pyrene	40	NA	120	22100000	--	ug/kg
BW42-012	0	0.5	Strontium	250	48.94	230	613000	--	mg/kg
BW42-012	0	0.5	U-235	1	0.0939	0.18	8	--	pCi/g
BW42-012	0	0.5	Vanadium	100	45.59	107	7150	292	mg/kg
BW42-012	0	0.5	Zinc	50	73.76	190	307000	--	mg/kg
BW42-012	0.5	2.5	Barium	150	289.38	706	26400	--	mg/kg
BW42-012	0.5	2.5	Benzo(a)Anthracene	40	NA	84	34900	--	ug/kg
BW42-012	0.5	2.5	Chrysene	55	NA	110	3490000	--	ug/kg
BW42-012	0.5	2.5	Copper	300	38.21	43	40900	--	mg/kg
BW42-012	0.5	2.5	Fluoranthene	87	NA	230	27200000	--	ug/kg
BW42-012	0.5	2.5	Lead	20	24.97	50	1000	97.7	mg/kg
BW42-012	0.5	2.5	Methylene Chloride	0.83	NA	1.1	2530000	39500	ug/kg
BW42-012	0.5	2.5	Pyrene	41	NA	230	22100000	--	ug/kg
BW42-012	0.5	2.5	Strontium	250	211.38	320	613000	--	mg/kg
BW42-012	0.5	2.5	Tetrachloroethene	1	NA	1.3	615000	--	ug/kg
BW42-012	0.5	2.5	U-235	1	0.12	0.31	8	--	pCi/g
BW42-012	0.5	2.5	Vanadium	100	88.49	129	7150	292	mg/kg
BW42-012	2.5	4.5	2-Butanone	5.1	NA	12	1.92E+08	433000	ug/kg
BW42-012	2.5	4.5	Acetone	5	NA	68	1.02E+08	211000	ug/kg
BW42-012	2.5	4.5	Methylene Chloride	0.87	NA	1.1	2530000	39500	ug/kg
BW42-012	2.5	4.5	Naphthalene	0.94	NA	8.3	3090000	--	ug/kg
BW42-012	2.5	4.5	Tetrachloroethene	1.1	NA	1.6	615000	--	ug/kg
BW42-012	4.5	6.5	Acetone	5.2	NA	10	1.02E+08	211000	ug/kg
BW42-012	4.5	6.5	Methylene Chloride	0.9	NA	1	2530000	39500	ug/kg
BW42-012	6.5	8.5	Acetone	5.1	NA	19	1.02E+08	211000	ug/kg
BW42-012	6.5	8.5	Methylene Chloride	0.89	NA	1.1	2530000	39500	ug/kg
BW42-013	0.62	1.08	Barium	150	289.38	307	26400	--	mg/kg
BW42-013	0.62	1.08	Bis(2-Ethylhexyl)Phthalate	72	NA	400	1970000	--	ug/kg
BW42-013	0.62	1.08	Pyrene	58	NA	62	22100000	--	ug/kg
BW42-013	0.62	1.08	U-235	1	0.12	0.2	8	--	pCi/g
BW42-013	1.08	3.58	Arsenic	25	13.14	19.1	22.2	--	mg/kg
BW42-013	1.08	3.58	Barium	150	289.38	697	26400	--	mg/kg
BW42-013	1.08	3.58	Bis(2-Ethylhexyl)Phthalate	80	NA	91	1970000	--	ug/kg
BW42-013	1.08	3.58	Copper	300	38.21	126	40900	--	mg/kg
BW42-013	1.08	3.58	U-235	1	0.12	0.3	8	--	pCi/g
BW42-013	1.08	3.58	Vanadium	100	88.49	178	7150	292	mg/kg
BW42-013	3.58	6.08	Acetone	5	NA	5.4	1.02E+08	211000	ug/kg
BW42-014	0.67	1.08	Barium	150	289.38	789	26400	--	mg/kg
BW42-014	0.67	1.08	Benzo(a)Anthracene	41	NA	98	34900	--	ug/kg

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-014	0.67	1.08	Benzo(a)Pyrene	53	NA	120	3490	--	ug/kg
BW42-014	0.67	1.08	Benzo(b)Fluoranthene	66	NA	90	34900	--	ug/kg
BW42-014	0.67	1.08	Benzo(k)Fluoranthene	71	NA	110	349000	--	ug/kg
BW42-014	0.67	1.08	Bis(2-Ethylhexyl)Phthalate	73	NA	75	1970000	--	ug/kg
BW42-014	0.67	1.08	Chrysene	36	NA	120	3490000	--	ug/kg
BW42-014	0.67	1.08	Copper	300	38.21	44.7	40900	--	mg/kg
BW42-014	0.67	1.08	Fluoranthene	41	NA	270	27200000	--	ug/kg
BW42-014	0.67	1.08	Indeno(1,2,3-Cd)Pyrene	46	NA	100	34900	--	ug/kg
BW42-014	0.67	1.08	Lead	20	24.97	33.2	1000	97.7	mg/kg
BW42-014	0.67	1.08	Pyrene	59	NA	210	22100000	--	ug/kg
BW42-014	0.67	1.08	Strontium	250	211.38	227	613000	--	mg/kg
BW42-014	0.67	1.08	U-235	1	0.12	0.2	8	--	pCi/g
BW42-014	1.08	3.58	2-Butanone	5	NA	19	1.92E+08	433000	ug/kg
BW42-014	1.08	3.58	Acetone	4.9	NA	87	1.02E+08	211000	ug/kg
BW42-014	1.08	3.58	Am-241	4	0.02	0.2	76	--	pCi/g
BW42-014	1.08	3.58	Arsenic	25	13.14	16.2	22.2	--	mg/kg
BW42-014	1.08	3.58	Barium	150	289.38	765	26400	--	mg/kg
BW42-014	1.08	3.58	Chrysene	36	NA	52	3490000	--	ug/kg
BW42-014	1.08	3.58	Copper	300	38.21	56.2	40900	--	mg/kg
BW42-014	1.08	3.58	Fluoranthene	42	NA	100	27200000	--	ug/kg
BW42-014	1.08	3.58	Lead	20	24.97	46.5	1000	97.7	mg/kg
BW42-014	1.08	3.58	Pu-239/240	0.005	0.066	0.2	116/50	--	pCi/g
BW42-014	1.08	3.58	Pyrene	60	NA	89	22100000	--	ug/kg
BW42-014	1.08	3.58	U-235	1	0.12	0.3	8	--	pCi/g
BW42-014	1.08	3.58	Vanadium	100	88.49	107	7150	292	mg/kg
BW42-014	3.58	6.08	2-Butanone	5.1	NA	9.4	1.92E+08	433000	ug/kg
BW42-014	3.58	6.08	Acetone	5	NA	76	1.02E+08	211000	ug/kg
BW42-014	6.08	8.58	Acetone	5.1	NA	9.7	1.02E+08	211000	ug/kg
BW42-015	0	0.5	Barium	150	141.26	802	26400	--	mg/kg
BW42-015	0	0.5	Benzo(a)Anthracene	39	NA	92	34900	--	ug/kg
BW42-015	0	0.5	Benzo(a)Pyrene	51	NA	95	3490	--	ug/kg
BW42-015	0	0.5	Benzo(b)Fluoranthene	63	NA	98	34900	--	ug/kg
BW42-015	0	0.5	Benzo(k)Fluoranthene	68	NA	79	349000	--	ug/kg
BW42-015	0	0.5	Chrysene	34	NA	110	3490000	--	ug/kg
BW42-015	0	0.5	Copper	300	18.06	48	40900	--	mg/kg
BW42-015	0	0.5	Fluoranthene	39	NA	230	27200000	--	ug/kg
BW42-015	0	0.5	Indeno(1,2,3-Cd)Pyrene	44	NA	64	34900	--	ug/kg
BW42-015	0	0.5	Iron	2500	18037	35400	307000	--	mg/kg
BW42-015	0	0.5	Manganese	200	365.08	682	3480	--	mg/kg
BW42-015	0	0.5	Nickel	60	14.91	40	20400	--	mg/kg
BW42-015	0	0.5	Pyrene	56	NA	180	22100000	--	ug/kg
BW42-015	0	0.5	Strontium	250	48.94	220	613000	--	mg/kg
BW42-015	0	0.5	U-235	1	0.0939	0.17	8	--	pCi/g
BW42-015	0	0.5	Vanadium	100	45.59	125	7150	292	mg/kg
BW42-015	0	0.5	Zinc	50	73.76	210	307000	--	mg/kg
BW42-015	0.5	2.5	Anthracene	68	NA	78	2.04E+08	--	ug/kg

34

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-015	0.5	2.5	Barium	150	289.38	846	26400	--	mg/kg
BW42-015	0.5	2.5	Benzo(a)Anthracene	41	NA	210	34900	--	ug/kg
BW42-015	0.5	2.5	Benzo(a)Pyrene	53	NA	210	3490	--	ug/kg
BW42-015	0.5	2.5	Benzo(b)Fluoranthene	66	NA	190	34900	--	ug/kg
BW42-015	0.5	2.5	Benzo(k)Fluoranthene	71	NA	200	349000	--	ug/kg
BW42-015	0.5	2.5	Bis(2-Ethylhexyl)Phthalate	73	NA	170	1970000	--	ug/kg
BW42-015	0.5	2.5	Chrysene	35	NA	240	3490000	--	ug/kg
BW42-015	0.5	2.5	Dibenz(a,h)Anthracene	65	NA	69	3490	--	ug/kg
BW42-015	0.5	2.5	Fluoranthene	41	NA	530	27200000	--	ug/kg
BW42-015	0.5	2.5	Indeno(1,2,3-Cd)Pyrene	46	NA	160	34900	--	ug/kg
BW42-015	0.5	2.5	Lead	20	24.97	43.4	1000	97.7	mg/kg
BW42-015	0.5	2.5	Pyrene	58	NA	430	22100000	--	ug/kg
BW42-015	0.5	2.5	Strontium	250	211.38	240	613000	--	mg/kg
BW42-015	0.5	2.5	U-235	1	0.12	0.2	8	--	pCi/g
BW42-017	0.8	2.5	Anthracene	75	NA	240	2.04E+08	--	ug/kg
BW42-017	0.8	2.5	Anthracene	79	NA	250	2.04E+08	--	ug/kg
BW42-017	0.8	2.5	Benzo(a)Anthracene	45	NA	98	34900	--	ug/kg
BW42-017	0.8	2.5	Benzo(a)Anthracene	48	NA	56	34900	--	ug/kg
BW42-017	0.8	2.5	Benzo(a)Pyrene	59	NA	81	3490	--	ug/kg
BW42-017	0.8	2.5	Benzo(k)Fluoranthene	78	NA	80	349000	--	ug/kg
BW42-017	0.8	2.5	Chrysene	39	NA	100	3490000	--	ug/kg
BW42-017	0.8	2.5	Chrysene	42	NA	68	3490000	--	ug/kg
BW42-017	0.8	2.5	Fluoranthene	45	NA	310	27200000	--	ug/kg
BW42-017	0.8	2.5	Fluoranthene	48	NA	280	27200000	--	ug/kg
BW42-017	0.8	2.5	Pyrene	64	NA	370	22100000	--	ug/kg
BW42-017	0.8	2.5	Pyrene	68	NA	340	22100000	--	ug/kg
BW42-017	0.8	2.5	U-235	1	0.12	0.15	8	--	pCi/g
BW42-017	2.5	4.5	Acetone	100	NA	111.5	1.02E+08	211000	ug/kg
BW42-017	2.5	4.5	Anthracene	72	NA	220	2.04E+08	--	ug/kg
BW42-017	2.5	4.5	Fluoranthene	43	NA	230	27200000	--	ug/kg
BW42-017	2.5	4.5	Pyrene	62	NA	290	22100000	--	ug/kg
BW42-017	2.5	4.5	U-235	1	0.12	0.19	8	--	pCi/g
BW42-017	4.5	6.5	Acenaphthene	53	NA	120	40800000	--	ug/kg
BW42-017	4.5	6.5	Anthracene	77	NA	280	2.04E+08	--	ug/kg
BW42-017	4.5	6.5	Benzo(a)Anthracene	46	NA	300	34900	--	ug/kg
BW42-017	4.5	6.5	Benzo(a)Pyrene	60	NA	290	3490	--	ug/kg
BW42-017	4.5	6.5	Benzo(b)Fluoranthene	74	NA	200	34900	--	ug/kg
BW42-017	4.5	6.5	Benzo(k)Fluoranthene	80	NA	280	349000	--	ug/kg
BW42-017	4.5	6.5	Chrysene	40	NA	340	3490000	--	ug/kg
BW42-017	4.5	6.5	Fluoranthene	46	NA	620	27200000	--	ug/kg
BW42-017	4.5	6.5	Fluorene	64	NA	93	40800000	--	ug/kg
BW42-017	4.5	6.5	Indeno(1,2,3-Cd)Pyrene	52	NA	190	34900	--	ug/kg
BW42-017	4.5	6.5	Pyrene	66	NA	610	22100000	--	ug/kg
BW42-017	4.5	6.5	U-235	1	0.12	0.14	8	--	pCi/g
BW42-017	6.5	8.5	1,1-Dichloroethane	5.3	NA	5.7	22500000	--	ug/kg
BW42-017	6.5	8.5	Anthracene	74	NA	240	2.04E+08	--	ug/kg

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-017	6.5	8.5	Benzo(a)Anthracene	45	NA	78	34900	--	ug/kg
BW42-017	6.5	8.5	Benzo(a)Pyrene	58	NA	75	3490	--	ug/kg
BW42-017	6.5	8.5	Chrysene	39	NA	100	3490000	--	ug/kg
BW42-017	6.5	8.5	Fluoranthene	45	NA	300	27200000	--	ug/kg
BW42-017	6.5	8.5	Indeno(1,2,3-Cd)Pyrene	50	NA	54	34900	--	ug/kg
BW42-017	6.5	8.5	Pyrene	64	NA	350	22100000	--	ug/kg
BW42-017	6.5	8.5	U-235	1	0.12	0.24	8	--	pCi/g
BW42-017	8.5	10.5	1,1-Dichloroethene	5.8	NA	94.6	17000	--	ug/kg
BW42-017	8.5	10.5	1,2,4-Trichlorobenzene	610	NA	1641.8	9230000	--	ug/kg
BW42-017	8.5	10.5	1,2,4-Trichlorobenzene	760	NA	2400	9230000	--	ug/kg
BW42-017	8.5	10.5	1,2,4-Trichlorobenzene	41	NA	2400	9230000	--	ug/kg
BW42-017	8.5	10.5	1,2-Dichlorobenzene	5.8	NA	74	31200000	--	ug/kg
BW42-017	8.5	10.5	1,4-Dichlorobenzene	5.8	NA	42.3	840000	--	ug/kg
BW42-017	8.5	10.5	2-Methylnaphthalene	40	NA	3600	20400000	--	ug/kg
BW42-017	8.5	10.5	2-Methylnaphthalene	760	NA	3600	20400000	--	ug/kg
BW42-017	8.5	10.5	4-Methyl-2-Pentanone	58	NA	323	16400000	--	ug/kg
BW42-017	8.5	10.5	4-Methylphenol	64	NA	1600	3690000	--	ug/kg
BW42-017	8.5	10.5	4-Methylphenol	760	NA	1600	3690000	--	ug/kg
BW42-017	8.5	10.5	Acenaphthene	380	NA	1500	40800000	--	ug/kg
BW42-017	8.5	10.5	Acenaphthene	52	NA	1500	40800000	--	ug/kg
BW42-017	8.5	10.5	Acetone	120	NA	129	1.02E+08	211000	ug/kg
BW42-017	8.5	10.5	Anthracene	380	NA	880	2.04E+08	--	ug/kg
BW42-017	8.5	10.5	Anthracene	75	NA	880	2.04E+08	--	ug/kg
BW42-017	8.5	10.5	Benzene	5.8	NA	86.7	205000	--	ug/kg
BW42-017	8.5	10.5	Benzo(a)Anthracene	45	NA	1200	34900	--	ug/kg
BW42-017	8.5	10.5	Benzo(a)Anthracene	760	NA	1200	34900	--	ug/kg
BW42-017	8.5	10.5	Benzo(a)Pyrene	59	NA	980	3490	--	ug/kg
BW42-017	8.5	10.5	Benzo(a)Pyrene	760	NA	980	3490	--	ug/kg
BW42-017	8.5	10.5	Benzo(b)Fluoranthene	72	NA	640	34900	--	ug/kg
BW42-017	8.5	10.5	Benzo(k)Fluoranthene	78	NA	720	349000	--	ug/kg
BW42-017	8.5	10.5	Carbon Disulfide	5.8	NA	11.5	15100000	--	ug/kg
BW42-017	8.5	10.5	Chrysene	39	NA	1800	3490000	--	ug/kg
BW42-017	8.5	10.5	Chrysene	760	NA	1800	3490000	--	ug/kg
BW42-017	8.5	10.5	Dibenzofuran	57	NA	770	2950000	--	ug/kg
BW42-017	8.5	10.5	Dibenzofuran	760	NA	770	2950000	--	ug/kg
BW42-017	8.5	10.5	Ethylbenzene	5.8	NA	205.8	4250000	--	ug/kg
BW42-017	8.5	10.5	Fluoranthene	45	NA	2000	27200000	--	ug/kg
BW42-017	8.5	10.5	Fluoranthene	760	NA	2000	27200000	--	ug/kg
BW42-017	8.5	10.5	Fluorene	62	NA	1000	40800000	--	ug/kg
BW42-017	8.5	10.5	Fluorene	760	NA	1000	40800000	--	ug/kg
BW42-017	8.5	10.5	Indeno(1,2,3-Cd)Pyrene	50	NA	510	34900	--	ug/kg
BW42-017	8.5	10.5	Naphthalene	610	NA	826.4	3090000	--	ug/kg
BW42-017	8.5	10.5	Naphthalene	48	NA	1400	3090000	--	ug/kg
BW42-017	8.5	10.5	Naphthalene	760	NA	1400	3090000	--	ug/kg
BW42-017	8.5	10.5	Phenol	62	NA	270	6.13E+08	--	ug/kg
BW42-017	8.5	10.5	Pyrene	760	NA	4500	22100000	--	ug/kg

36

Closeout Report for IHSS Group 300-1

Location	SBD (ft)	SED (ft)	Analyte	Reporting Limit	Background Mean + 2 SD	Result	WRW Action Level	Ecological Action Level	Unit
BW42-017	8.5	10.5	Pyrene	64	NA	4500	22100000	--	ug/kg
BW42-017	8.5	10.5	Tetrachloroethene	1500	NA	1943.6	615000	--	ug/kg
BW42-017	8.5	10.5	Toluene	5.8	NA	339.2	31300000	329000	ug/kg
BW42-017	8.5	10.5	Trichloroethene	610	NA	5183.6	19600	--	ug/kg
BW42-017	8.5	10.5	U-235	1	0.12	0.33	8	--	pCi/g
BW42-017	8.5	10.5	Vinyl Chloride	5.8	NA	567.9	41200	431	ug/kg
BW42-017	8.5	10.5	Xylenes (Total)	12	NA	930.8	1.00E+09	--	ug/kg
BW42-018	1	1.8	Acenaphthene	53	NA	89	40800000	--	ug/kg
BW42-018	1	1.8	Anthracene	76	NA	280	2.04E+08	--	ug/kg
BW42-018	1	1.8	Arsenic	25	13.14	19.1	22.2	--	mg/kg
BW42-018	1	1.8	Barium	150	289.38	789	26400	--	mg/kg
BW42-018	1	1.8	Benzo(a)Anthracene	46	NA	320	34900	--	ug/kg
BW42-018	1	1.8	Benzo(a)Pyrene	60	NA	300	3490	--	ug/kg
BW42-018	1	1.8	Benzo(b)Fluoranthene	74	NA	240	34900	--	ug/kg
BW42-018	1	1.8	Benzo(k)Fluoranthene	80	NA	300	349000	--	ug/kg
BW42-018	1	1.8	Chrysene	40	NA	380	3490000	--	ug/kg
BW42-018	1	1.8	Copper	300	38.21	81.5	40900	--	mg/kg
BW42-018	1	1.8	Fluoranthene	46	NA	650	27200000	--	ug/kg
BW42-018	1	1.8	Indeno(1,2,3-Cd)Pyrene	52	NA	180	34900	--	ug/kg
BW42-018	1	1.8	Lead	20	24.97	42.9	1000	97.7	mg/kg
BW42-018	1	1.8	Pyrene	66	NA	650	22100000	--	ug/kg
BW42-018	1	1.8	Vanadium	100	88.49	163	7150	292	mg/kg
BW42-019	15.2	16	1,4-Dichlorobenzene	280	NA	2177.4	840000	--	ug/kg
BW42-019	15.2	16	Acetone	5600	NA	7130.5	1.02E+08	211000	ug/kg
BW42-020	0	0.5	2-Methylnaphthalene	37	NA	98	20400000	--	ug/kg
BW42-020	0	0.5	Acenaphthene	47	NA	65	40800000	--	ug/kg
BW42-020	0	0.5	Anthracene	68	NA	80	2.04E+08	--	ug/kg
BW42-020	0	0.5	Benzo(a)Anthracene	41	NA	230	34900	--	ug/kg
BW42-020	0	0.5	Benzo(a)Pyrene	54	NA	240	3490	--	ug/kg
BW42-020	0	0.5	Benzo(b)Fluoranthene	66	NA	170	34900	--	ug/kg
BW42-020	0	0.5	Benzo(k)Fluoranthene	71	NA	220	349000	--	ug/kg
BW42-020	0	0.5	Chrysene	36	NA	270	3490000	--	ug/kg
BW42-020	0	0.5	Fluoranthene	41	NA	490	27200000	--	ug/kg
BW42-020	0	0.5	Indeno(1,2,3-Cd)Pyrene	46	NA	150	34900	--	ug/kg
BW42-020	0	0.5	Pyrene	59	NA	460	22100000	--	ug/kg
BW42-022	0.5	2.5	Lead	0.2	24.97	32	1000	--	mg/kg
BW42-023	2.5	4.5	U-233/234	0.276	2.64	5.99	300	--	pCi/g

SBD – Soil Begin Depth
 SED – Soil End Depth
 SD – Standard Deviation

since been covered with approximately 6 inches of topsoil. This contamination will be further evaluated in the ecological portion of the Comprehensive Risk Assessment.

In addition, the concentration of vinyl chloride at location BW42-017 exceeded the proposed ecological receptor AL at a depth of 8.5 to 10.5 feet. Vinyl chloride was detected at 568 micrograms per kilogram (ug/kg), and the proposed ecological receptor AL is 431 ug/kg. The ecological risk is low because the exceedance occurs at a depth greater than 6 feet. Also, the vinyl chloride may be present due to the degradation of tetrachloroethene and trichloroethene. As degradation continues, the residual vinyl chloride will also degrade. Therefore, remediation is not warranted.

2.6 Sums of Ratios and Area of Concern

RFCA sums of ratios (SORs) were calculated for the IHSS Group 300-1 sampling locations based on the WRW ALs. SOR calculations were based on accelerated action analytical data for the radionuclides of concern. Plutonium-239/240 concentrations are derived from the americium-241 concentrations [i.e., Pu-239/240 = (Am-241 gamma spectroscopy concentration x 8.08) + 3.24]. Table 4 presents the SORs for surface and subsurface soil. SORs were calculated for all locations with analytical results greater than background means plus two standard deviations or RLs. All SORs for radionuclides in surface and subsurface soil are less than 1. SORs based on pre-accelerated action and accelerated action analytical data are presented in Section 9.0.

The Area of Concern (AOC), shown on Figure 5, was determined based on analytical results presented in Section 2.0 (i.e., pre-accelerated action and accelerated action data). The AOC is defined as the area with any contaminant concentration greater than background mean plus two standard deviations or RL. Data from sample locations that are no longer representative were excluded.

Table 4
RFCA Sums of Ratios Based on Radionuclide Concentrations

Location	Surface Soil SOR	Subsurface Soil SOR
BV42-000	0.025	NA
BV42-001	0.02	0.0125
BV42-002	0	0.0125
BV42-003	0.02125	0.10063
BV42-004	NA	NA
BV42-005	NA	NA
BW42-000	0.0125	0.0375
BW42-001	NA	0
BW42-002	0	NA
BW42-003	0.05	NA
BW42-004	0.025	NA
BW42-005	0.025	NA
BW42-006	0.0375	NA
BW42-007	NA	0.025
BW42-008	0	0.035
BW42-009	0	0.0375
BW42-010	0.02625	0.0375
BW42-011	0.011	0.01875
BW42-012	0.0225	0.03875
BW42-013	NA	0.0625
BW42-014	NA	0.16313
BW42-015	0.02125	0.025
BW42-017	NA	0.13125
BW42-018	NA	NA
BW42-019	NA	NA
BW42-020	NA	NA
BW42-021	NA	NA
BW42-022	NA	NA
BW42-023	NA	0.01997

NA – Not applicable. Contaminants may be present but at concentrations below background means plus two standard deviations or RLs.

3.0 ACCELERATED ACTION

Accelerated action objectives were developed and described in ER RSOP Notification #02-10 (DOE 2002b). ER RSOP remedial action objectives (RAOs) include the following:

1. Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
2. Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
3. Minimize the spread of contaminants during implementation of accelerated actions.

The original accelerated action remediation goals for IHSS Group 300-1 that were included in the ER RSOP Notification were superceded by the following:

- Remove the three concrete slabs and the caissons/footers associated with Building 335 within 3 feet of current grade, and recycle in accordance with the RSOP for Recycling Concrete (DOE 1999), or dispose at an appropriate facility, pending waste characterization;
- Grout and remove building drains, remove other structures and piping within 3 feet of current grade, and dispose at an appropriate facility, pending waste characterization;
- Remove soil with nonradionuclide or uranium contaminant concentrations greater than proposed RFCA WRW ALs to a depth of 6 inches. If uranium is present at 6 inches, remove one additional equivalent interval of soil for As Low As Reasonably Achievable (ALARA) requirements.
- Remove soil with plutonium activity greater than the proposed RFCA WRW AL to a depth of 3 feet or to less than 50 pCi/g, whichever comes first. If concentrations are greater than 3 nCi/g between 3 and 6 feet, characterize and remediate pursuant to RFCA Attachment 5. If plutonium is present below 6 feet, conduct a soil risk screen.
- Remove soil with contaminant concentrations less than proposed RFCA WRW ALs if indicated through the stewardship and ALARA evaluations and the consultative process;
- Consult with the regulatory agencies if contaminant concentrations are greater than the ecological receptor ALs; and
- Collect confirmation samples in accordance with the IASAP (DOE 2001a).

Accelerated action activities were conducted between August 27, 2002, and January 24, 2003. Start and end dates of significant activities are listed in Table 5. Photographs of site activities are provided in Appendix A.

**Table 5
Dates of Accelerated Action Activities**

Activity	Start Date	End Date	Duration
Characterization Sampling	August 27, 2002	December 13, 2002	5 Days
Removal Activities	December 10, 2002	December 12, 2002	3 Days
Backfill Excavations	December 12, 2002	December 17, 2002	4 Days
Reseed	January 24, 2003	January 24, 2003	1 Day

3.1 Removal Activities

All accelerated action objectives were achieved. Removal activities are described below. Documentation regarding approval to regrade is provided in an ER Regulatory Contact Record dated December 17, 2002 (refer to Appendix B).

Building Slabs, Sump, and Underground Utilities

The Building 335 slab was removed, as well as the foundation walls, two exterior equipment slabs, a corrugated-metal sump, and electric lines. An excavator was used to remove the items. All items were surveyed and, based on survey results, hauled to the concrete recycle pile on the Building 850 slab. Water in the sump was pumped into two 55-gallon drums, sampled, and then disposed into a storm drain.

Drain Lines

The numerous floor drains in Building 335 were not connected to the sanitary or storm sewer systems. These drains were grouted prior to building decommissioning. The lines connected to the floor drains were shallow (less than 3 feet below present ground surface), and all were removed with the building slab. Line sections were cut up and placed in waste containers as hazardous waste.

4.0 CONFIRMATION SAMPLING

Because results from characterization sampling indicated that contaminant concentrations were less than the proposed RFCA WRW ALs, except for one arsenic result (Section 2.5), no soil was removed, and confirmation sampling was not conducted.

5.0 RCRA UNIT CLOSURE

IHSS Group 300-1 does not contain any RCRA units.

6.0 SUBSURFACE SOIL RISK SCREEN

The subsurface soil risk screen follows the steps identified on Figure 3 in Attachment 5 of the proposed RFCA Modification (DOE et al 2002).

Screen 1 – Are the chemical of concern (COC) concentrations below RFCA Table 3 ALs for the WRW?

As shown in Table 3, all COC concentrations are below the proposed WRW ALs, except for one subsurface soil arsenic concentration. The arsenic concentration at location

42

BV42-003, at 0.5 to 2.5 feet below grade, was 29.3 mg/kg, and the proposed WRW AL is 22.2 mg/kg. The detected concentration is within the background range observed at RFETS. Refer to ER Regulatory Contact Record dated December 17, 2002, included in Appendix B.

Screen 2 – Is there a potential for subsurface soil to become surface soil (landslides and erosion areas identified on Figure 1 of the proposed RFCA Modification)?

No. IHSS Group 300-1 is not located in an area susceptible to landslides or high erosion (Figure 1; DOE et al 2002).

Screen 3 – Does subsurface soil contamination for radionuclides exceed criteria defined in Section 5.3 and Attachment 14?

No. As shown in Table 3, radionuclide concentrations are well below the soil ALs. In addition, there are no Original Process Waste Lines (OPWL) located within IHSS Group 300-1.

Screen 4 - Is there an environmental pathway and sufficient quantity of COCs that would cause an exceedance of surface water standards?

Migration via erosion and groundwater are the two possible pathways whereby surface water could become contaminated by IHSS Group 300-1. A well was installed at sampling location BW42-017 to evaluate impacts of soil VOCs on groundwater in this location. Contaminant concentrations in groundwater at Well 33502 (located within IHSS 300-134 (N); Figure 2) are less than the Groundwater Tier I ALs, except for the vinyl chloride concentration. The vinyl chloride concentration is 350 ug/L, and the Groundwater Tier I AL is 200 ug/L. Groundwater flow direction appears to be to the north or northeast towards North Walnut Creek, which is located approximately 2,400 feet from the IHSS Group. Well P114889, located approximately 100 feet to the northeast (Figure 2), was sampled in April 2002. Groundwater in the well contained some of the same chlorinated solvents found in soil at this IHSS Group, however, there were no exceedances of RFCA Groundwater Tier I ALs at this well.

The groundwater contamination at IHSS Group 300-1 is considered part of the IA Plume. Further groundwater evaluation will be part of the groundwater plume remedial decision and future sitewide evaluation.

Screen 5 – Are COC concentrations below RFCA Table 3 Action Levels for ecological receptors (DOE et al 2002)?

The concentration of vinyl chloride at location BW42-017 exceeded the proposed ecological receptor AL at a depth of 8.5 to 10.5 feet. Vinyl chloride was detected at 568 micrograms per kilogram (ug/kg), and the proposed ecological receptor AL is 431 ug/kg. However, the AL is based on Preliminary Remediation Goal calculations for the Preble's meadow jumping mouse, and this mammal is unlikely to burrow to a depth of 8.5 feet. Also, the residual vinyl chloride will degrade, thereby further reducing the exposure potential. This exceedance will be further evaluated in the ecological portion of the Comprehensive Risk Assessment.

7.0 STEWARDSHIP ANALYSIS

The IHSS Group 300-1 stewardship evaluation was conducted through ongoing consultation with the regulatory agencies. Frequent informal project updates, e-mails, and telephone and personal contact occurred throughout the project. Documentation associated with these contacts is provided in Appendix B.

7.1 Current Site Conditions

As discussed in Section 3.1, accelerated actions at IHSS Group 300-1 consisted of excavation of three slabs, foundation walls, one sump, and drain lines. Based on the accelerated action, the following conditions exist at IHSS Group 300-1:

- Potential sources of contamination that existed in IHSS Group 300-1 (that is, the slabs, sump, and drain lines) were removed.
- Surface and subsurface contaminant concentrations in soil are greater than background means plus two standard deviations or RLs throughout the IHSS Group.
- Contaminant concentrations are below RFCA ALs, except for one elevated arsenic concentration at location BV42-003 (between 0.5 and 2.5 feet). The concentration was 29.3 mg/kg, and the proposed WRW AL is 22.2 mg/kg. The detected concentration is within the range of background concentrations historically observed at the Site.
- The site was covered with approximately 6 inches of topsoil and revegetated.

7.2 Near-Term Management Recommendations

Because residual contaminant concentrations are low and potential contaminant sources were removed, mitigated, or found not to have existed, no specific near-term management techniques are required. Potential contaminant sources and pathways have been removed. Contaminant concentrations in soil remaining at IHSS Group 300-1 do not trigger any further accelerated action. Near-term recommendations include the following:

- Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process.
- Fencing and signs restricting access will be posted to minimize disturbance to newly revegetated areas.
- Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls.

7.3 Long-Term Stewardship Recommendations

Based on remaining environmental conditions at IHSS Group 300-1, no specific long-term stewardship activities are recommended beyond the generally applicable Site requirements. These requirements may be imposed on this area in the future. Institutional controls that will be used as appropriate for this area include the following:

- Prohibitions on construction of buildings in the IA;
- Restrictions on excavation or other soil disturbance; and
- Prohibitions on groundwater pumping in the area of IHSS Group 300-1.

No specific engineered controls or environmental monitoring are recommended as a result of the conditions remaining at IHSS Group 300-1. Likewise, no specific institutional or physical controls, such as fences, are recommended as a result of the conditions remaining at IHSS Group 300-1.

This closeout report and associated documentation will be retained as part of the Rocky Flats Administrative Record file. The specific long-term stewardship recommendations will also be summarized in the Rocky Flats Long-Term Stewardship Strategy.

IHSS Group 300-1 will be evaluated as part of the Sitewide CRA, which is part of the RFI/RI and Corrective Measures Study/Feasibility Study (CMS/FS) that will be conducted for the Site. The need for and extent of any more general, long-term stewardship activities will also be evaluated in the RFI/RI and CMS/FS and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision (CAD/ROD), any post-closure Colorado Hazardous Waste Act (CHWA) permit that may be required, and any post-RFCA agreement.

8.0 DEVIATIONS FROM THE ER RSOP

Removal methods and objectives did not deviate from ER RSOP Notification #02-10. However, the proposed modifications to RFCA Attachment 5, including the proposed ALs, were used to evaluate objectives and the need for potential further remediation (Section 3.0 and DOE et al 2002).

9.0 POST-REMEDICATION CONDITIONS

The Building 335 slab, equipment slabs, and foundation walls were removed, as well as a sump, drain lines, and electric lines. Sampling results from the soil beneath the items removed indicate that all contaminant concentrations are less than the proposed RFCA WRW ALs. Sampling results from other locations in the IHSSs also indicate that all contaminant concentrations are less than the proposed RFCA WRW ALs, except for one subsurface soil location with an elevated arsenic concentration. The arsenic concentration at location BV42-003 (between 0.5 and 2.5 feet) was 29.3 mg/kg, and the AL is 22.2 mg/kg. The detected concentration is within the range of background concentrations historically observed at the Site. In addition, two concentrations exceeded proposed ecological receptor ALs (refer to Section 2.5). One surface soil lead concentration at Location BW42-007 was detected at 202 mg/kg, and the proposed ecological receptor AL is 97.7 mg/kg. One subsurface soil vinyl chloride concentration at Location BW42-017 was detected at 568 micrograms per kilogram (ug/kg), and the proposed ecological receptor AL is 431 ug/kg.

The presence of residual contamination was determined based on pre-accelerated action and accelerated action characterization. Pre-accelerated action characterization indicates no contaminant concentrations in surface or subsurface soil greater than the proposed RFCA WRW ALs. Accelerated action characterization indicates no contaminant concentrations in surface or subsurface soil greater than the proposed RFCA WRW ALs, except for one subsurface soil location with an elevated arsenic concentration. Also, concentrations in soil were not greater than the ecological receptor ALs, except for one surface soil location with an elevated lead concentration and one subsurface soil location with an elevated vinyl chloride concentration. Residual surface soil concentrations greater than background means plus two standard deviations or RLs at IHSS Group 300-1 are shown on Figure 6. Residual subsurface soil concentrations greater than background means plus two standard deviations or RLs are shown on Figure 4. No subsurface soil pre-accelerated action data exist.

SORs, based on the proposed RFCA WRW ALs for radionuclides and pre-accelerated action and accelerated action data, are listed in Table 6 and shown on Figure 7. Plutonium-239/240 concentrations are derived from the americium-241 concentrations [i.e., $\text{Pu-239/240} = (\text{Am-241 gamma spectroscopy concentration} \times 8.08) + 3.24$]. No subsurface soil pre-accelerated action data exist. All SORs for radionuclides in surface and subsurface soil were less than 1.

10.0 WASTE MANAGEMENT

Waste from the IHSS Group 300-1 accelerated action consisted of concrete, a corrugated-metal sump, drain lines, and electric lines. All waste was hauled to the concrete recycling pile on the Building 850 slab, except the drain lines. These lines were cut up and placed in waste containers as hazardous waste. Water in the sump was pumped into two 55-gallon drums, sampled, and then disposed into a storm drain. Approximately 171 cubic meters of waste were hauled to the recycling pile.

11.0 SITE RECLAMATION

Approximately 170 cubic yards of topsoil was brought to the project site and spread over the area. The area was subsequently graded and seeded. A mesic seed mix was spread over the site using broadcast seeding methods. Hydromulch was applied to conserve moisture and prevent erosion.

Table 6
Sums of Ratios Based on Pre-Accelerated and Accelerated Action Radionuclide Concentrations

Location	Surface Soil SOR	Subsurface Soil SOR
SED05595	NA	NA
SS301693	0.108	NA
SS302093	0.077	NA
SS302193	0.045	NA
SS302293	0.031	NA
SS302393	0.030	NA
BV42-000	0.025	NA
BV42-001	0.02	0.025
BV42-002	0	0.0125
BV42-003	0.02125	0.10063
BV42-004	NA	NA
BV42-005	NA	NA
BW42-000	0.0125	0.0375
BW42-001	NA	0
BW42-002	0	NA
BW42-003	0.05	NA
BW42-004	0.025	NA
BW42-005	0.025	NA
BW42-006	0.0375	NA
BW42-007	NA	0.025
BW42-008	0	0.035
BW42-009	0	0.0375
BW42-010	0.02625	0.0375
BW42-011	0.011	0.01875
BW42-012	0.0225	0.03875
BW42-013	NA	0.0625
BW42-014	NA	0.16313
BW42-015	0.02125	0.025
BW42-017	NA	0.13125
BW42-018	NA	NA
BW42-019	NA	NA
BW42-020	NA	NA
BW42-021	NA	NA
BW42-022	NA	NA
BW42-023	NA	0.01997

NA = Not applicable.

Contaminants may be present but at concentrations below background means plus two standard deviations or RLs.

48

12.0 NO LONGER REPRESENTATIVE SAMPLING LOCATIONS

There are no sampling locations that are NLR. The soil surface associated with each location was disturbed by slab and drainline removal activities, placement of topsoil, and regrading; however, the subsurface component of each location was not impacted. Therefore, data from the sampling locations are representative.

13.0 DATA QUALITY ASSESSMENT

The Data Quality Objectives (DQOs) for this project are described in the IASAP (DOE 2002). All DQOs for this project were achieved based on the following:

- Regulatory agency approved sampling program design (IASAP Addendum 02-01 [DOE 2001b]);
- Collection of samples in accordance with the sampling design;
- Results of the Data Quality Assessment as described in the following sections.

13.1 Data Quality Assessment Process

The DQA process ensures that the type, quantity and quality of environmental data used in decision making are defensible, and is based on the following guidance and requirements:

- EPA QA/G-4, 1994a, Guidance for the Data Quality Objective Process;
- EPA QA/G-9, 1998, Guidance for the Data Quality Assessment Process; Practical Methods for Data Analysis; and
- DOE Order 414.1A, 1999, Quality Assurance.

Verification and validation (V&V) of the data are the primary components of the DQA. The final data are compared with original project DQOs and evaluated with respect to project decisions; uncertainty within the decisions; and quality criteria required for the data, specifically precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS). Validation criteria are consistent with the following RFETS-specific documents and industry guidelines:

- EPA 540/R-94/012, 1994b, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review;
- EPA 540/R-94/013, 1994c, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review; and
- Kaiser-Hill Company, L.L.C.(K-H) V&V Guidelines;
- General Guidelines for Data Verification and Validation, DA-GR01-v1, 1997a.

- V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v1, 1998.
- V&V Guidelines for Volatile Organics, DA-SS01-v1, 1997b.
- V&V Guidelines for Semivolatile Organics, DA-SS02-v1, 1997c.
- V&V Guidelines for Metals, DA-SS05-v1, 1997d.
- Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5.

This report will be submitted to the Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA) Administrative Record (AR) for permanent storage 30 days after being provided to CDPHE and/or U.S. EPA.

13.2 Verification and Validation of Results

Verification ensures that data produced and used by the project are documented and traceable in accordance with quality requirements. Validation consists of a technical review of all data that directly support the project decisions so that any limitations of the data relative to project goals are delineated and the associated data are qualified accordingly. The V&V process defines the criteria that constitute data quality, namely PARCCS parameters. Data traceability and archival are also addressed. V&V criteria include the following:

- Chain-of-custody;
- Preservation and hold-times;
- Instrument calibrations;
- Preparation blanks;
- Interference check samples (metals);
- Matrix spikes/matrix spike duplicates (MS/MSD);
- Laboratory control samples (LCS);
- Field duplicate measurements;
- Chemical yield (radiochemistry);
- Required quantitation limits/minimum detectable activities (sensitivity of chemical and radiochemical measurements, respectively); and
- Sample analysis and preparation methods.

Evaluation of V&V criteria ensures that PARCCS parameters are satisfactory (i.e., within tolerances acceptable to the project). Satisfactory V&V of laboratory quality controls are captured through application of validation “flags” or qualifiers to individual records.

Raw hardcopy data (e.g., individual analytical data packages) are currently filed by RIN and are maintained by Kaiser-Hill Analytical Services Division; older hardcopies may reside in the Federal Center in Lakewood, Colorado. Electronic data are stored in the RFETS Soil and Water Database.

Both real and QC data, as of June 4, 2003, are included on the enclosed CDs.

13.2.1 Accuracy

The following measures of accuracy were evaluated:

- Laboratory Control Sample Evaluation;
- Surrogate Evaluation;
- Field Blanks; and
- Sample Matrix Spike Evaluation.

Results are compared to method requirements and project goals. The results of these comparisons are summarized for RFCA COCs where the result could impact project decisions. Particular attention is paid to those values near ALs when quality control (QC) results could indicate unacceptable levels of uncertainty for decision-making purposes.

Laboratory Control Sample Evaluation

The frequency of Laboratory Control Sample (LCS) measurements, relative to each laboratory batch, is given in Table 7. LCS frequency was adequate based on at least one LCS per batch. The minimum and maximum LCS results are also tabulated, by chemical, for the entire project. While not all LCS results are within tolerances, project decisions based on AL exceedances (i.e., arsenic) were not affected. Any qualifications of results due to LCS performance exceeding upper or lower tolerance limits are captured in the V&V flags, described in the Completeness Section.

Surrogate Evaluation

The frequency of surrogate measurements, relative to each laboratory batch, is given in Table 8. Surrogate frequency was adequate based on at least one set per sample. The minimum and maximum surrogate results are also tabulated, by chemical, for the entire project. Any qualifications of results due to surrogate results are captured in the V&V flags, described in the Completeness Section.

Field Blank Evaluation

Results of the field blank analyses are given in Table 9. Detectable amounts of contaminants within the blanks, which could indicate possible cross-contamination of samples, are evaluated if the same contaminants are detected in the associated real samples. Blank contamination was not detected for any contaminants that exceeded ALs

within the data set of interest (e.g., arsenic), therefore no significant blank contamination, or false positives, are indicated.

Table 7
Laboratory Control Sample Evaluation

CAS No.	Analyte	Result Type	Minimum	Maximum	Number of Laboratory Samples	Number of Laboratory Batches	Unit	Test Method
71-55-6	1,1,1-TRICHLOROETHANE	LC	88	113	3	3	%REC	SW-846 8260
79-34-5	1,1,2,2-TETRACHLOROETHANE	LC	86	93	3	3	%REC	SW-846 8260
79-00-5	1,1,2-TRICHLOROETHANE	LC	84	90	3	3	%REC	SW-846 8260
75-34-3	1,1-DICHLOROETHANE	LC	85	105	3	3	%REC	SW-846 8260
75-35-4	1,1-DICHLOROETHENE	LC	89	123	11	11	%REC	SW-846 8260
120-82-1	1,2,4-TRICHLOROBENZENE	LC	80	90	3	3	%REC	SW-846 8260
120-82-1	1,2,4-TRICHLOROBENZENE	LC	74	76	2	2	%REC	SW-846 8270
120-82-1	1,2,4-TRICHLOROBENZENE	LC	55	67	6	6	%REC	SW-846 8270B
107-06-2	1,2-DICHLOROETHANE	LC	86	101	3	3	%REC	SW-846 8260
78-87-5	1,2-DICHLOROPROPANE	LC	83	93	3	3	%REC	SW-846 8260
39638-32-9	2,2'-OXYBIS(1-CHLOROPROPANE)	LC	73	80	2	2	%REC	SW-846 8270
95-95-4	2,4,5-TRICHLOROPHENOL	LC	75	85	2	2	%REC	SW-846 8270
88-06-2	2,4,6-TRICHLOROPHENOL	LC	78	86	2	2	%REC	SW-846 8270
120-83-2	2,4-DICHLOROPHENOL	LC	80	80	2	2	%REC	SW-846 8270
105-67-9	2,4-DIMETHYLPHENOL	LC	77	87	2	2	%REC	SW-846 8270
51-28-5	2,4-DINITROPHENOL	LC	73	80	2	2	%REC	SW-846 8270
121-84-2	2,4-DINITROTOLUENE	LC	84	88	2	2	%REC	SW-846 8270
121-84-2	2,4-DINITROTOLUENE	LC	53	86	6	6	%REC	SW-846 8270B
606-20-2	2,6-DINITROTOLUENE	LC	82	90	2	2	%REC	SW-846 8270
78-93-3	2-BUTANONE	LC	66	82	3	3	%REC	SW-846 8260
91-58-7	2-CHLORONAPHTHALENE	LC	77	80	2	2	%REC	SW-846 8270
95-57-8	2-CHLOROPHENOL	LC	79	82	2	2	%REC	SW-846 8270
95-57-8	2-CHLOROPHENOL	LC	59	88	6	6	%REC	SW-846 8270B
91-57-6	2-METHYLNAPHTHALENE	LC	74	76	2	2	%REC	SW-846 8270
95-48-7	2-METHYLPHENOL	LC	77	80	2	2	%REC	SW-846 8270
88-74-4	2-NITROANILINE	LC	77	85	2	2	%REC	SW-846 8270
91-94-1	3,3'-DICHLOROBENZIDINE	LC	55	63	2	2	%REC	SW-846 8270
534-52-1	4,6-DINITRO-O-CRESOL	LC	74	75	2	2	%REC	SW-846 8270
106-47-8	4-CHLOROANILINE	LC	31	49	2	2	%REC	SW-846 8270
108-10-1	4-METHYL-2-PENTANONE	LC	89	89	3	3	%REC	SW-846 8260
106-44-5	4-METHYLPHENOL	LC	79	82	2	2	%REC	SW-846 8270
83-32-9	ACENAPHTHENE	LC	76	81	2	2	%REC	SW-846 8270
83-32-9	ACENAPHTHENE	LC	57	77	6	6	%REC	SW-846 8270B
67-64-1	ACETONE	LC	22	50	3	3	%REC	SW-846 8260
7429-90-5	ALUMINUM	LC	97	97	1	1	%REC	SW-846 6010
120-12-7	ANTHRACENE	LC	76	76	2	2	%REC	SW-846 8270
7440-36-0	ANTIMONY	LC	94	94	1	1	%REC	SW-846 6010
7440-38-2	ARSENIC	LC	99	99	1	1	%REC	SW-846 6010
7440-39-3	BARIUM	LC	98	98	1	1	%REC	SW-846 6010
100-51-6	BENZYL ALCOHOL	LC	81	83	2	2	%REC	SW-846 8270
71-42-9	BENZENE	LC	91	115	11	11	%REC	SW-846 8260

Closeout Report for IHSS Group 300-1

CAS No.	Analyte	Result Type	Minimum	Maximum	Number of Laboratory Samples	Number of Laboratory Batches	Unit	Test Method
56-55-3	BENZO(A)ANTHRACENE	LC	76	80	2	2	%REC	SW-846 8270
50-32-8	BENZO(A)PYRENE	LC	75	82	2	2	%REC	SW-846 8270
205-99-2	BENZO(B)FLUORANTHENE	LC	72	79	2	2	%REC	SW-846 8270
207-08-9	BENZO(K)FLUORANTHENE	LC	80	82	2	2	%REC	SW-846 8270
65-85-0	BENZOIC ACID	LC	55	63	2	2	%REC	SW-846 8270
7440-41-7	BERYLLIUM	LC	98	98	1	1	%REC	SW-846 6010
111-44-4	BIS(2-CHLOROETHYL) ETHER	LC	73	77	2	2	%REC	SW-846 8270
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	LC	72	83	2	2	%REC	SW-846 8270
75-27-4	BROMODICHLOROMETHANE	LC	86	93	3	3	%REC	SW-846 8260
75-25-2	BROMOFORM	LC	87	91	3	3	%REC	SW-846 8260
74-83-9	BROMOMETHANE	LC	76	102	3	3	%REC	SW-846 8260
85-68-7	BUTYLBENZYLPHthalATE	LC	74	84	2	2	%REC	SW-846 8270
7440-43-9	CADMIUM	LC	96	96	1	1	%REC	SW-846 6010
75-15-0	CARBON DISULFIDE	LC	81	114	3	3	%REC	SW-846 8260
108-90-7	CHLORO BENZENE	LC	82	101	11	11	%REC	SW-846 8260
75-00-3	CHLOROETHANE	LC	92	127	3	3	%REC	SW-846 8260
67-66-3	CHLOROFORM	LC	88	106	3	3	%REC	SW-846 8260
74-87-3	CHLOROMETHANE	LC	74	130	3	3	%REC	SW-846 8260
218-01-9	CHRYSENE	LC	75	80	2	2	%REC	SW-846 8270
10061-01-5	CIS-1,3-DICHLOROPROPENE	LC	81	91	3	3	%REC	SW-846 8260
7440-48-4	COBALT	LC	98	98	1	1	%REC	SW-846 6010
7440-48-8	COPPER	LC	107	107	1	1	%REC	SW-846 6010
53-70-3	DIBENZ(A,H)ANTHRACENE	LC	74	79	2	2	%REC	SW-846 8270
132-64-9	DIBENZOFURAN	LC	77	79	2	2	%REC	SW-846 8270
124-48-1	DIBROMOCHLOROMETHANE	LC	87	91	3	3	%REC	SW-846 8260
84-66-2	DIETHYL PHTHALATE	LC	80	85	2	2	%REC	SW-846 8270
131-11-3	DIMETHYL PHTHALATE	LC	78	83	2	2	%REC	SW-846 8270
84-74-2	DI-N-BUTYL PHTHALATE	LC	79	83	2	2	%REC	SW-846 8270
117-84-0	DI-N-OCTYL PHTHALATE	LC	70	81	2	2	%REC	SW-846 8270
100-41-4	ETHYLBENZENE	LC	88	97	3	3	%REC	SW-846 8260
206-44-0	FLUORANTHENE	LC	75	77	2	2	%REC	SW-846 8270
86-73-7	FLUORENE	LC	77	83	2	2	%REC	SW-846 8270
118-74-1	HEXACHLORO BENZENE	LC	79	84	2	2	%REC	SW-846 8270
87-68-3	HEXACHLORO BUTADIENE	LC	78	89	3	3	%REC	SW-846 8260
87-68-3	HEXACHLORO BUTADIENE	LC	73	75	2	2	%REC	SW-846 8270
77-47-4	HEXACHLOROCYCLOPENTADIENE	LC	58	70	2	2	%REC	SW-846 8270
67-72-1	HEXACHLOROETHANE	LC	74	81	2	2	%REC	SW-846 8270
193-39-5	INDENO(1,2,3-CD)PYRENE	LC	75	79	2	2	%REC	SW-846 8270
7439-89-6	IRON	LC	98	98	1	1	%REC	SW-846 6010
78-59-1	ISOPHORONE	LC	102	103	2	2	%REC	SW-846 8270
7439-92-1	LEAD	LC	99	99	1	1	%REC	SW-846 6010
7439-93-2	LITHIUM	LC	100	100	1	1	%REC	SW-846 6010
7439-96-5	MANGANESE	LC	99	99	1	1	%REC	SW-846 6010
7439-97-6	MERCURY	LC	102	102	1	1	%REC	SW-846 6010

54

Closeout Report for IHSS Group 300-1

CAS No.	Analyte	Result Type	Minimum	Maximum	Number of Laboratory Samples	Number of Laboratory Batches	Unit	Test Method
75-09-2	METHYLENE CHLORIDE	LC	87	107	3	3	%REC	SW-846 8260
7439-98-7	MOLYBDENUM	LC	93	93	1	1	%REC	SW-846 6010
91-20-3	NAPHTHALENE	LC	84	91	3	3	%REC	SW-846 8260
91-20-3	NAPHTHALENE	LC	73	76	2	2	%REC	SW-846 8270
7440-02-0	NICKEL	LC	97	97	1	1	%REC	SW-846 6010
98-95-3	NITROBENZENE	LC	77	83	2	2	%REC	SW-846 8270
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	LC	76	87	2	2	%REC	SW-846 8270
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	LC	53	79	6	6	%REC	SW-846 8270B
86-30-6	N-NITROSODIPHENYLAMINE	LC	90	93	2	2	%REC	SW-846 8270
95-50-1	O-DICHLOROBENZENE	LC	86	94	3	3	%REC	SW-846 8260
106-46-7	P-DICHLOROBENZENE	LC	86	96	3	3	%REC	SW-846 8260
106-46-7	P-DICHLOROBENZENE	LC	52	68	6	6	%REC	SW-846 8270B
87-86-5	PENTACHLOROPHENOL	LC	69	77	2	2	%REC	SW-846 8270
87-86-5	PENTACHLOROPHENOL	LC	54	76	6	6	%REC	SW-846 8270B
108-95-2	PHENOL	LC	82	83	2	2	%REC	SW-846 8270
108-95-2	PHENOL	LC	58	88	6	6	%REC	SW-846 8270B
100-02-7	P-NITROPHENOL	LC	85	91	2	2	%REC	SW-846 8270
100-02-7	P-NITROPHENOL	LC	38	92	6	6	%REC	SW-846 8270B
129-00-0	PYRENE	LC	69	74	2	2	%REC	SW-846 8270
129-00-0	PYRENE	LC	55	75	6	6	%REC	SW-846 8270B
7440-22-4	SILVER	LC	104	104	1	1	%REC	SW-846 6010
7440-24-6	STRONTIUM	LC	98	98	1	1	%REC	SW-846 6010
100-42-5	STYRENE	LC	86	94	3	3	%REC	SW-846 8260
127-18-4	TETRACHLOROETHENE	LC	83	97	3	3	%REC	SW-846 8260
7440-31-5	TIN	LC	97	97	1	1	%REC	SW-846 6010
108-88-3	TOLUENE	LC	82	101	11	11	%REC	SW-846 8260
10061-02-6	TRANS-1,3-DICHLOROPROPENE	LC	86	96	3	3	%REC	SW-846 8260
79-01-6	TRICHLOROETHENE	LC	79	111	11	11	%REC	SW-846 8260
7440-62-2	VANADIUM	LC	99	99	1	1	%REC	SW-846 6010
75-01-4	VINYL CHLORIDE	LC	86	137	3	3	%REC	SW-846 8260
1330-20-7	XYLENES (TOTAL)	LC	88	97	3	3	%REC	SW-846 8260
7440-66-6	ZINC	LC	98	98	1	1	%REC	SW-846 6010

Table 8
Surrogate Recovery Summary

VOC Surrogate Recoveries				
Number of Samples	Analyte	Minimum	Maximum	Unit Code
94	1,2-DICHLOROETHANE-D4	17.5	120.7	%REC
94	4-BROMOFLUOROBENZENE	16.29	146.6	%REC
94	TOLUENE-D8	16.7	124.1	%REC
SVOC SURROGATE RECOVERIES				
Number of Samples	Analyte	Minimum	Maximum	Unit Code
38	2-FLUOROBIPHENYL	50	88	%REC
38	2-FLUOROPHENOL	47	82	%REC
38	NITROBENZENE-D5	48	89	%REC
38	TERPHENYL-D14	46	98	%REC

Table 9
Field Blank Summary

Sample QC Code	Test Method Name	Analyte	Maximum Detected Value	Unit
RB	SW8260B	2-Butanone	5	ug/L
FB	SW8260B	Toluene	1	ug/L
RB	GAMMA	Uranium-235	0.3	pCi/g
RB	GAMMA	Uranium-238	5	pCi/g
Field Blanks (Trip, Rinse, Field) results greater than detection limits (not *U* Qualified)				

Sample Matrix Spike Evaluation

The frequency of MS measurements, relative to each laboratory batch, was adequate based on at least one MS per batch. The minimum and maximum of MS results are summarized by chemical, for the entire project in Table 10. Any qualifications of results due to MS results exceeding upper or lower tolerance limits are captured in the V&V flags, described in the Completeness Section.

Table 10
Sample Matrix Spike Evaluation

CAS No.	Analyte	Result Type	Minimum	Maximum	Number of Laboratory Samples	Number of Laboratory Batches	Unit	Test Method
71-55-6	1,1,1-TRICHLOROETHANE	MS	15	85	2	2	%REC	SW-846 8260
79-34-5	1,1,2,2-TETRACHLOROETHANE	MS	17	103	2	2	%REC	SW-846 8260
79-00-5	1,1,2-TRICHLOROETHANE	MS	59	95	2	2	%REC	SW-846 8260
75-34-3	1,1-DICHLOROETHANE	MS	18	91	2	2	%REC	SW-846 8260
75-35-4	1,1-DICHLOROETHENE	MS	16	114	6	6	%REC	SW-846 8260
120-82-1	1,2,4-TRICHLOROBENZENE	MS	14	68	2	2	%REC	SW-846 8260
120-82-1	1,2,4-TRICHLOROBENZENE	MS	76	78	2	2	%REC	SW-846 8270
120-82-1	1,2,4-TRICHLOROBENZENE	MS	50	61	3	3	%REC	SW-846 8270B
107-06-2	1,2-DICHLOROETHANE	MS	18	93	2	2	%REC	SW-846 8260
78-87-5	1,2-DICHLOROPROPANE	MS	18	91	2	2	%REC	SW-846 8260
638-32-9	2,2'-OXYBIS(1-CHLOROPROPANE)	MS	73	75	2	2	%REC	SW-846 8270

56

Closeout Report for IHSS Group 300-1

CAS No.	Analyte	Result Type	Minimum	Maximum	Number of Laboratory Samples	Number of Laboratory Batches	Unit	Test Method
95-95-4	2,4,5-TRICHLOROPHENOL	MS	80	86	2	2	%REC	SW-846 8270
88-06-2	2,4,6-TRICHLOROPHENOL	MS	78	85	2	2	%REC	SW-846 8270
120-83-2	2,4-DICHLOROPHENOL	MS	82	82	2	2	%REC	SW-846 8270
105-67-9	2,4-DIMETHYLPHENOL	MS	82	86	2	2	%REC	SW-846 8270
51-28-5	2,4-DINITROPHENOL	MS	54	74	2	2	%REC	SW-846 8270
121-14-2	2,4-DINITROTOLUENE	MS	89	91	2	2	%REC	SW-846 8270
121-14-2	2,4-DINITROTOLUENE	MS	51	85	3	3	%REC	SW-846 8270B
606-20-2	2,6-DINITROTOLUENE	MS	90	93	2	2	%REC	SW-846 8270
78-93-3	2-BUTANONE	MS	28	109	2	2	%REC	SW-846 8260
91-58-7	2-CHLORONAPHTHALENE	MS	77	83	2	2	%REC	SW-846 8270
95-57-8	2-CHLOROPHENOL	MS	82	82	2	2	%REC	SW-846 8270
95-57-8	2-CHLOROPHENOL	MS	58	79	3	3	%REC	SW-846 8270B
91-57-6	2-METHYLNAPHTHALENE	MS	77	78	2	2	%REC	SW-846 8270
95-48-7	2-METHYLPHENOL	MS	79	81	2	2	%REC	SW-846 8270
88-74-4	2-NITROANILINE	MS	85	85	2	2	%REC	SW-846 8270
91-94-1	3,3'-DICHLOROBENZIDINE	MS	66	70	2	2	%REC	SW-846 8270
534-52-1	4,6-DINITRO-O-CRESOL	MS	67	77	2	2	%REC	SW-846 8270
106-47-8	4-CHLOROANILINE	MS	57	57	2	2	%REC	SW-846 8270
108-10-1	4-METHYL-2-PENTANONE	MS	20	102	2	2	%REC	SW-846 8260
106-44-5	4-METHYLPHENOL	MS	80	82	2	2	%REC	SW-846 8270
83-32-9	ACENAPHTHENE	MS	79	82	2	2	%REC	SW-846 8270
83-32-9	ACENAPHTHENE	MS	53	74	3	3	%REC	SW-846 8270B
64-1	ACETONE	MS	-232	115	2	2	%REC	SW-846 8260
7429-90-5	ALUMINUM	MS	3770	3770	1	1	%REC	SW-846 6010
120-12-7	ANTHRACENE	MS	72	82	2	2	%REC	SW-846 8270
7440-36-0	ANTIMONY	MS	36	36	1	1	%REC	SW-846 6010
7440-38-2	ARSENIC	MS	97	97	1	1	%REC	SW-846 6010
7440-39-3	BARIUM	MS	105	105	1	1	%REC	SW-846 6010
100-51-6	BENZYL ALCOHOL	MS	80	83	2	2	%REC	SW-846 8270
71-43-2	BENZENE	MS	15	109	6	6	%REC	SW-846 8260
56-55-3	BENZO(A)ANTHRACENE	MS	80	81	2	2	%REC	SW-846 8270
50-32-8	BENZO(A)PYRENE	MS	80	83	2	2	%REC	SW-846 8270
205-99-2	BENZO(B)FLUORANTHENE	MS	75	82	2	2	%REC	SW-846 8270
207-08-9	BENZO(K)FLUORANTHENE	MS	79	81	2	2	%REC	SW-846 8270
65-85-0	BENZOIC ACID	MS	52	58	2	2	%REC	SW-846 8270
7440-41-7	BERYLLIUM	MS	99	99	1	1	%REC	SW-846 6010
111-44-4	BIS(2-CHLOROETHYL) ETHER	MS	77	80	2	2	%REC	SW-846 8270
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	MS	78	84	2	2	%REC	SW-846 8270
75-27-4	BROMODICHLOROMETHANE	MS	22	91	2	2	%REC	SW-846 8260
75-25-2	BROMOFORM	MS	16	97	2	2	%REC	SW-846 8260
74-83-9	BROMOMETHANE	MS	16	97	2	2	%REC	SW-846 8260
85-68-7	BUTYLBENZYLPHTHALATE	MS	79	88	2	2	%REC	SW-846 8270
7440-43-9	CADMIUM	MS	87	87	1	1	%REC	SW-846 6010
75-15-0	CARBON DISULFIDE	MS	16	89	2	2	%REC	SW-846 8260
56-23-5	CARBON TETRACHLORIDE	MS	16	84	2	2	%REC	SW-846 8260
8-90-7	CHLOROBENZENE	MS	17	100	6	6	%REC	SW-846 8260

57

Closeout Report for IHSS Group 300-1

CAS No.	Analyte	Result Type	Minimum	Maximum	Number of Laboratory Samples	Number of Laboratory Batches	Unit	Test Method
75-00-3	CHLOROETHANE	MS	14	82	2	2	%REC	SW-846 8260
67-66-3	CHLOROFORM	MS	17	87	2	2	%REC	SW-846 8260
74-87-3	CHLOROMETHANE	MS	12	100	2	2	%REC	SW-846 8260
218-01-9	CHRYSENE	MS	79	80	2	2	%REC	SW-846 8270
10061-01-5	CIS-1,3-DICHLOROPROPENE	MS	18	93	2	2	%REC	SW-846 8260
7440-48-4	COBALT	MS	96	96	1	1	%REC	SW-846 6010
7440-50-8	COPPER	MS	105	105	1	1	%REC	SW-846 6010
53-70-3	DIBENZ(A,H)ANTHRACENE	MS	82	83	2	2	%REC	SW-846 8270
132-64-9	DIBENZOFURAN	MS	80	80	2	2	%REC	SW-846 8270
124-48-1	DIBROMOCHLOROMETHANE	MS	17	90	2	2	%REC	SW-846 8260
84-66-2	DIETHYL PHTHALATE	MS	86	87	2	2	%REC	SW-846 8270
131-11-3	DIMETHYL PHTHALATE	MS	84	84	2	2	%REC	SW-846 8270
84-74-2	DI-N-BUTYL PHTHALATE	MS	82	85	2	2	%REC	SW-846 8270
117-84-0	DI-N-OCTYL PHTHALATE	MS	78	81	2	2	%REC	SW-846 8270
100-41-4	ETHYLBENZENE	MS	17	92	2	2	%REC	SW-846 8260
206-44-0	FLUORANTHENE	MS	75	86	2	2	%REC	SW-846 8270
86-73-7	FLUORENE	MS	82	82	2	2	%REC	SW-846 8270
118-74-1	HEXACHLOROBENZENE	MS	82	87	2	2	%REC	SW-846 8270
87-68-3	HEXACHLOROBUTADIENE	MS	12	68	2	2	%REC	SW-846 8260
87-68-3	HEXACHLOROBUTADIENE	MS	74	76	2	2	%REC	SW-846 8270
77-47-4	HEXACHLOROCYCLOPENTADIENE	MS	49	71	2	2	%REC	SW-846 8270
7-72-1	HEXACHLOROETHANE	MS	69	78	2	2	%REC	SW-846 8270
3-39-5	INDENO(1,2,3-CD)PYRENE	MS	80	83	2	2	%REC	SW-846 8270
7439-89-6	IRON	MS	2230	2230	1	1	%REC	SW-846 6010
78-59-1	ISOPHORONE	MS	104	107	2	2	%REC	SW-846 8270
7439-92-1	LEAD	MS	103	103	1	1	%REC	SW-846 6010
7439-93-2	LITHIUM	MS	104	104	1	1	%REC	SW-846 6010
7439-96-5	MANGANESE	MS	137	137	1	1	%REC	SW-846 6010
7439-97-6	MERCURY	MS	99	99	1	1	%REC	SW-846 6010
75-09-2	METHYLENE CHLORIDE	MS	17	88	2	2	%REC	SW-846 8260
7439-98-7	MOLYBDENUM	MS	88	88	1	1	%REC	SW-846 6010
91-20-3	NAPHTHALENE	MS	0	72	2	2	%REC	SW-846 8260
91-20-3	NAPHTHALENE	MS	76	78	2	2	%REC	SW-846 8270
7440-02-0	NICKEL	MS	116	116	1	1	%REC	SW-846 6010
98-95-3	NITROBENZENE	MS	77	81	2	2	%REC	SW-846 8270
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	MS	77	88	2	2	%REC	SW-846 8270
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	MS	54	75	3	3	%REC	SW-846 8270B
86-30-6	N-NITROSODIPHENYLAMINE	MS	94	99	2	2	%REC	SW-846 8270
95-50-1	O-DICHLOROBENZENE	MS	17	82	2	2	%REC	SW-846 8260
106-46-7	P-DICHLOROBENZENE	MS	16	82	2	2	%REC	SW-846 8260
106-46-7	P-DICHLOROBENZENE	MS	48	62	3	3	%REC	SW-846 8270B
87-86-5	PENTACHLOROPHENOL	MS	78	79	2	2	%REC	SW-846 8270
87-86-5	PENTACHLOROPHENOL	MS	40	80	3	3	%REC	SW-846 8270B
108-95-2	PHENOL	MS	80	86	2	2	%REC	SW-846 8270
108-95-2	PHENOL	MS	58	78	3	3	%REC	SW-846 8270B
0-02-7	P-NITROPHENOL	MS	84	86	2	2	%REC	SW-846 8270

58

CAS No.	Analyte	Result Type	Minimum	Maximum	Number of Laboratory Samples	Number of Laboratory Batches	Unit	Test Method
100-02-7	P-NITROPHENOL	MS	40	76	3	3	%REC	SW-846 8270B
129-00-0	PYRENE	MS	69	71	2	2	%REC	SW-846 8270
129-00-0	PYRENE	MS	70	86	3	3	%REC	SW-846 8270B
7782-49-2	SELENIUM	MS	99	99	1	1	%REC	SW-846 6010
7440-22-4	SILVER	MS	102	102	1	1	%REC	SW-846 6010
7440-24-6	STRONTIUM	MS	96	96	1	1	%REC	SW-846 6010
100-42-5	STYRENE	MS	17	88	2	2	%REC	SW-846 8260
127-18-4	TETRACHLOROETHENE	MS	16	87	2	2	%REC	SW-846 8260
7440-31-5	TIN	MS	91	91	1	1	%REC	SW-846 6010
108-88-3	TOLUENE	MS	17	102	6	6	%REC	SW-846 8260
10061-02-6	TRANS-1,3-DICHLOROPROPENE	MS	18	89	2	2	%REC	SW-846 8260
79-01-6	TRICHLOROETHENE	MS	18	113	6	6	%REC	SW-846 8260
7440-62-2	VANADIUM	MS	119	119	1	1	%REC	SW-846 6010
75-01-4	VINYL CHLORIDE	MS	12	83	2	2	%REC	SW-846 8260
1330-20-7	XYLENES (TOTAL)	MS	14	92	2	2	%REC	SW-846 8260
7440-66-6	ZINC	MS	101	101	1	1	%REC	SW-846 6010

13.2.2 Precision

Matrix Spike Duplicate Evaluation

Laboratory precision is measured through use of MSD. Adequate frequency of MSD measurements is indicated by at least one MSD in each laboratory batch. Table 11 indicates that MSD frequencies were adequate. While the variability for those contaminants with RPDs greater than 35% was relatively high, the repeatability of real results were consistently below ALs. Consequently, project decisions are not altered or qualified due to the MSD results.

Table 11
Sample Matrix Spike Duplicate Evaluation

Analyte Name	Number of Sample Pairs	Number of Laboratory Batches	Max RPD (%)
1,1,1-TRICHLOROETHANE	2	2	5
1,1,2,2-TETRACHLOROETHANE	2	2	3
1,1,2-TRICHLOROETHANE	2	2	63
1,1-DICHLOROETHANE	2	2	6
1,1-DICHLOROETHENE	6	6	7
1,2,4-TRICHLOROBENZENE	2	2	5
1,2,4-TRICHLOROBENZENE	2	2	38
1,2,4-TRICHLOROBENZENE	3	3	8
1,2-DICHLOROETHANE	2	2	4
1,2-DICHLOROPROPANE	2	2	4
2,4,5-TRICHLOROPHENOL	2	2	34
2,4,6-TRICHLOROPHENOL	2	2	28
2,4-DICHLOROPHENOL	2	2	31
2,4-DIMETHYLPHENOL	2	2	31

Analyte Name	Number of Sample Pairs	Number of Laboratory Batches	Max RPD (%)
2,4-DINITROPHENOL	2	2	45
2,4-DINITROTOLUENE	2	2	27
2,4-DINITROTOLUENE	3	3	8
2,6-DINITROTOLUENE	2	2	29
2-BUTANONE	2	2	5
2-CHLORONAPHTHALENE	2	2	32
2-CHLOROPHENOL	2	2	36
2-CHLOROPHENOL	3	3	14
2-NITROANILINE	2	2	31
4-CHLOROANILINE	2	2	33
4-METHYL-2-PENTANONE	2	2	2
ACENAPHTHENE	2	2	32
ACENAPHTHENE	3	3	5
ACETONE	2	2	7
ALUMINUM	1	1	132
ANTHRACENE	2	2	31
ANTIMONY	1	1	13
ARSENIC	1	1	5
BARIUM	1	1	15
BENZENE	6	6	6
BENZO(A)ANTHRACENE	2	2	34
BENZO(A)PYRENE	2	2	30
BENZO(B)FLUORANTHENE	2	2	27
BENZO(K)FLUORANTHENE	2	2	31
BENZOIC ACID	2	2	17
BERYLLIUM	1	1	7
BIS(2-ETHYLHEXYL)PHTHALATE	2	2	33
BROMODICHLOROMETHANE	2	2	37
BROMOFORM	2	2	4
BROMOMETHANE	2	2	7
BUTYLBENZYLPHthalATE	2	2	32
CARBON DISULFIDE	2	2	6
CARBON TETRACHLORIDE	2	2	7
CHLOROBENZENE	6	6	8
CHLOROETHANE	2	2	7
CHLOROFORM	2	2	6
CHLROMETHANE	2	2	9
CHRYSENE	2	2	32
CIS-1,3-DICHLOROPROPENE	2	2	6
COBALT	1	1	5
COPPER	1	1	3
DIBENZ(A,H)ANTHRACENE	2	2	31
DIBENZOFURAN	2	2	29
DIBROMOCHLOROMETHANE	2	2	5
ETHYLBENZENE	2	2	7
FLUORANTHENE	2	2	31

Analyte Name	Number of Sample Pairs	Number of Laboratory Batches	Max RPD (%)
FLUORENE	2	2	28
HEXACHLOROBENZENE	2	2	29
HEXACHLOROBUTADIENE	2	2	6
HEXACHLOROBUTADIENE	2	2	37
HEXACHLOROCYCLOPENTADIENE	2	2	39
HEXACHLOROETHANE	2	2	36
INDENO(1,2,3-CD)PYRENE	2	2	31
IRON	1	1	110
ISOPHORONE	2	2	35
LEAD	1	1	95
LITHIUM	1	1	9
MANGANESE	1	1	58
MERCURY	1	1	2
METHYLENE CHLORIDE	2	2	6
MOLYBDENUM	1	1	1
NAPHTHALENE	2	2	82
NAPHTHALENE	2	2	36
NICKEL	1	1	13
NITROBENZENE	2	2	35
N-NITROSODIPHENYLAMINE	2	2	28
PENTACHLOROPHENOL	2	2	26
PENTACHLOROPHENOL	3	3	24
PHENOL	2	2	36
PHENOL	3	3	15
PYRENE	2	2	29
PYRENE	3	3	32
SELENIUM	1	1	5
SILVER	1	1	5
STRONTIUM	1	1	3
TETRACHLOROETHENE	2	2	6
TIN	1	1	2
TOLUENE	6	6	5
TRANS-1,3-DICHLOROPROPENE	2	2	4
TRICHLOROETHENE	6	6	9
VANADIUM	1	1	18
VINYL CHLORIDE	2	2	8
ZINC	1	1	15

Field Duplicate Evaluation

Field duplicate results reflect sampling precision, or overall repeatability of the sampling process. The frequency of field duplicate collection should exceed 1 field duplicate per 20 real samples, or 5 percent. Table 12 indicates that sampling frequencies were adequate. A common metric for evaluating precision is the relative percent difference (RPD) value; RPD values are given in Table 13. Ideally, RPDs of less than 35 percent (in soil) indicate satisfactory precision. While the variability for those contaminants with

RPDs greater than 35% was relatively high, the repeatability of real results were consistently below ALs for those contaminants. Consequently, project decisions are not altered due to the field duplicate results.

Table 12
Field Duplicate Sample Frequency

Test Method Name	Sample Code	Number of Samples	% Duplicate Samples
ALPHA SPEC	REAL	3	33
ALPHA SPEC	DUP	1	
GAMMA SPECTROSCOPY	REAL	21	24
GAMMA SPECTROSCOPY	DUP	5	
SW-846 6010	REAL	3	33
SW-846 6010	DUP	1	
SW-846 6200	REAL	23	22
SW-846 6200	DUP	5	
SW-846 8260	REAL	17	29
SW-846 8260	DUP	5	
SW-846 8270	REAL	5	20
SW-846 8270	DUP	1	
SW-846 8270B	REAL	12	33
SW-846 8270B	DUP	4	

Table 13
RPD Evaluation

Analyte	Max of RPD %
1,1,1-TRICHLOROETHANE	13
1,1,2,2-TETRACHLOROETHANE	13
1,1,2-TRICHLOROETHANE	13
1,1-DICHLOROETHANE	198
1,1-DICHLOROETHENE	194
1,2,4-TRICHLOROBENZENE	200
1,2-DICHLOROETHANE	13
1,2-DICHLOROPROPANE	13
2,4,5-TRICHLOROPHENOL	10
2,4,6-TRICHLOROPHENOL	10
2,4-DICHLOROPHENOL	10
2,4-DIMETHYLPHENOL	10
2,4-DINITROPHENOL	8
2,4-DINITROTOLUENE	10
2,6-DINITROTOLUENE	10
2-BUTANONE	68
2-CHLORONAPHTHALENE	10
2-CHLOROPHENOL	10
2-NITROANILINE	8
4-CHLOROANILINE	13
4-METHYL-2-PENTANONE	192
ACENAPHTHENE	116
ACETONE	162

42

ALUMINUM	11
ANTHRACENE	125
ANTIMONY	52
ARSENIC	39
BARIUM	21
BENZENE	196
BENZO(A)ANTHRACENE	182
BENZO(A)PYRENE	166
BENZO(B)FLUORANTHENE	121
BENZO(K)FLUORANTHENE	164
BENZOIC ACID	8
BERYLLIUM	13
BIS(2-ETHYLHEXYL)PHTHALATE	98
BROMODICHLOROMETHANE	13
BROMOFORM	13
BROMOMETHANE	13
BUTYLBENZYLPHTHALATE	10
CARBON DISULFIDE	119
CARBON TETRACHLORIDE	13
CHLOROBENZENE	13
CHLOROETHANE	13
CHLOROFORM	13
CHLOROMETHANE	13
CHRYSENE	185
CIS-1,3-DICHLOROPROPENE	13
COBALT	8
COPPER	52
DIBENZ(A,H)ANTHRACENE	133
DIBENZOFURAN	10
DIBROMOCHLOROMETHANE	13
ETHYLBENZENE	198
FLUORANTHENE	151
FLUORENE	159
HEXACHLOROBENZENE	10
HEXACHLOROBUTADIENE	199
HEXACHLOROCYCLOPENTADIENE	10
HEXACHLOROETHANE	10
INDENO(1,2,3-CD)PYRENE	175
IRON	29
ISOPHORONE	10
LEAD	61
LITHIUM	7
MANGANESE	56
MERCURY	103
METHYLENE CHLORIDE	30
MOLYBDENUM	64
NAPHTHALENE	200
NICKEL	63
NITROBENZENE	10

N-NITROSODIPHENYLAMINE	10
PENTACHLOROPHENOL	8
PHENOL	100
PYRENE	172
SELENIUM	0
SILVER	0
STRONTIUM	78
TETRACHLOROETHENE	200
TIN	67
TOLUENE	198
TRANS-1,3-DICHLOROPROPENE	13
TRICHLOROETHENE	200
VANADIUM	56
VINYL CHLORIDE	198

Completeness

Based on original project DQOs, a minimum of 25 percent of ER Program analytical (and radiological) results must be formally verified and validated. Of that percentage, no more than 10 percent of the results may be rejected, which ensures that analytical laboratory practices are consistent with quality requirements. Table 14 shows the number and percentage of validated records (codes without "1"), the number and percentage of verified records (codes with "1"), and the percentage of rejected records for each analyte group. Although the frequency of validation for the project is less than 25 percent for several of the analytical suites, the validation goal of 25 percent for the ER Program as a whole is currently being met. Because the same laboratories are used for all projects under the ER Program, it is inferred that the project's analytical records are of adequate quality for making decisions.

13.2.3 Sensitivity

Reporting limits, in units of ug/kg for organics, mg/kg for metals, and pCi/g for radionuclides, were compared with proposed RFCA WRW and Ecological Receptor ALs. Adequate sensitivities of analytical methods were attained for all COCs that affect project decisions. "Adequate" sensitivity is defined as a reporting limit less than an analyte's associated AL, typically less than one-half the AL.

13.3 Summary of Data Quality

The RPDs greater than 35 percent for field duplicate samples exceeded project goals. However, all real samples for those contaminants in excess of the RPD goal were repeatable at concentrations well below their respective ALs; consequently, project decisions were not affected. Although the project validation frequency is less than 25 percent, the ER program goal of 25 percent per analytical suite is intact. No records were rejected. Compliance with the project quality requirements and RFETS validation goal of 25 percent of all analytical records indicate that these data are adequate. If additional V&V information is received, IHSS Group 300-1 records will be updated in the Soil Water Database. Data qualified as a result of additional data will be assessed as part of the Comprehensive Risk Assessment process. Data collected and used for IHSS Group 300-1 are adequate for decision-making.

**Table 14
Validation and Verification Summary**

Validation Code	Number of Records	Radionuclides	Metals	SVOCs	VOCs
No V&V	1248	608	0	0	640
J	37	0	37	0	
J1	14	0	8	0	6
U1	1	0	0	0	1
V	1026	0	80	420	526
V1	4692	705	2763	0	1224
JB1	27	0	0	0	27
UJ	19	0	7	0	12
UJ1	94	0	7	8	79
Total	7158	1313	2902	428	2515
Total Validated	1082	0	124	420	538
% Validated	15.12%	0.00%	4.27%	98.13%	21.39%
Total Verified	4827	705	2778	8	1336
% Verified	67.44%	53.69%	95.73%	1.87%	53.12%
% Rejected	0%	0%	0%	0%	0%

KEY:
 I, V1 - Verified
 J, J1 - Estimated
 UJ1 - Estimated detection limit
 V - Validated

14.0 CONCLUSION

Results of the accelerated action justify No Further Accelerated Action. Justification is based on the following:

1. No accelerated action required by surface soil data;
2. No accelerated action required by the subsurface soil risk screen;
3. No accelerated action required by the stewardship evaluation; and
4. No accelerated action required by ALARA consideration (i.e., no elevated concentrations of radionuclides).

15.0 REFERENCES

CDPHE, 2002, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation FY02 Notification #02-10 Approval Letter, October 24.

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

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado.

DOE, 2000, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2001b, Industrial Area Sampling and Analysis Plan Addendum #IA-02-01, Rocky Flats Environmental Technology Site, Golden, Colorado, November.

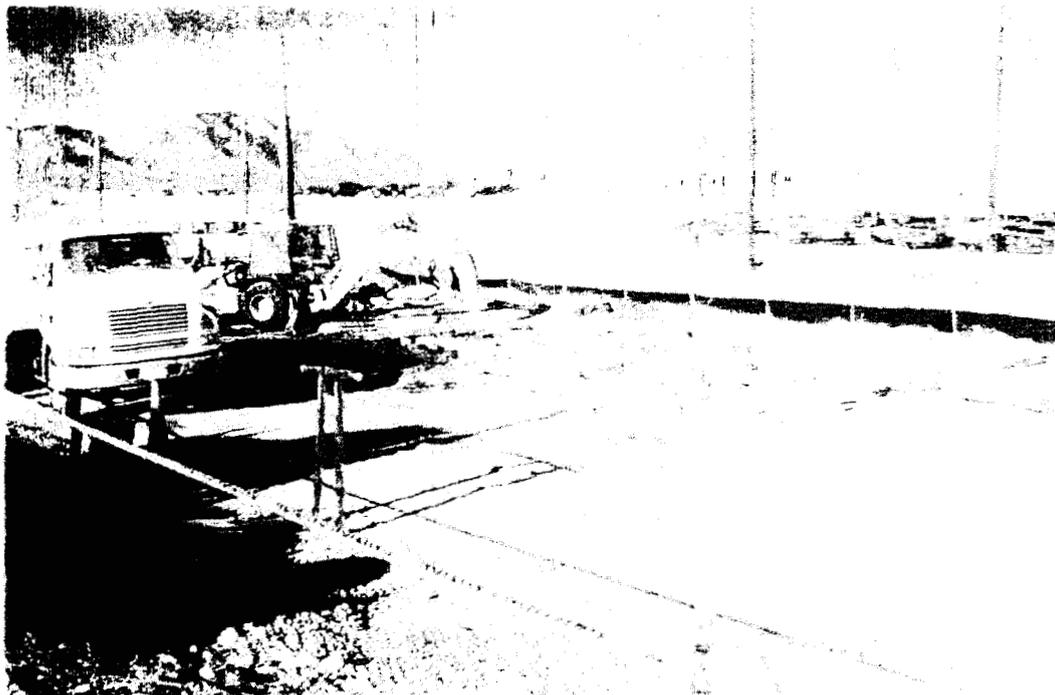
DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado. January.

DOE, 2002b, Environmental Restoration RFCA Standard Operating Protocol Notification #02-10, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

DOE, CDPHE and EPA, 2002, Proposed RFCA Modifications, Rocky Flats Environmental Technology Site, Golden, Colorado, November.

K-H, 1995, Draft Data Summary, Operable Unit 13, 100 Area, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

Appendix A
Project Photographs



Break-up of the Building 335 Slab



Excavation of the Building 335 Slab, Showing the Excavated Metal Sump



Break-up and Excavation of the Building 335 Slab

69

**Appendix B
Correspondence**

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
ER REGULATORY CONTACT RECORD**

Date/Time: December 17, 2002 3:00 pm
Site Contact(s): Hanna Marschall, Reginald Tyler
Phone: (303) 966-4085 (303) 966-5927
Regulatory Contact: Carl Spreng
Phone: (303) 692-3358
Agency: CDPHE

Purpose of Contact: Permission to re-grade Building 335

Discussion

While grading at the site of the former building 335, soil staining was noted at the southeast corner of the slab. An additional sample was collected for volatile organic compounds (VOC) and metals in the soil to determine if soil contamination above action levels was present. A review of the sample data indicates that all constituents are below Tier 1 and Tier 2 action levels with the exception of an arsenic concentration of 19 ppm, slightly exceeding the arsenic background value. However, this value is within the range of arsenic concentrations identified at other locations even though it is slightly above the official background value.

After review of this data and based on similar arsenic concentrations seen at several other locations that are accepted to be within the arsenic background range, both Reg Tyler, DOE and Carl Spreng, CDPHE agreed that the B335 area can be regraded.

Contact Record Prepared By: Hanna Z. Marschall

Required Distribution:

S. Bell, RFFO	D. Mayo, K-H RISS
L. Brooks, K-H ESS	J. Mead, K-H ESS
L. Butler, K-H RISS	S. Nesta, K-H RISS
C. Deck, K-H Legal	K. North, K-H ESS
R. DiSalvo, RFFO	T. Rehder, USEPA
S. Gunderson, CDPHE	D. Shelton, K-H
J. Legare, RFFO	E. Pottorff, CDPHE
D. Kruchek, CDP	R. Tyler, RFFO

Additional Distribution

(choose names as applicable):

M. Broussard, K-H RISS
S. Serreze, K-H RISS
G. Kleeman, USEPA
G. Kelly, K-H RISS
L. Norland, K-H RISS
A. Primrose, K-H RISS
D. Foss, K-H RISS
C. Freiboth, K-H RISS
H. Marschall, K-H RISS
N. Castaneda, RFFO
S. Surovchak, RFFO

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
ER REGULATORY CONTACT RECORD**

Date/Time: December 10, 2002/ 11:00 am
Site Contact(s): Hanna Marschall, Reginald Tyler
Phone: (303) 966-4058, (303) 966-5927
Regulatory Contact: Elizabeth Pottorff
Phone: (303) 692-3429
Agency: CDPHE

Purpose of Contact: Location of additional soil samples at Building 335

Discussion

Two (2) under building sample locations, as described in the IASAP Addendum #1A-02-01 for IHSS Group 300-1, were relocated outside the slab perimeter due to the logistics of positioning the geoprobe with the facility structure in place. As discussed with and agreed to by David Kruchek and Elizabeth Pottorff, CDPHE and Reg Tyler, DOE, after removal of the concrete slabs and the sump at the site of B335, one soil sample will be taken at each of the three following locations: (1) under the older concrete slab (east section) of the building near the building drains; (2) under the new concrete slab (west section), near the building drains; and (3) under the sump. The samples will be analyzed for volatile organic compounds (VOC) and metals.

Contact Record Prepared By: Hanna Z. Marschall

Required Distribution:

S. Bell, RFFO
L. Brooks, K-H ESS
L. Butler, K-H RISS
C. Deck, K-H Legal
R. DiSalvo, RFFO
S. Gunderson, CDPHE
J. Legare, RFFO
D. Kruchek, CDPHE

D. Mayo, K-H RISS
J. Mead, K-H ESS
S. Nesta, K-H RISS
K. North, K-H ESS
T. Rehder, USEPA
D. Shelton, K-H
C. Spreng, CDPHE
R. Tyler, RFFO

Additional Distribution

(choose names as applicable):

M. Broussard, K-H RISS
C. Freiboth, K-H RISS
G. Kleeman, USEPA
S. Serreze, K-H RISS
L. Norland, K-H RISS
A. Primrose, K-H RISS
E. Pottorff, CDPHE
D. Foss, K-H RISS
G. Kelly, K-H RISS
H. Marschall, K-H RISS
N. Castaneda, RFFO
S. Surovchak, RFFO

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
ER REGULATORY CONTACT RECORD**

Date/Time: December 5, 2002/ 10:00 AM

Site Contact(s): Craig Cowdery
Phone: 966-2506

Regulatory Contact: Carl Spreng
Phone: 303-692-3358

Agency: Colorado Department of Public Health and the Environment (CDPHE)

Purpose of Contact: Notification of Additional Soil Sampling at Individual Hazardous Substance Site 134N

Discussion

Notification was made to CDPHE of plans to take soil samples the week of 12/09/02 in the area north of the Building 335 slab in Individual Hazardous Substance Site (IHSS) 134N. This work is a continuation of the IHSS Group 300-1 characterization sampling. CDPHE was informed of past sampling results that indicated that sludge with high volatile organic compound (VOC) concentrations that had been found in this area in 1995. CDPHE indicated their concurrence with taking additional samples in this area.

Contact Record Prepared By: Craig Cowdery

Distribution:

S. Bell, RFFO	G. Kleeman, USEPA	A. Primrose, K-H RISS
L. Brooks, K-H ESS	D. Kruchek, CDPHE	T. Rehder, USEPA
M. Broussard, K-H RISS	J. Legare, RFFO	S. Serreze, K-H Team
L. Butler, K-H RISS	H. Marschall, K-H Team	D. Shelton, K-H
N. Castaneda, RFFO	D. Mayo, K-H RISS	C. Spreng, CDPHE
C. Cowdery, K-H Team	J. Mead, K-H ESS	D. Strand, K-H Team
C. Deck, K-H Legal	S. Nesta, K-H RISS	R. Tyler, RFFO
R. DiSalvo, RFFO	K. North, K-H ESS	
S. Gunderson, CDPHE	E. Pottorff, CDPHE	

Mayo, Donna

From: Cowdery, Craig

Sent: Thursday, December 05, 2002 4:35 PM

To: #ER Contact Records, Marschall, Hanna, Strand, David, Serreze, Susan

Subject: Contact Record for Additional Soil Sampling At IHSS Group 300-1

The attached contact record documents a discussion concerning an additional soil borehole (Geoprobe) location on the north side of IHSS 134N as part of the IHSS Group 300-1 Characterization



ER_Contact_record1
for 300-1.s

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
ER REGULATORY CONTACT RECORD**

Date/Time: September 9, 2002/ 11:00 am
Site Contact(s): Annette Primrose, Norma Castaneda
Phone: (303) 966-4385, (303) 966-4226
Regulatory Contact: David Kruchek
Phone: 692-3328
Agency: CDPHE

Purpose of Contact: Building 335 floor drains

Discussion

During a walkdown with the RISS Decommissioning staff, ER and Environmental Compliance staff on September 5th, it was noted that the numerous floor drains in Building 335 are not connected to the sanitary sewer or storm sewer system. While the Facility Disposition RSOP states that building drains will be flushed and grouted prior to decommissioning, in this case, this is not recommended. Therefore, drains will be grouted prior to building decommissioning. The lines connecting the floor drains are shallow (less than 3 feet below present ground surface) and will be removed with the slab.

Contact Record Prepared By: Annette Primrose

Required Distribution:

S. Bell, RFFO
L. Brooks, K-H ESS
L. Butler, K-H RISS
C. Deck, K-H Legal
R. DiSalvo, RFFO
S. Gunderson, CDPHE
J. Legare, RFFO

D. Mayo, K-H RISS
J. Mead, K-H ESS
S. Nesta, K-H RISS
K. North, K-H ESS
T. Rehder, USEPA
D. Shelton, K-H
C. Spreng, CDPHE

Additional Distribution

(choose names as applicable):

M. Broussard, K-H RISS
J. Hindman, CDPHE
G. Kleeman, USEPA
D. Kruchek, CDPHE
L. Norland, K-H RISS
A. Primrose, K-H RISS
E. Pottorff, CDPHE
S. Tower, DOE
C. Freiboth, K-H RISS
D. Foss, K-H RISS
G. Kelly, K-H RISS
H. Marschall, K-H RISS
S. Serreze, K-H RISS

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
ENVIRONMENTAL RESTORATION
REGULATORY CONTACT RECORD**

Date/Time: August 8, 2002

Site Contact(s): Susan Serreze, Gerry Kelly
Phone: 303-966-2677, 303-966-4979

Regulatory Contact: Elizabeth Pottorff, David Kruchek
Phone: 303-692-3429, 303-692-3328

Agency: CDPHE

Purpose of Contact: Consultative Process – ER RSOP Notification #02-10 (IHSS Group 300-1) and IASAP Addendum #IA-02-08 (Building 776)

Discussion

The ER RSOP Notification #02-10 for IHSS Group 300-1 was discussed. Several issues were discussed and resolved. Concrete slabs, caissons, and structures less than 3 feet below the surface will be removed. Confirmation samples will be taken beneath drains. RFETS will determine if any drains are present and what types of materials were in the building.

The IASAP Addendum #IA-02-08 for Building 776 was discussed. Several issues were discussed. Sampling under this addendum is limited to locations and contaminants of interest to Building 776 staff. ER will sample soil beneath the building slab. CDPHE suggests that the Building 776 staff also sample the concrete at these locations.

Distribution:

S. Gunderson, CDPHE	L. Brooks, K-H ESS	C. Cowdery, K-H Team
D. Kruchek, CDPHE	M. Broussard, K-H RISS	G. Kelly, K-H Team
E. Pottorff, CDPHE	L. Butler, K-H RISS	S. Luker, K-H Team
C. Spreng, CDPHE	C. Deck, K-H Legal	C. Madore, K-H Team
T. Rehder, USEPA	D. Mayo, K-H RISS	S. Paris, K-H Team
G. Kleeman, USEPA	J. Mead, K-H ESS	D. Reeder, K-H Team
N. Castenada, RFFO	S. Nesta, K-H RISS	S. Serreze, K-H Team
R. DiSalvo, RFFO	L. Norland, K-H RISS	Administrative Record
L. Kilpatrick, RFFO	K. North, K-H ESS	ER Meeting Minutes
J. Legare, RFFO	A. Primrose, K-H RISS	
S. Surovchak, RFFO	D. Shelton, K-H	

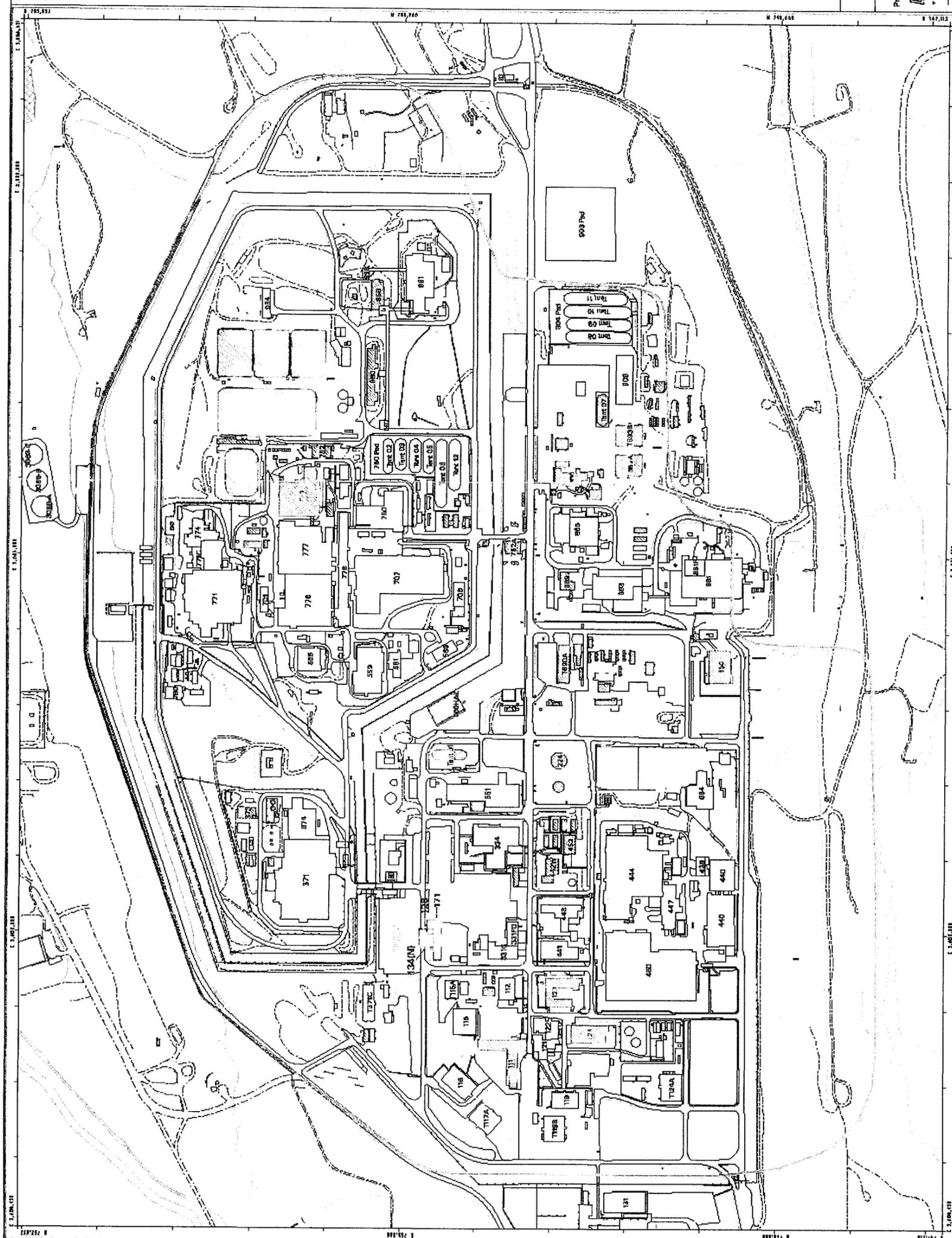
COMPLETE DATA SET COMPACT DISC

PRE-ACCELERATED ACTION AND ACCELERATED ACTION DATA

Figure 1
IA Groups Location Map

EXPLANATION
IH&S Groupings

- Standard Map Features
 - Buildings and other structures
 - Dismantled buildings
 - Solar Evaporation Ponds (SEPs)
 - Lakes and ponds
 - Streams, ditches, or other drainage features
 - Fences and other barriers
 - Paved roads
 - Dirt roads
 - Industrial Areas Operable Unit Boundary
- Other symbols used on map:
 1. 1/4" = 1" scale
 2. 1/4" = 1" scale
 3. 1/4" = 1" scale
 4. 1/4" = 1" scale
 5. 1/4" = 1" scale
 6. 1/4" = 1" scale
 7. 1/4" = 1" scale
 8. 1/4" = 1" scale
 9. 1/4" = 1" scale
 10. 1/4" = 1" scale
 11. 1/4" = 1" scale
 12. 1/4" = 1" scale
 13. 1/4" = 1" scale
 14. 1/4" = 1" scale
 15. 1/4" = 1" scale
 16. 1/4" = 1" scale
 17. 1/4" = 1" scale
 18. 1/4" = 1" scale
 19. 1/4" = 1" scale
 20. 1/4" = 1" scale
 21. 1/4" = 1" scale
 22. 1/4" = 1" scale
 23. 1/4" = 1" scale
 24. 1/4" = 1" scale
 25. 1/4" = 1" scale
 26. 1/4" = 1" scale
 27. 1/4" = 1" scale
 28. 1/4" = 1" scale
 29. 1/4" = 1" scale
 30. 1/4" = 1" scale
 31. 1/4" = 1" scale
 32. 1/4" = 1" scale
 33. 1/4" = 1" scale
 34. 1/4" = 1" scale
 35. 1/4" = 1" scale
 36. 1/4" = 1" scale
 37. 1/4" = 1" scale
 38. 1/4" = 1" scale
 39. 1/4" = 1" scale
 40. 1/4" = 1" scale
 41. 1/4" = 1" scale
 42. 1/4" = 1" scale
 43. 1/4" = 1" scale
 44. 1/4" = 1" scale
 45. 1/4" = 1" scale
 46. 1/4" = 1" scale
 47. 1/4" = 1" scale
 48. 1/4" = 1" scale
 49. 1/4" = 1" scale
 50. 1/4" = 1" scale
 51. 1/4" = 1" scale
 52. 1/4" = 1" scale
 53. 1/4" = 1" scale
 54. 1/4" = 1" scale
 55. 1/4" = 1" scale
 56. 1/4" = 1" scale
 57. 1/4" = 1" scale
 58. 1/4" = 1" scale
 59. 1/4" = 1" scale
 60. 1/4" = 1" scale
 61. 1/4" = 1" scale
 62. 1/4" = 1" scale
 63. 1/4" = 1" scale
 64. 1/4" = 1" scale
 65. 1/4" = 1" scale
 66. 1/4" = 1" scale
 67. 1/4" = 1" scale
 68. 1/4" = 1" scale
 69. 1/4" = 1" scale
 70. 1/4" = 1" scale
 71. 1/4" = 1" scale
 72. 1/4" = 1" scale
 73. 1/4" = 1" scale
 74. 1/4" = 1" scale
 75. 1/4" = 1" scale
 76. 1/4" = 1" scale
 77. 1/4" = 1" scale
 78. 1/4" = 1" scale
 79. 1/4" = 1" scale
 80. 1/4" = 1" scale
 81. 1/4" = 1" scale
 82. 1/4" = 1" scale
 83. 1/4" = 1" scale
 84. 1/4" = 1" scale
 85. 1/4" = 1" scale
 86. 1/4" = 1" scale
 87. 1/4" = 1" scale
 88. 1/4" = 1" scale
 89. 1/4" = 1" scale
 90. 1/4" = 1" scale
 91. 1/4" = 1" scale
 92. 1/4" = 1" scale
 93. 1/4" = 1" scale
 94. 1/4" = 1" scale
 95. 1/4" = 1" scale
 96. 1/4" = 1" scale
 97. 1/4" = 1" scale
 98. 1/4" = 1" scale
 99. 1/4" = 1" scale
 100. 1/4" = 1" scale



Scale = 1:8330
 1 inch represents approximately 829 feet

State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD27

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

Prepared by:
DynCorp
 THE ART OF TECHNOLOGY

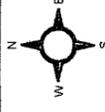
Prepared for:
 K&S, Inc.
 10000 E. 1st Ave.
 Denver, CO 80231

October 30, 2002

Figure 2
IHSS Group 300-1
Pre-Accelerated Action
Surface Sampling Locations
and Results

KEY

- ☆ Below Action Level
- Paved Road
- Building/Structure
- IHSS
- Groundwater Wells



20 0 20 40 60 Feet

Scale = 1: 550
 State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD 27

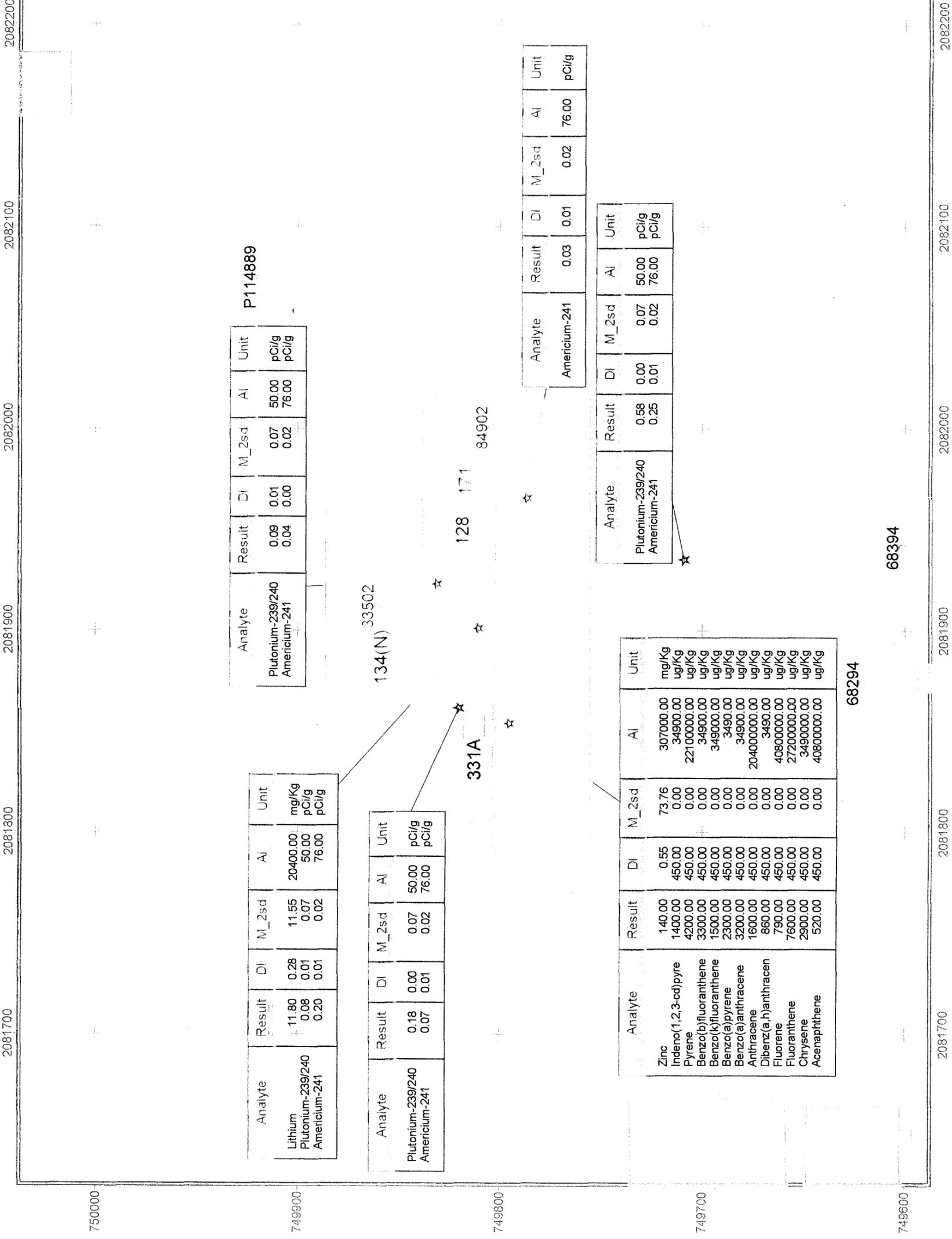
U.S. Department of Energy
 Rocky Flats Environmental Technology Site

Prepared by: **RADMS** Date: 2.24.03

Prepared for:



File: W:\Projects\F200300-1\Closure\F2003-1_closr_jb.apr



P114889

Analyte	Result	DI	M_2sd	AI	Unit
Plutonium-239/240	0.09	0.01	0.07	50.00	pCi/g
Americium-241	0.04	0.00	0.02	76.00	pCi/g

Analyte	Result	DI	M_2sd	AI	Unit
Lithium	11.80	0.28	11.55	20400.00	mg/Kg
Plutonium-239/240	0.08	0.01	0.07	50.00	pCi/g
Americium-241	0.20	0.01	0.02	76.00	pCi/g

Analyte	Result	DI	M_2sd	AI	Unit
Plutonium-239/240	0.18	0.00	0.07	50.00	pCi/g
Americium-241	0.07	0.01	0.02	76.00	pCi/g

Analyte	Result	DI	M_2sd	AI	Unit
Americium-241	0.03	0.01	0.02	76.00	pCi/g

Analyte	Result	DI	M_2sd	AI	Unit
Plutonium-239/240	0.58	0.00	0.07	50.00	pCi/g
Americium-241	0.25	0.01	0.02	76.00	pCi/g

68294

Analyte	Result	DI	M_2sd	AI	Unit
Zinc	140.00	0.55	73.76	307000.00	mg/Kg
Indeno(1,2,3-cd)pyre	1400.00	450.00	0.00	349000.00	ug/Kg
Pyrene	4200.00	450.00	0.00	22100000.00	ug/Kg
Benzo(b)fluoranthene	3300.00	450.00	0.00	349000.00	ug/Kg
Benzo(k)fluoranthene	1500.00	450.00	0.00	349000.00	ug/Kg
Benzo(a)pyrene	2300.00	450.00	0.00	349000.00	ug/Kg
Benzo(a)anthracene	3200.00	450.00	0.00	349000.00	ug/Kg
Anthracene	1600.00	450.00	0.00	204000000.00	ug/Kg
Dibenz(a,h)anthracen	860.00	450.00	0.00	349000.00	ug/Kg
Fluorene	790.00	450.00	0.00	40800000.00	ug/Kg
Fluoranthene	7600.00	450.00	0.00	272000000.00	ug/Kg
Chrysene	2900.00	450.00	0.00	34900000.00	ug/Kg
Acenaphthene	520.00	450.00	0.00	408000000.00	ug/Kg

68294

68394

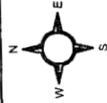
2081700 2081800 2081900 2082000 2082100 2082200

750000 749900 749800 749700 749600

Figure 5
IHSS Group 300-1
Area of Concern

KEY

- Streams
- Paved Road
- Building
- IHSS
- AOC



20
0
20 Feet

Scale = 1: 250
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by: **RADMS** Date: 3.5.03

Prepared for:



File: W:\Projects\Fy2003\300-1\Closeout\300-1_close_jb2.apr

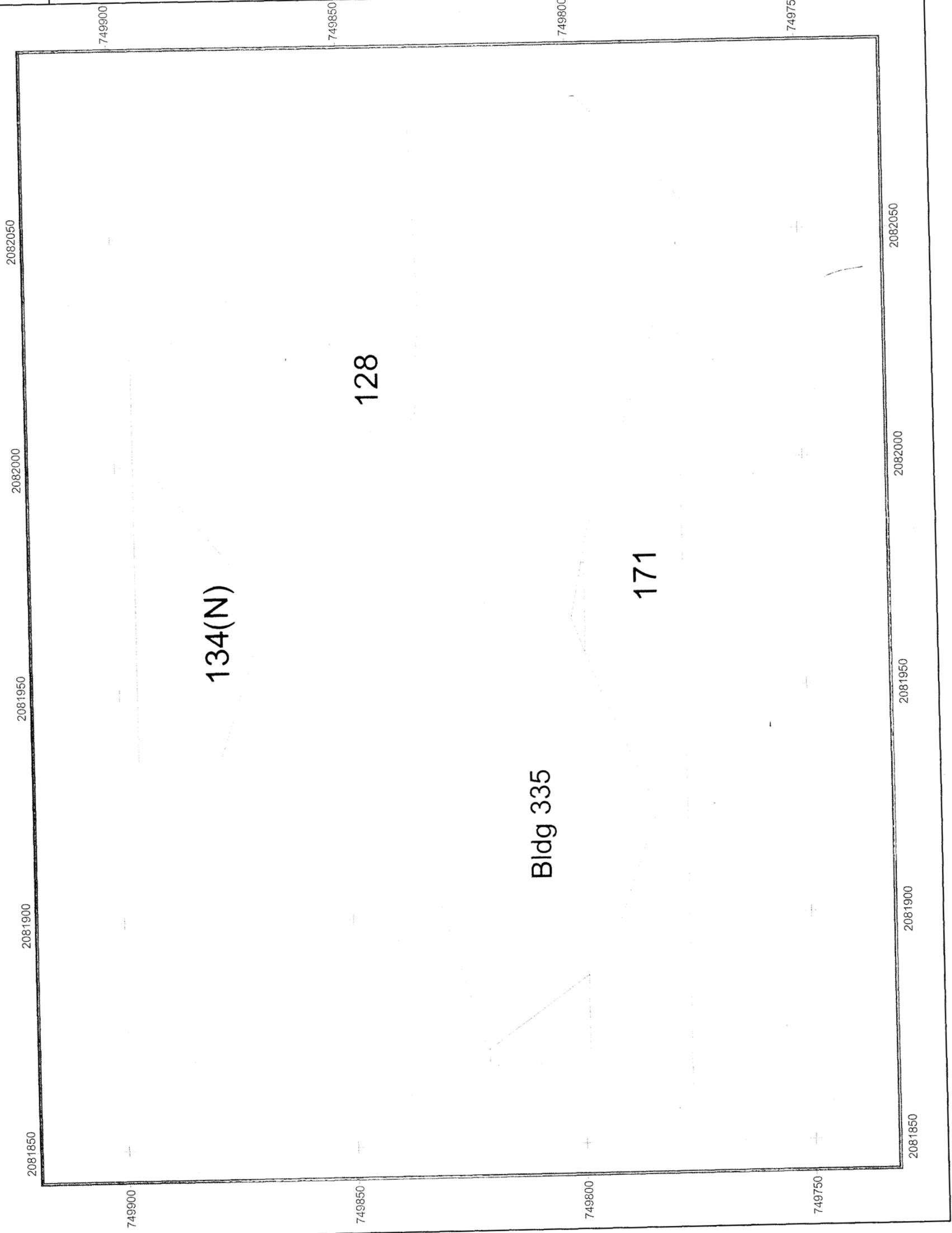
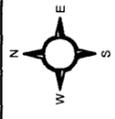


Figure 7
Sum of Ratios
for Radionuclides

KEY

- Subsurface SOR
- Surface SOR
- ★ Surface (Dry, Alkaline) SOR
- ▭ Paved Road
- ▭ Building/Structure
- ▭ IHSS

SOR = Sum of Ratios



Scale = 1: 250
20 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by: **RADMS** Date: 11.12.03

Prepared for:



File: W:\Projects\FY2003\300-1\Closure\300-1_closure_ib.apr

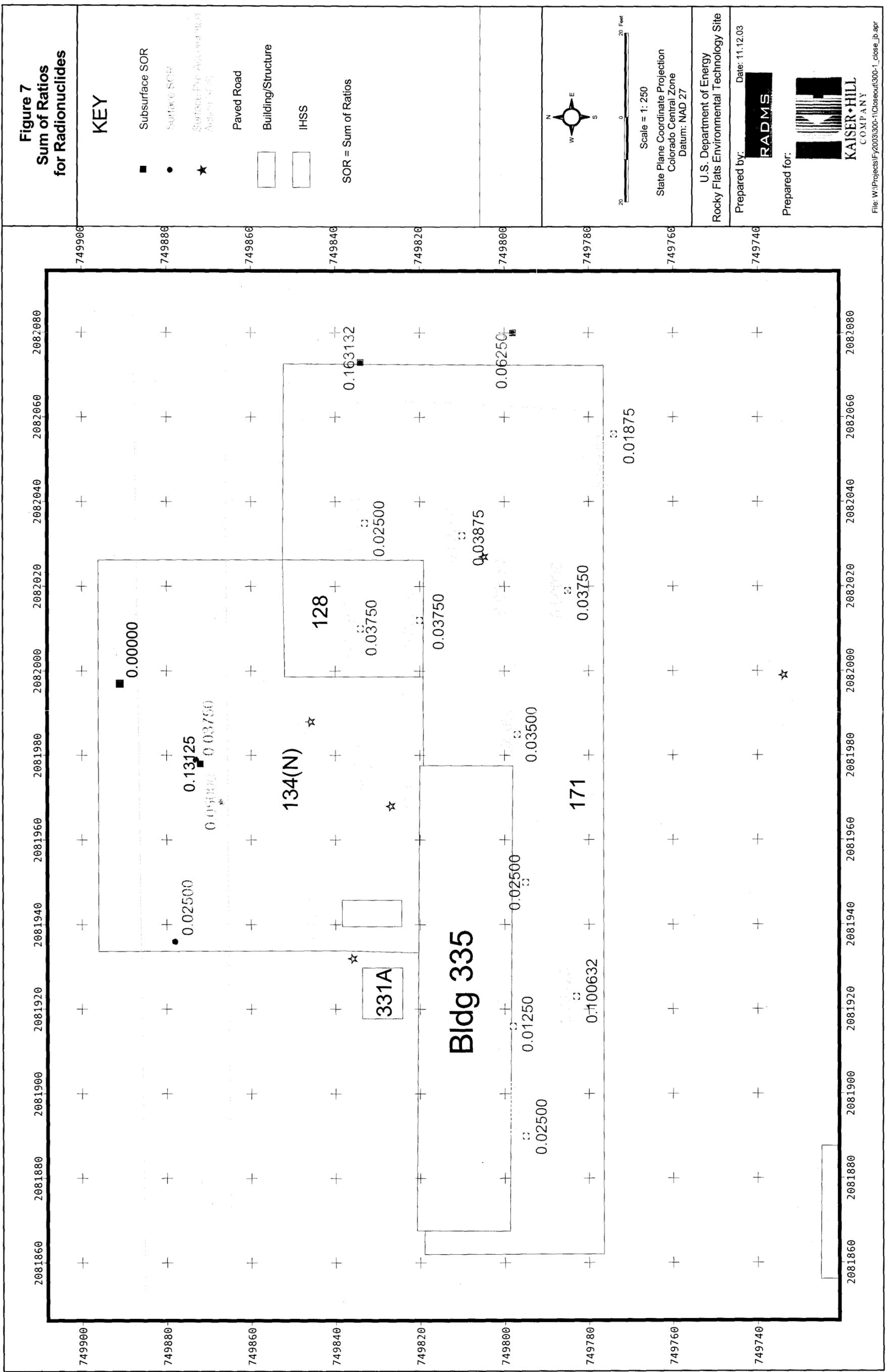


Figure 4 Accelerated Action Subsurface Sampling Locations and Results at IHSS Group 300-1

KEY

- Paved Road
- Building
- IHSS
- Sampling Location with WRW AL Exceedance
- Sampling Location Below WRW AL
- Sampling Location Below Background Mean or Detection Limit

Soil Action Levels (ALs) have been proposed as modifications to RFCA Attachment 5

- Sbd = Sample begin depth
- Sed = Sample end depth
- DI = Detection limit
- M2sd = Mean + 2 standard deviations
- Ww = Wildlife Refuge Worker Action Level
- Er = Ecological Receptor Action Level



Scale = 1: 750
0 50 100 150 200 Feet

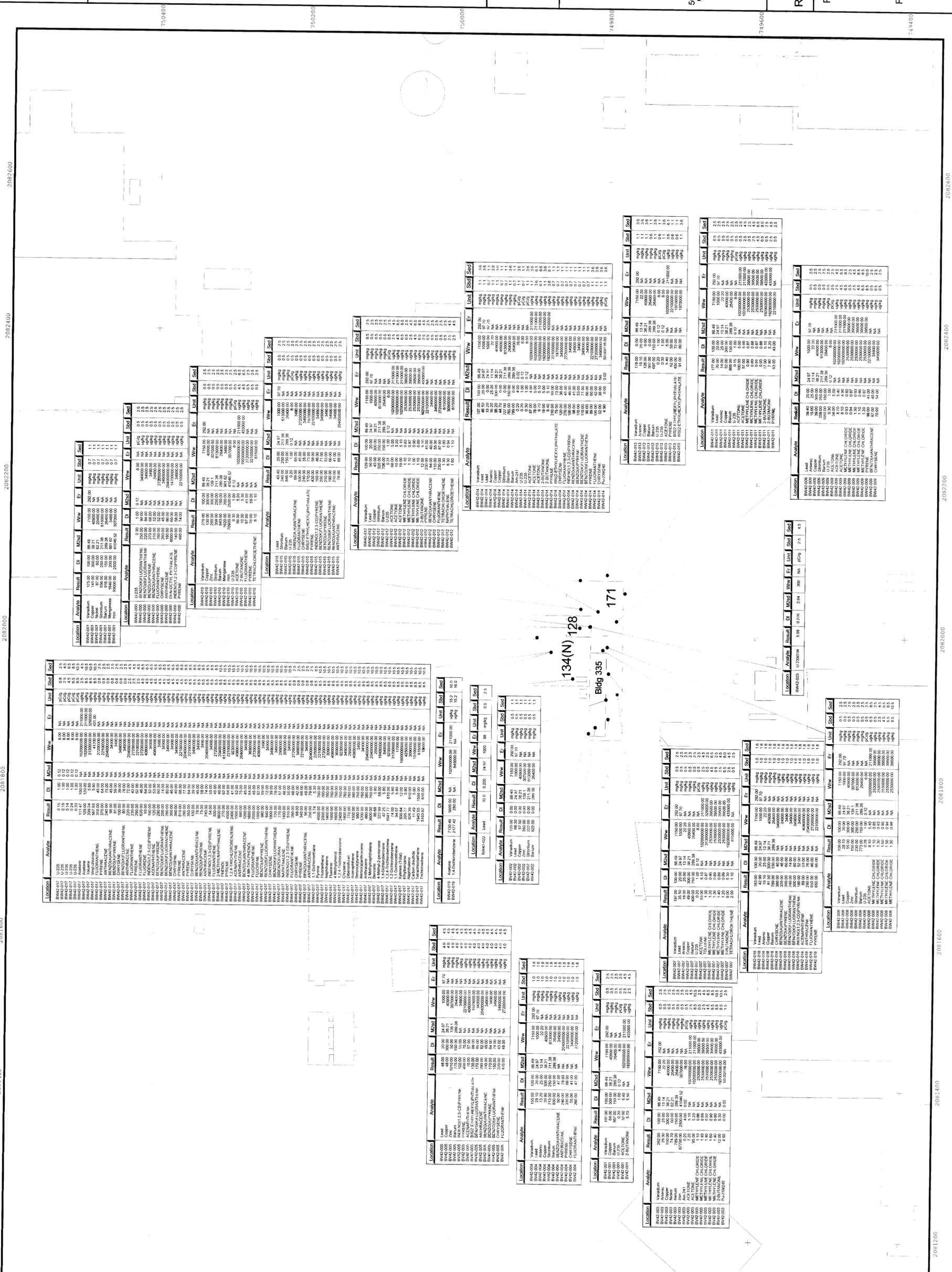
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by: **RADMS** Date: 6/2/03



Prepared for:



Location	Analyte	Result	DI	M2sd	Ww	Er	Unit	Std	Sec
BW42-017	U235	1.19	0.12	0.12	8.00	NA	pcg	0.5	2.5
BW42-017	U238	0.24	0.12	0.12	8.00	NA	pcg	0.5	2.5
BW42-017	Asbestos	11.47	100.00	100.00	1000000.00	NA	ppm	100.00	100.00
BW42-017	Toluene	335.94	150.00	150.00	1000000.00	NA	ppm	150.00	150.00
BW42-017	Fluoranthene	311.00	4.89	4.89	47000.00	NA	ppm	4.89	4.89
BW42-017	Anthracene	242.00	56.89	56.89	2700000.00	NA	ppm	56.89	56.89
BW42-017	Benzo(a)anthracene	91.00	46.89	46.89	34000.00	NA	ppm	46.89	46.89
BW42-017	Benzo(a)pyrene	100.00	39.00	39.00	30000.00	NA	ppm	39.00	39.00
BW42-017	Benzo(b)fluoranthene	100.00	21.00	21.00	16000.00	NA	ppm	21.00	21.00
BW42-017	Fluorene	260.00	65.00	65.00	50000.00	NA	ppm	65.00	65.00
BW42-017	Fluoranthene	130.00	35.00	35.00	27000.00	NA	ppm	35.00	35.00
BW42-017	Acenaphthylene	200.00	74.00	74.00	57000.00	NA	ppm	74.00	74.00
BW42-017	Acenaphthene	300.00	49.00	49.00	37000.00	NA	ppm	49.00	49.00
BW42-017	Phenanthrene	410.00	69.00	69.00	53000.00	NA	ppm	69.00	69.00
BW42-017	Fluoranthene	300.00	64.00	64.00	49000.00	NA	ppm	64.00	64.00
BW42-017	Benzo(a)anthracene	78.00	42.00	42.00	32000.00	NA	ppm	42.00	42.00
BW42-017	Benzo(b)fluoranthene	300.00	41.00	41.00	31000.00	NA	ppm	41.00	41.00
BW42-017	Fluoranthene	300.00	41.00	41.00	31000.00	NA	ppm	41.00	41.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Benzo(a)anthracene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Benzo(b)fluoranthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Fluoranthene	390.00	51.00	51.00	38000.00	NA	ppm	51.00	51.00
BW42-017	Acenaphthylene	190.00	52.00	52.00	39000.00	NA	ppm	52.00	52.00
BW42-017	Acenaphthene	290.00	45.00	45.00	34000.00	NA	ppm	45.00	45.00
BW42-017	Phenanthrene	390.00	51.00	51.00					

Figure 3 Accelerated Action Surface Sampling Locations and Results at IHSS Group 300-1

KEY

- Paved Road
- Building
- IHSS
- Sampling Location Below WRW AL
- Sampling Location Below Background Mean or Detection Limit

Soil Action Levels (ALs) have been proposed as modifications to RFCA Attachment 5

Sbd = Sample begin depth
 Sed = Sample end depth
 DI = Detection limit
 M2sd = Mean + 2 standard deviations
 WRW = Wildlife Refuge Worker Action Level
 Er = Ecological Receptor Action Level



Scale = 1:540

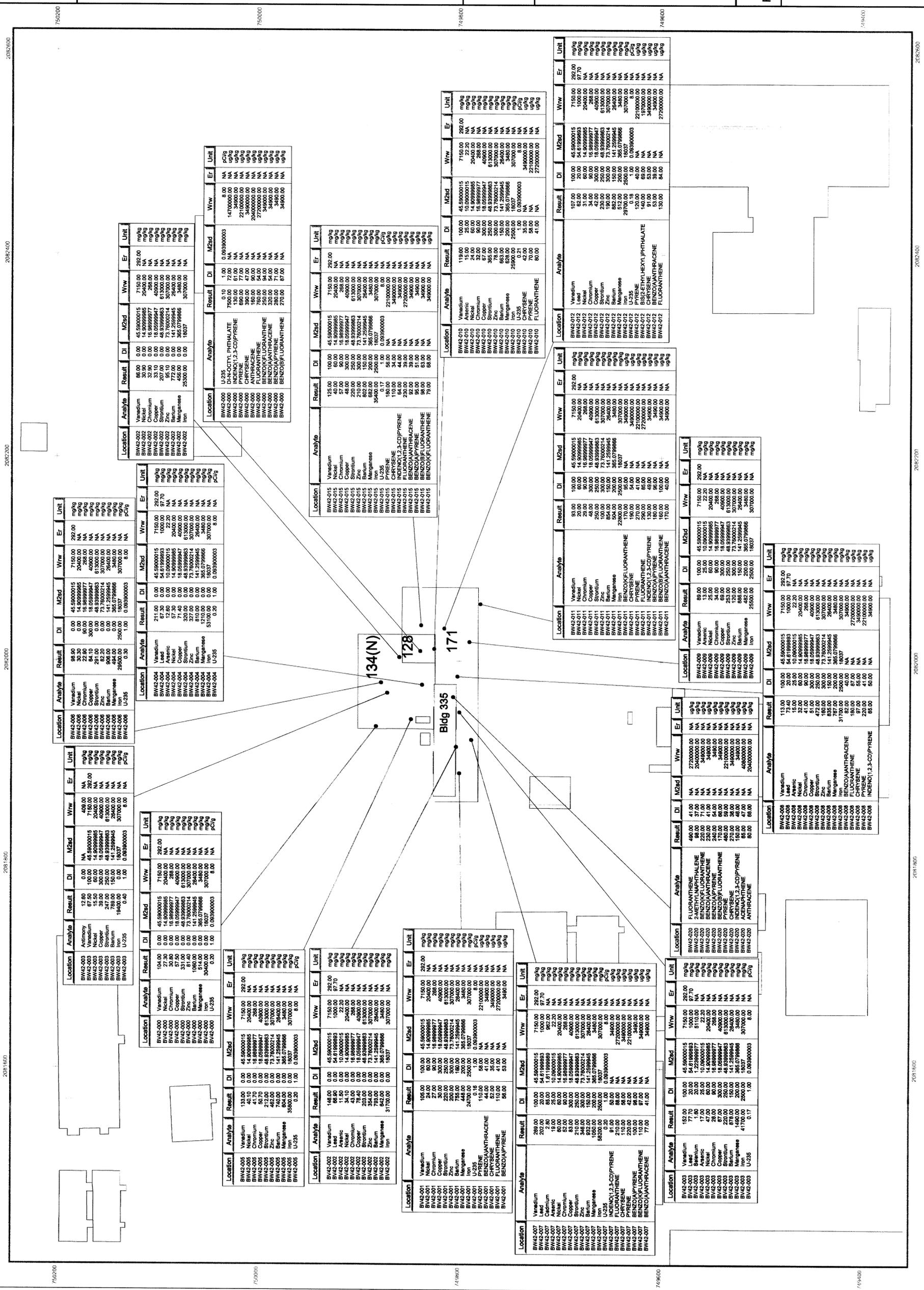
State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD 27

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

Prepared by: **RADMS** Date: 3.5.03



Prepared for:



Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-006	Vanadium	88.50	0.00	45.59000015	7150.00	292.00	mg/kg
BW42-006	Chromium	22.30	0.00	16.85999977	20400.00	NA	mg/kg
BW42-006	Copper	64.10	0.00	18.05999947	40900.00	NA	mg/kg
BW42-006	Strontium	291.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-006	Barium	247.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-006	Manganese	906.00	0.00	141.2599945	28400.00	NA	mg/kg
BW42-006	Iron	2562.00	2500.00	365.0799866	307000.00	NA	mg/kg
BW42-006	U-235	0.30	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-004	Vanadium	12.80	0.00	45.59000015	7150.00	292.00	mg/kg
BW42-004	Nickel	67.50	0.00	54.61999983	1000.00	NA	mg/kg
BW42-004	Chromium	22.30	0.00	16.85999977	20400.00	NA	mg/kg
BW42-004	Copper	291.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-004	Strontium	247.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-004	Barium	194.00	0.00	141.2599945	28400.00	NA	mg/kg
BW42-004	Manganese	906.00	0.00	141.2599945	28400.00	NA	mg/kg
BW42-004	Iron	2562.00	2500.00	365.0799866	307000.00	NA	mg/kg
BW42-004	U-235	0.40	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-005	Vanadium	133.00	0.00	45.59000015	7150.00	292.00	mg/kg
BW42-005	Nickel	17.00	0.00	14.90999985	20400.00	NA	mg/kg
BW42-005	Chromium	30.80	0.00	16.85999977	20400.00	NA	mg/kg
BW42-005	Copper	50.70	0.00	18.05999947	40900.00	NA	mg/kg
BW42-005	Strontium	331.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-005	Barium	196.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-005	Zinc	1060.00	0.00	73.76000214	307000.00	NA	mg/kg
BW42-005	Manganese	604.00	0.00	141.2599945	28400.00	NA	mg/kg
BW42-005	Iron	3040.00	0.00	365.0799866	307000.00	NA	mg/kg
BW42-005	U-235	0.20	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-002	Vanadium	211.00	0.00	45.59000015	7150.00	292.00	mg/kg
BW42-002	Lead	67.30	0.00	54.61999983	1000.00	NA	mg/kg
BW42-002	Chromium	57.30	0.00	16.85999977	20400.00	NA	mg/kg
BW42-002	Copper	71.40	0.00	18.05999947	40900.00	NA	mg/kg
BW42-002	Strontium	327.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-002	Barium	327.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-002	Zinc	1170.00	0.00	73.76000214	307000.00	NA	mg/kg
BW42-002	Manganese	521.00	0.00	141.2599945	28400.00	NA	mg/kg
BW42-002	Iron	1510.00	0.00	365.0799866	307000.00	NA	mg/kg
BW42-002	U-235	0.20	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-004	Vanadium	148.00	0.00	45.59000015	7150.00	292.00	mg/kg
BW42-004	Lead	68.90	0.00	54.61999983	1000.00	NA	mg/kg
BW42-004	Chromium	31.50	0.00	16.85999977	20400.00	NA	mg/kg
BW42-004	Copper	43.00	0.00	18.05999947	40900.00	NA	mg/kg
BW42-004	Strontium	78.40	0.00	48.83999983	613000.00	NA	mg/kg
BW42-004	Barium	35.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-004	Zinc	793.00	0.00	73.76000214	307000.00	NA	mg/kg
BW42-004	Manganese	642.00	0.00	141.2599945	28400.00	NA	mg/kg
BW42-004	Iron	3110.00	0.00	365.0799866	307000.00	NA	mg/kg
BW42-004	U-235	0.20	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-002	Vanadium	105.00	0.00	45.59000015	7150.00	292.00	mg/kg
BW42-002	Lead	27.00	0.00	18.05999947	40900.00	NA	mg/kg
BW42-002	Chromium	30.00	0.00	16.85999977	20400.00	NA	mg/kg
BW42-002	Copper	230.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-002	Strontium	785.00	0.00	73.76000214	307000.00	NA	mg/kg
BW42-002	Barium	240.00	0.00	48.83999983	613000.00	NA	mg/kg
BW42-002	Zinc	240.00	0.00	141.2599945	28400.00	NA	mg/kg
BW42-002	Manganese	340.00	0.00	141.2599945	28400.00	NA	mg/kg
BW42-002	Iron	240.00	0.00	365.0799866	307000.00	NA	mg/kg
BW42-002	U-235	0.18	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-015	Vanadium	125.00	100.00	45.59000015	7150.00	292.00	mg/kg
BW42-015	Nickel	40.00	60.00	14.90999985	20400.00	NA	mg/kg
BW42-015	Chromium	57.00	90.00	16.85999977	20400.00	NA	mg/kg
BW42-015	Copper	220.00	250.00	18.05999947	40900.00	NA	mg/kg
BW42-015	Strontium	210.00	300.00	48.83999983	613000.00	NA	mg/kg
BW42-015	Barium	892.00	100.00	48.83999983	613000.00	NA	mg/kg
BW42-015	Zinc	3640.00	200.00	73.76000214	307000.00	NA	mg/kg
BW42-015	Manganese	0.17	1.00	141.2599945	28400.00	NA	mg/kg
BW42-015	Iron	180.00	2500.00	365.0799866	307000.00	NA	mg/kg
BW42-015	U-235	0.17	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-015	Vanadium	110.00	110.00	45.59000015	7150.00	292.00	mg/kg
BW42-015	Nickel	64.00	44.00	14.90999985	20400.00	NA	mg/kg
BW42-015	Chromium	58.00	38.00	16.85999977	20400.00	NA	mg/kg
BW42-015	Copper	96.00	51.00	18.05999947	40900.00	NA	mg/kg
BW42-015	Strontium	96.00	63.00	48.83999983	613000.00	NA	mg/kg
BW42-015	Barium	96.00	63.00	48.83999983	613000.00	NA	mg/kg
BW42-015	Zinc	73.00	68.00	73.76000214	307000.00	NA	mg/kg
BW42-015	Manganese	73.00	68.00	141.2599945	28400.00	NA	mg/kg
BW42-015	Iron	34.00	34.00	365.0799866	307000.00	NA	mg/kg
BW42-015	U-235	0.17	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-015	Vanadium	93.00	100.00	45.59000015	7150.00	292.00	mg/kg
BW42-015	Nickel	20.00	60.00	14.90999985	20400.00	NA	mg/kg
BW42-015	Chromium	42.00	90.00	16.85999977	20400.00	NA	mg/kg
BW42-015	Copper	250.00	250.00	18.05999947	40900.00	NA	mg/kg
BW42-015	Strontium	100.00	300.00	48.83999983	613000.00	NA	mg/kg
BW42-015	Barium	504.00	200.00	48.83999983	613000.00	NA	mg/kg
BW42-015	Zinc	2290.00	200.00	73.76000214	307000.00	NA	mg/kg
BW42-015	Manganese	190.00	2500.00	141.2599945	28400.00	NA	mg/kg
BW42-015	Iron	190.00	2500.00	365.0799866	307000.00	NA	mg/kg
BW42-015	U-235	0.17	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-011	Vanadium	89.00	100.00	45.59000015	7150.00	292.00	mg/kg
BW42-011	Nickel	20.00	60.00	14.90999985	20400.00	NA	mg/kg
BW42-011	Chromium	42.00	90.00	16.85999977	20400.00	NA	mg/kg
BW42-011	Copper	250.00	250.00	18.05999947	40900.00	NA	mg/kg
BW42-011	Strontium	100.00	300.00	48.83999983	613000.00	NA	mg/kg
BW42-011	Barium	504.00	200.00	48.83999983	613000.00	NA	mg/kg
BW42-011	Zinc	2290.00	200.00	73.76000214	307000.00	NA	mg/kg
BW42-011	Manganese	190.00	2500.00	141.2599945	28400.00	NA	mg/kg
BW42-011	Iron	190.00	2500.00	365.0799866	307000.00	NA	mg/kg
BW42-011	U-235	0.17	1.00	0.083900003	8.00	NA	pCi/g

Location	Analyte	Result	DI	M2sd	Wrw	Er	Unit
BW42-011	Vanadium	89.00	100.00	45.59000015	7150.00	292.00	mg/kg
BW42-011	Nickel	20.00	60.00	14.90999985	20400.00	NA	mg/kg
BW42-011	Chromium	42.00	90.00	16.85999977	20400.00	NA	mg/kg
BW42-011	Copper	250.00	250.00	18.05999947	40900.00	NA	mg/kg
BW42-011	Strontium	100.00	300.00	48.83999983	613000.00	NA	mg/kg
BW42-011	Barium	504.00	200.00	48.83999983	613000.00	NA	mg/kg
BW42-011	Zinc	2290.00	200.00	73.76000214	307000.00	NA	mg/kg
BW42-011	Manganese	190.00	2500.00	141.2599945	28400.00	NA	mg/kg
BW42-011	Iron	190.00	2500.00				

Figure 6 Residual Surface Contamination at IHSS Group 300-1

KEY

Paved Road

Building

IHSS

Sampling Location
Below WRW AL

Soil Action Levels (ALs) have been proposed
as modifications to RFCA Attachment 5

Sbd = Sample begin depth
Sed = Sample end depth
DI = Detection limit

Scale = 1: 600



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:



Prepared for:

