

NOTICE

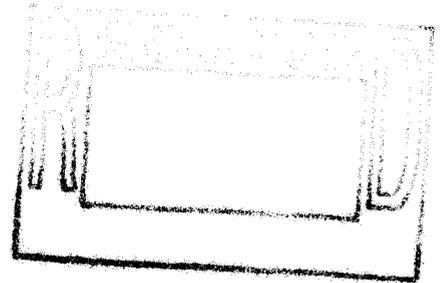
All drawings located at the end of the document.

**Data Summary Report
for IHSS Group 700-5**

**Building 770 Under Building
Contamination Site**

Approval received from the Colorado Department of Public Health and Environment
September 7, 2004.

Approval letter contained in the Administrative Record.



September 2004

ADMIN RECORD

IA-A-002344

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Appendix A – Correspondence

ENCLOSURE

Complete Data Set Compact Disc – Accelerated Action Data

ACRONYMS

AAESE	Accelerated Action Ecological Screening Evaluation
AL	action level
CAS	Chemical Abstracts Service
CD	compact disc
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
CRA	Comprehensive Risk Assessment
DOE	U.S. Department of Energy
DQA	Data Quality Assessment
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ft	foot
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
IM/IRA	Interim Measure/Interim Remedial Action
K-H	Kaiser-Hill Company, L.L.C.
LCS	laboratory control sample
µg/kg	micrograms per kilogram (may be found as ug/kg)
mg/kg	milligrams per kilogram
MDL	method detection limit
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable
NFAA	No Further Accelerated Action
PAC	Potential Area of Concern
PARCCS	precision, accuracy, representativeness, completeness, comparability, and sensitivity
pCi/g	picocuries per gram
PCB	polychlorinated biphenyl
PCOC	potential contaminant of concern
POE	Point of Evaluation
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RL	reporting limit
RPD	relative percent difference
SAP	Sampling and Analysis Plan

Site	Rocky Flats Environmental Technology Site
SBD	sample begin depth
SD	standard deviation
SED	sample end depth
SOR	sum of ratios
SSRS	Subsurface Soil Risk Screen
UBC	Under Building Contamination
VOC	volatile organic compound
V&V	verification and validation
WRW	wildlife refuge worker

1.0 INTRODUCTION

This Data Summary Report summarizes accelerated action characterization activities conducted at Individual Hazardous Substance Site (IHSS) Group 700-5, which consists of the Building 770 Waste Storage Facility Under Building Contamination (UBC) Site, at the Rocky Flats Environmental Technology Site (RFETS or Site) in Golden, Colorado.

IHSS Group 700-5 consists solely of UBC 770. A general Site location map of IHSS Group 700-5 and UBC 770 is shown on Figure 1.

Characterization activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001) and IASAP Addendum #IA-03-17 (DOE 2003a). The IASAP Addendum was approved by the Colorado Department of Public Health and Environment (CDPHE) on October 21, 2003 (CDPHE 2003). Ecological effects will be evaluated in the Accelerated Action Ecological Screening Evaluation (AAESE) and the ecological risk assessment portion of the Sitewide Comprehensive Risk Assessment (CRA).

Approval of this Data Summary Report constitutes regulatory agency concurrence that IHSS Group 700-5 is a No Further Accelerated Action (NFAA) Site. This information and NFAA determination will be documented in the Fiscal Year (FY) 2004 (04) Historical Release Report (HRR).

2.0 SITE CHARACTERIZATION

IHSS Group 700-5 characterization information consists of historical knowledge, previously collected analytical data from the vicinity of the IHSS Group, and accelerated action analytical data. Historical information for the IHSS Group was derived from previous studies (DOE 1992-2003, 1992, 1995, 2000, 2001, 2003a). The historical information and data are discussed in Section 2.1.

Accelerated action analytical data for IHSS Group 700-5 are summarized in Section 2.2. A compact disc (CD) is enclosed that contains the accelerated action data, as well as quality control (QC) data, for this project. The CD contains a data set in which analyte names, Chemical Abstracts Service (CAS) numbers, and units are standardized, and derived analytes are provided.

2.1 Historical Information and Data

IHSS Group 700-5 is located north of Buildings 771 and 774. The IHSS Group encompasses approximately 3,168 square feet. Building 770 is a metal, prefabricated, modular building constructed in 1965 on a concrete foundation. The building is currently used to store tools, materials, and supplies for Building 771 decommissioning operations. Historically, Building 770 was used for equipment storage and also as a facility for equipment assembly prior to equipment installation inside other Site buildings. Building 770 was also used to store radioactive waste.

In August 1972, a punctured scrap box stored inside Building 770 contaminated more than 3,000 square feet within the building and 500 square feet outside the building. Levels of radioactivity were measured up to 200,000 disintegrations per minute. In September 1972, a 55-gallon drum containing spent radioactive ion exchange residue leaked onto the concrete floor inside Building 770.

Drums with spent radioactive ion exchange residue (for processing in Building 771) and cargo containers were stored on the surface area located west of Building 770 from 1969 to 1974 when storage operations were moved to Building 776. Several contamination releases occurred on the ground surface located west of Building 770 between 1965 and 1971 (Potential Area of Concern [PAC] 700-150.1).

No characterization of soil beneath the Building 770 foundation slab had been conducted prior to the accelerated action characterization. As shown on Figure 2, historical data for soil in the vicinity of IHSS Group 700-5 indicate that all contaminant concentrations are below the Rocky Flats Cleanup Agreement (RFCA) wildlife refuge worker (WRW) action levels (ALs) (DOE et al. 2003). Only data greater than background means plus two standard deviations (SDs) (for radionuclides and metals) or method detection limits (MDLs) (for organic compounds) are presented.

2.2 Accelerated Action Characterization Data

Based on historical information and data from within and around IHSS Group 700-5, IASAP Addendum #IA-03-17 (DOE 2003a) specified that the potential contaminants of concern (PCOCs) for the IHSS Group were radionuclides, metals, volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs).

Accelerated action analytical data for IHSS Group 700-5 were collected in accordance with IASAP Addendum #IA-03-17 (DOE 2003a). Sampling specifications, including PCOCs and media, are presented in Table 1. Deviations from the IASAP Addendum are also presented and explained in Table 1. Table 2 presents a summary of accelerated action sampling and analyses. The sampling locations and analytical results greater than background means plus two SDs or reporting limits (RLs) are shown on Figure 3 and listed in Table 3. WRW AL exceedances are shown in bold in Table 3 and in red on Figure 3. Plutonium-239/240 and uranium-234 activities based on high-purity germanium (HPGe) results (derived from americium-241 and uranium-238 gamma spectroscopy results, respectively) are shown in Table 3 in italics. Summary statistics for the project analytical results are presented in Tables 4 and 5, by analyte, for surface and subsurface soil, respectively.

THIS TARGET SHEET REPRESENTS AN
OVER-SIZED MAP / PLATE FOR THIS DOCUMENT:
(Ref: 04-RF-00953; KLW-017-04)

**Data Summary Report
IHSS Group 700-5**

Building 770 Under Building Contamination Site

September, 2004

Figure 2:

**IHSS Group 700-5 Existing Soil
Sampling Results Greater Than
Background Means Plus 2 Standard
Deviations or Method Detection
Limits**

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July 20, 2004

CERCLA Administrative Record Document, IA-A-002344

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

GOLDEN, COLORADO

Table 1
IHSS Group 700-5 Accelerated Action Characterization Specifications and Sampling Deviations

Location	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Actual Media	Actual Depth Interval (ft)	Actual Analytes	Comments/Deviations
CF49-021	2083927.384	751220.084	2083929.000	751221.000	Surface Soil	0.0 - 0.5	Radionuclides, Metals & VOCs	Actual location estimated from building walls; no significant change in location.
CF49-022	2083931.668	751255.828	2083932.000	751255.000	Surface Soil	0.0 - 0.5	Radionuclides, Metals & VOCs	Actual location estimated from building walls; no significant change in location.
CG49-008	2083960.481	751234.246	2083961.000	751238.000	Surface Soil	0.0 - 0.5	Radionuclide, Metals, VOCs & PCBs	Actual location estimated from building walls; no significant change in location.
CG49-009	2083971.873	751259.396	2083971.000	751258.000	Surface Soil	0.0 - 0.5	Radionuclides, Metals, VOCs & PCBs	No significant change in location.
CG49-010	2083955.814	751267.208	2083955.785	751267.201	Surface Soil	0.0 - 0.5	Radionuclides, Metals, VOCs (B interval only) & PCBs	No significant change in location.
CG49-011	2083982.724	751254.188	2083982.770	751254.198	Subsurface Soil	0.5 - 2.5	Radionuclides, Metals, VOCs (B interval only) & PCBs	No significant change in location.
CG49-012	2083982.724	751213.389	2083984.618	751211.725	Subsurface Soil	0.5 - 2.0	Radionuclides, Metals, VOCs (B interval only) & PCBs	Biased sampling location to target storm drain located along south side of Bldg 770. Location also below roof drain. No significant change in location. Partial recovery in B interval due to refusal. Location also used to characterize IHSS Group 700-11.
CG49-013	2083982.152	751238.381	2083982.149	751238.378	Surface Soil	0.0 - 0.5	Radionuclides, Metals, VOCs (B interval only) & PCBs	No significant change in location.
CG49-014	2083992.996	751211.269	NA	NA	NA	NA	NA	Sampling location transferred to IHSS Group 700-11.
CG49-015	2084001.299	751211.947	NA	NA	NA	NA	NA	Sampling location transferred to IHSS Group 700-11.
CG49-016	2084035.020	751220.081	NA	NA	NA	NA	NA	Sampling location transferred to IHSS Group 700-11.
CG49-017	2084019.939	751220.758	NA	NA	NA	NA	NA	Sampling location transferred to IHSS Group 700-11.

Table 2
IHSS Group 700-5 Accelerated Action Sampling and Analysis Summary

Criteria	Number
Number of Sampling Locations	8
Number of Samples	12
Number of Radionuclide Analyses	12
Number of Metal Analyses	12
Number of VOC Analyses	8
Number of PCB Analyses	10

As indicated in Table 1, four sampling locations presented in IASAP Addendum #IA-03-17 (CG49-014, CG49-015, CG49-016 and CG49-017) were transferred to the IHSS Group 700-11 project to characterize that IHSS group. All four of these locations are in the drainage that flows into Bowman's Pond. Sampling Location CG49-012 was used to characterize both IHSS groups. The Regulatory Contact Record, dated March 23, 2004, (Appendix A) states that data results from Sampling Locations CG49-012, CG49-015 and CG49-016 would be presented in the documentation for both IHSS groups. However, after further discussions with CDPHE, it was determined that only results from CG49-012 needed to be presented in both reports.

As shown, all contaminant concentrations are less than the WRW ALs, except for the surface and subsurface Aroclor 1254 concentrations at Sampling Location CG49-012. The surface soil concentration is 43,000 micrograms per kilogram (ug/kg), and the subsurface soil concentration is 20,000 ug/kg. The WRW AL for Aroclor 1254 is 12,400 ug/kg. This location will be remediated under the IHSS Group 700-11 project. After remediation is conducted, confirmation sampling will be conducted in accordance with the IASAP.

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(Ref: 04-RF-00953; KLW-017-04)

**Data Summary Report
IHSS Group 700-5**

Building 770 Under Building Contamination Site

September, 2004

Figure 3:

**IHSS Group 700-5 Accelerated Action
Sampling Locations and Results**

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July 20, 2004

CERCLA Administrative Record Document, IA-A-002344

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

GOLDEN, COLORADO

Table 3
IHSS Group 700-5 Accelerated Action Characterization Data Greater Than
Background Means Plus Two Standard Deviations or Reporting Limits

Location Code	Latitude	Longitude	Start Depth (ft)	End Depth (ft)	Analyte	Result	RL	Background	WRW AL	Unit
CF49-021	751221.000	2083929.000	0.0	0.5	Acetone	99.000	6.000	NA	102000000.0	ug/kg
CF49-021	751221.000	2083929.000	0.0	0.5	Aluminum	18000.000	NA	16902.000	228000.0	mg/kg
CF49-021	751221.000	2083929.000	0.0	0.5	Barium	200.000	NA	141.260	26400.0	mg/kg
CF49-021	751221.000	2083929.000	0.0	0.5	Chromium	29.000	NA	16.990	268.0	mg/kg
CF49-021	751221.000	2083929.000	0.0	0.5	Lithium	16.000	NA	11.550	20400.0	mg/kg
CF49-021	751221.000	2083929.000	0.0	0.5	Nickel	20.000	NA	14.910	20400.0	mg/kg
CF49-021	751221.000	2083929.000	0.0	0.5	Plutonium-239/240	0.140	NA	0.066	50.0	pCi/g
CF49-021	751221.000	2083929.000	0.0	0.5	Strontium	71.000	NA	48.940	613000.0	mg/kg
CF49-021	751221.000	2083929.000	0.0	0.5	Toluene	2.100	1.000	NA	31300000.0	ug/kg
CF49-022	751255.000	2083932.000	0.0	0.5	Barium	150.000	NA	141.260	26400.0	mg/kg
CF49-022	751255.000	2083932.000	0.0	0.5	Lithium	12.000	NA	11.550	20400.0	mg/kg
CF49-022	751255.000	2083932.000	0.0	0.5	Strontium	49.000	NA	48.940	613000.0	mg/kg
CF49-022	751255.000	2083932.000	0.0	0.5	Uranium-235	0.183	NA	0.094	8.0	pCi/g
CG49-008	751238.000	2083961.000	0.0	0.5	Aluminum	21000.000	NA	16902.000	228000.0	mg/kg
CG49-008	751238.000	2083961.000	0.0	0.5	Aroclor-1254	19.000	5.300	NA	12400.0	ug/kg
CG49-008	751238.000	2083961.000	0.0	0.5	Barium	180.000	NA	141.260	26400.0	mg/kg
CG49-008	751238.000	2083961.000	0.0	0.5	Chromium	19.000	NA	16.990	268.0	mg/kg
CG49-008	751238.000	2083961.000	0.0	0.5	Lithium	17.000	NA	11.550	20400.0	mg/kg
CG49-008	751238.000	2083961.000	0.0	0.5	Nickel	16.000	NA	14.910	20400.0	mg/kg
CG49-008	751238.000	2083961.000	0.0	0.5	Strontium	50.000	NA	48.940	613000.0	mg/kg
CG49-008	751238.000	2083961.000	0.0	0.5	Uranium-234	5.003	NA	2.253	300.0	pCi/g
CG49-008	751238.000	2083961.000	0.0	0.5	Uranium-235	0.256	NA	0.094	8.0	pCi/g
CG49-008	751238.000	2083961.000	0.0	0.5	Uranium-238	5.003	NA	2.000	351.0	pCi/g
CG49-009	751258.000	2083971.000	0.0	0.5	Aluminum	18000.000	NA	16902.000	228000.0	mg/kg
CG49-009	751258.000	2083971.000	0.0	0.5	Aroclor-1254	46.000	4.800	NA	12400.0	ug/kg
CG49-009	751258.000	2083971.000	0.0	0.5	Barium	160.000	NA	141.260	26400.0	mg/kg
CG49-009	751258.000	2083971.000	0.0	0.5	Copper	21.000	NA	18.060	40900.0	mg/kg
CG49-009	751258.000	2083971.000	0.0	0.5	Lithium	15.000	NA	11.550	20400.0	mg/kg

Location Code	Latitude	Longitude	Start Depth (ft)	End Depth (ft)	Analyte	Result	RL	Background	WRW AL	Unit
CG49-009	751258.000	2083971.000	0.0	0.5	Nickel	16.000	NA	14.910	20400.0	mg/kg
CG49-009	751258.000	2083971.000	0.0	0.5	Strontium	89.000	NA	48.940	613000.0	mg/kg
CG49-010	751267.201	2083955.785	0.0	0.5	Aluminum	19000.000	NA	16902.000	228000.0	mg/kg
CG49-010	751267.201	2083955.785	0.0	0.5	Aroclor-1254	50.000	4.900	NA	12400.0	ug/kg
CG49-010	751267.201	2083955.785	0.0	0.5	Barium	160.000	NA	141.260	26400.0	mg/kg
CG49-010	751267.201	2083955.785	0.0	0.5	Cadmium	5.800	NA	1.612	962.0	mg/kg
CG49-010	751267.201	2083955.785	0.0	0.5	Chromium	18.000	NA	16.990	268.0	mg/kg
CG49-010	751267.201	2083955.785	0.0	0.5	Lithium	16.000	NA	11.550	20400.0	mg/kg
CG49-010	751267.201	2083955.785	0.0	0.5	Nickel	17.000	NA	14.910	20400.0	mg/kg
CG49-010	751267.201	2083955.785	0.0	0.5	Uranium-234	3.393	NA	2.253	300.0	pCi/g
CG49-010	751267.201	2083955.785	0.0	0.5	Uranium-235	0.246	NA	0.094	8.0	pCi/g
CG49-010	751267.201	2083955.785	0.0	0.5	Uranium-238	3.393	NA	2.000	351.0	pCi/g
CG49-010	751267.201	2083955.785	0.0	0.5	Zinc	1600.000	NA	73.760	307000.0	mg/kg
CG49-010	751267.201	2083955.785	0.5	2.5	Uranium-234	4.645	NA	2.640	300.0	pCi/g
CG49-010	751267.201	2083955.785	0.5	2.5	Uranium-235	0.305	NA	0.120	8.0	pCi/g
CG49-010	751267.201	2083955.785	0.5	2.5	Uranium-238	4.645	NA	1.490	351.0	pCi/g
CG49-011	751254.198	2083982.770	0.0	0.5	Americium-241	0.262	NA	0.023	76.0	pCi/g
CG49-011	751254.198	2083982.770	0.0	0.5	Aroclor-1254	360.000	4.700	NA	12400.0	ug/kg
CG49-011	751254.198	2083982.770	0.0	0.5	Barium	150.000	NA	141.260	26400.0	mg/kg
CG49-011	751254.198	2083982.770	0.0	0.5	Cadmium	5.900	NA	1.612	962.0	mg/kg
CG49-011	751254.198	2083982.770	0.0	0.5	Chromium	21.000	NA	16.990	268.0	mg/kg
CG49-011	751254.198	2083982.770	0.0	0.5	Lithium	13.000	NA	11.550	20400.0	mg/kg
CG49-011	751254.198	2083982.770	0.0	0.5	Manganese	450.000	NA	365.080	3480.0	mg/kg
CG49-011	751254.198	2083982.770	0.0	0.5	Nickel	23.000	NA	14.910	20400.0	mg/kg
CG49-011	751254.198	2083982.770	0.0	0.5	Plutonium-239/240	1.495	NA	0.066	50.0	pCi/g
CG49-011	751254.198	2083982.770	0.0	0.5	Strontium	63.000	NA	48.940	613000.0	mg/kg
CG49-011	751254.198	2083982.770	0.0	0.5	Uranium-235	0.136	NA	0.094	8.0	pCi/g
CG49-011	751254.198	2083982.770	0.0	0.5	Zinc	150.000	NA	73.760	307000.0	mg/kg
CG49-011	751254.198	2083982.770	0.5	2.5	Aroclor-1254	280.000	4.600	NA	12400.0	ug/kg
CG49-011	751254.198	2083982.770	0.5	2.5	Cadmium	4.000	NA	1.700	962.0	mg/kg
CG49-011	751254.198	2083982.770	0.5	2.5	Zinc	160.000	NA	139.100	307000.0	mg/kg
CG49-012	751211.725	2083984.618	0.0	0.5	Americium-241	1.460	NA	0.023	76.0	pCi/g
CG49-012	751211.725	2083984.618	0.0	0.5	Aroclor-1254	43000.000	930.000	NA	12400.0	ug/kg

Location Code	Latitude	Longitude	Start Depth (ft)	End Depth (ft)	Analyte	Result	RL	Background	WRW AL	Unit
CG49-012	751211.725	2083984.618	0.0	0.5	Chromium	29.000	NA	16.990	268.0	mg/kg
CG49-012	751211.725	2083984.618	0.0	0.5	Copper	27.000	NA	18.060	40900.0	mg/kg
CG49-012	751211.725	2083984.618	0.0	0.5	Nickel	20.000	NA	14.910	20400.0	mg/kg
CG49-012	751211.725	2083984.618	0.0	0.5	Plutonium-239/240	8.322	NA	0.066	50.0	pCi/g
CG49-012	751211.725	2083984.618	0.0	0.5	Zinc	270.000	NA	73.760	307000.0	mg/kg
CG49-012	751211.725	2083984.618	0.5	2.0	Americium-241	6.707	NA	0.020	76.0	pCi/g
CG49-012	751211.725	2083984.618	0.5	2.0	Aroclor-1254	20000.000	490.000	NA	12400.0	ug/kg
CG49-012	751211.725	2083984.618	0.5	2.0	Plutonium-239/240	38.230	NA	0.020	50.0	pCi/g
CG49-012	751211.725	2083984.618	0.5	2.0	Uranium-234	3.796	NA	2.640	300.0	pCi/g
CG49-012	751211.725	2083984.618	0.5	2.0	Uranium-235	0.225	NA	0.120	8.0	pCi/g
CG49-012	751211.725	2083984.618	0.5	2.0	Uranium-238	3.796	NA	1.490	351.0	pCi/g
CG49-012	751211.725	2083984.618	0.5	2.0	Zinc	180.000	NA	139.100	307000.0	mg/kg
CG49-013	751238.378	2083982.149	0.0	0.5	Americium-241	0.450	NA	0.023	76.0	pCi/g
CG49-013	751238.378	2083982.149	0.0	0.5	Aroclor-1254	1300.000	22.000	NA	12400.0	ug/kg
CG49-013	751238.378	2083982.149	0.0	0.5	Cadmium	3.100	NA	1.612	962.0	mg/kg
CG49-013	751238.378	2083982.149	0.0	0.5	Chromium	57.000	NA	16.990	268.0	mg/kg
CG49-013	751238.378	2083982.149	0.0	0.5	Copper	23.000	NA	18.060	40900.0	mg/kg
CG49-013	751238.378	2083982.149	0.0	0.5	Nickel	36.000	NA	14.910	20400.0	mg/kg
CG49-013	751238.378	2083982.149	0.0	0.5	Plutonium-239/240	2.565	NA	0.066	50.0	pCi/g
CG49-013	751238.378	2083982.149	0.0	0.5	Zinc	230.000	NA	73.760	307000.0	mg/kg
CG49-013	751238.378	2083982.149	0.5	2.5	Americium-241	0.248	NA	0.020	76.0	pCi/g
CG49-013	751238.378	2083982.149	0.5	2.5	Aroclor-1254	440.000	24.000	NA	12400.0	ug/kg
CG49-013	751238.378	2083982.149	0.5	2.5	Cadmium	9.600	NA	1.700	962.0	mg/kg
CG49-013	751238.378	2083982.149	0.5	2.5	Plutonium-239/240	1.413	NA	0.020	50.0	pCi/g

Table 4
IHSS Group 700-5 Surface Soil Summary Statistics

Analyte	No. of Samples Analyzed	Detection Frequency	Average Concentration	Maximum Concentration	Background Mean Plus 2 SD	WRW AL	Unit
Acetone	5	20.00%	99.000	99.000	NA	102000000.0	ug/kg
Aluminum	8	50.00%	19000.000	21000.000	16902.000	228000.0	mg/kg
Americium-241	8	37.50%	0.724	1.460	0.023	76.0	pCi/g
Aroclor-1254	6	100.00%	7462.500	43000.000	NA	12400.0	ug/kg
Barium	8	75.00%	166.667	200.000	141.260	26400.0	mg/kg
Cadmium	8	37.50%	4.933	5.900	1.612	962.0	mg/kg
Chromium	8	75.00%	28.833	57.000	16.990	268.0	mg/kg
Copper	8	37.50%	23.667	27.000	18.060	40900.0	mg/kg
Lithium	8	75.00%	14.833	17.000	11.550	20400.0	mg/kg
Manganese	8	12.50%	450.000	450.000	365.080	3480.0	mg/kg
Nickel	8	87.50%	21.143	36.000	14.910	20400.0	mg/kg
Plutonium-239/240	8	50.00%	3.131	8.322	0.066	50.0	pCi/g
Strontium	8	62.50%	64.400	89.000	48.940	613000.0	mg/kg
Toluene	5	20.00%	2.100	2.100	NA	31300000.0	ug/kg
Uranium-234	8	25.00%	4.198	5.003	2.253	300.0	pCi/g
Uranium-235	8	50.00%	0.205	0.256	0.094	8.0	pCi/g
Uranium-238	8	25.00%	4.198	5.003	2.000	351.0	pCi/g
Zinc	8	50.00%	562.500	1600.000	73.760	307000.0	mg/kg

Table 5
IHSS Group 700-5 Subsurface Soil Summary Statistics

Analyte	No. of Samples Analyzed	Detection Frequency	Average Concentration	Maximum Concentration	Background Mean Plus 2 SD	WRW AL	Unit
Americium-241	4	50.00%	3.477	6.707	0.020	76.0	pCi/g
Aroclor-1254	4	75.00%	6906.667	20000.000	NA	12400.0	ug/kg
Cadmium	4	50.00%	6.800	9.600	1.700	962.0	mg/kg
Plutonium-239/240	4	50.00%	19.821	38.230	0.020	50.0	pCi/g
Uranium-234	4	50.00%	4.221	4.645	2.640	300.0	pCi/g
Uranium-235	4	50.00%	0.265	0.305	0.120	8.0	pCi/g
Uranium-238	4	50.00%	4.221	4.645	1.490	351.0	pCi/g
Zinc	4	50.00%	170.000	180.000	139.100	307000.0	mg/kg

2.3 Sum of Ratios

RFCA sums of ratios (SORs) were calculated for the IHSS Group 700-5 sampling locations based on the accelerated action analytical data for the contaminants of concern (COCs). Radionuclide SOR calculations included americium-241, plutonium-239/240, uranium-234, uranium-235, and uranium-238 when analyses were greater than background means plus 2 SDs. Plutonium-239/240 activities were derived from americium-241 activities (that is, plutonium-239/240 activity = americium-241 gamma spectroscopy activity x 5.7) where HPGe detection was used for analysis. Table 6 presents the radionuclide SORs. All SORs for radionuclides in surface soil (0 to 3 feet [ft]) were less than 1.

Table 6
RFCA Radionuclide Soil SORs

Location	Start Depth (ft)	End Depth (ft)	SOR
CF49-021	0	0.5	0.001
CF49-022	0	0.5	0.023
CG49-008	0	0.5	0.063
CG49-010	0	0.5	0.052
CG49-010	0.5	2.5	0.067
CG49-012	0	0.5	0.091
CG49-012	0.5	2.0	0.469
CG49-011	0	0.5	0.033
CG49-013	0	0.5	0.028
CG49-013	0.5	2.5	0.015

Surface soil SORs for non-radionuclide COCs are shown in Table 7. Non-radionuclide SORs were calculated for all locations with analytical results greater than 10 percent of the WRW ALs. Aluminum, arsenic, iron, manganese, and polyaromatic hydrocarbons were not included in the non-radionuclide SORs. All non-radionuclide SORs for surface soil were less than 1, with one exception. The non-radionuclide SOR at Sampling Location CG49-012 was 3.576 because of the elevated Aroclor-1254 concentration.

Table 7
RFCA Non-Radionuclide Surface Soil SORs

Location	Start Depth (ft)	End Depth (ft)	SOR
CF49-021	0	0.5	0.108
CG49-012	0	0.5	3.576
CG49-013	0	0.5	0.318

3.0 RCRA UNIT CLOSURE

Building 770 did not contain any Resource Conservation and Recovery Act (RCRA)-permitted unit, and therefore, no RCRA unit closure is required.

4.0 SUBSURFACE SOIL RISK SCREEN

The Subsurface Soil Risk Screen (SSRS) follows the steps identified on Figure 3 in Attachment 5 of RFCA (DOE et al. 2003):

Screen 1 – Are the COC concentrations below RFCA Table 3 WRW soil ALs?

No. As shown in Table 3 (this document), subsurface COC concentrations are below WRW ALs, except for the Aroclor 1254 concentration at Sampling Location CG49-012. The subsurface soil concentration is 20,000 ug/kg, and the WRW AL is 12,400 ug/kg. This location will be remediated under the IHSS Group 700-11 project

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

No. IHSS Group 700-5 is not located in an area susceptible to landslides or high erosion based on RFCA Attachment 5, Figure 1 (DOE et al. 2003).

Screen 3 – Does subsurface soil radionuclide contamination exceed criteria in RFCA Section 5.3 and Attachment 14?

No. As shown in Table 3, radionuclide concentrations are below soil WRW ALs.

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

No. Contaminant migration via erosion and groundwater are two possible pathways whereby surface water could become contaminated from IHSS Group 700-5 soil. As stated in Screen 2 above, IHSS Group 700-5 is not located in an area likely to be eroded. Run-off from IHSS Group 700-5 is conveyed via storm drains and the ditch along the Protected Area Perimeter Road into North Walnut Creek through Gauging Station SW120 (DOE 2003b).

The nearest RFCA surface water Point of Evaluation (POE) is SW093, which is located in North Walnut Creek and receives runoff from a large part of the IA, including IHSS Group 700-5 (DOE 2003b). Monitoring results indicate that plutonium and americium loadings at SW093 have increased recently, apparently related to increased erosion occurring within the upstream project areas (personal communication, Robert Nininger to Gerard Kelly, July 17, 2004). Increased total suspended solids in the surface water have resulted in reportable concentrations of actinides at SW093 (June 15, 2004, presentation to RFCA Coordinators, updated with available data on June 29, 2004). Even though levels of radionuclides in soil within IHSS Group 700-5 do not exceed WRW ALs and do

not require any action, radionuclides in soil within IHSS Group 700-5 could contribute to reportable concentrations in surface water if erosion potential exists (Screen 2).

Groundwater monitoring wells in the vicinity of IHSS Group 700-5 are Wells 20298, 20398, 20498 and P219189. Data in the Soil Water Database indicate that contaminant concentrations in these wells have not exceeded Tier I groundwater ALs since 1991. Groundwater from Wells 20298, 20498 and P219189 has historically contained VOC concentrations greater than Tier II ALs. Groundwater from Well 20398 has contained manganese and lead concentrations greater than Tier II ALs, and results from Well 20498 has indicated manganese concentrations greater than Tier II ALs. Groundwater from Well P219189 has exhibited uranium-234, uranium-235 and uranium-238 activities greater than Tier II ALs. Groundwater contamination at IHSS Group 700-5 may have multiple sources. Further groundwater evaluation will be conducted as part of the groundwater Interim Measure/Interim Remedial Action (IM/IRA) decision and future Sitewide evaluation.

5.0 NO FURTHER ACCELERATED ACTION SUMMARY

Based on analytical results and the SSRS, action is not required for this IHSS Group. As such, an NFAA determination is justified for IHSS Group 700-5 given the following:

- Contaminant concentrations were below WRW ALs, except for surface and subsurface Aroclor 1254 concentrations at Sampling Location CG49-012. This location will be remediated under the IHSS Group 700-11 project.
- Migration of contaminants to surface water through erosion is unlikely because IHSS Group 700-5 is not in an area prone to landslides or erosion.
- Migration of contaminants in groundwater will not likely impact surface water because of the low levels of soil contamination encountered in IHSS Group 700-5. The groundwater will be further evaluated in the groundwater IM/IRA.

Approval of this Data Summary Report constitutes regulatory agency concurrence that this IHSS Group is an NFAA Site. This information and the NFAA determination will be documented in the FY04 HRR. Ecological factors will be evaluated in the AAESE process and the CRA.

6.0 DATA QUALITY ASSESSMENT

All project data quality objectives (DQOs) were achieved based on the following:

- Regulatory agency-approved sampling program design (IASAP Addendum #IA-03-17 [DOE 2003a]);
- Collection of samples in accordance with the sampling design or concurrence by regulatory agencies with modifications to the sampling plan; and

- Results of the Data Quality Assessment (DQA), as described in the following sections.

6.1 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:

- U.S. Environmental Protection Agency (EPA), 1994a, Guidance for the Data Quality Objective Process, QA/G-4;
- EPA, 1998, Guidance for the Data Quality Assessment Process, Practical Methods for Data Analysis, QA/G-9; and
- U.S. Department of Energy (DOE), 1999, Quality Assurance, Order 414.1A.

Verification and validation (V&V) of 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, 1994b, U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, 540/R-94/012;
- EPA, 1994c, U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, 540/R-94/013;
- Kaiser-Hill Company, L.L.C. (K-H) V&V Guidelines:
 - General Guidelines for Data Verification and Validation, DA-GR01-v2, 2002a
 - V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v2, 2002b
 - V&V Guidelines for Volatile Organics, DA-SS01-v3, 2002c
 - V&V Guidelines for Semivolatile Organics, DA-SS02-v3, 2002d
 - V&V Guidelines for Metals, DA-SS05-v3, 2002e; and
- Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5.

The IHSS Group 700-5 data was evaluated using two duplicate samples that were collected at Sampling Location CG49-016 (from the A and B intervals). This location was included in the IASAP Addendum for IHSS Group 700-5 (#IA-03-17), however, as

explained in Section 2.2, the location was transferred to the IHSS Group 700-11 project. No other duplicate samples were collected, and therefore, data associated with Sampling Location CG49-016 are reflected in this DQA.

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

6.2 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/MSDs);
- Laboratory control samples (LCSs);
- 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 (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, hard-copy data (for example, individual analytical data packages) are currently filed by report identification number and maintained by K-H Analytical Services Division; older hard copies may reside in the Federal Center in Lakewood, Colorado. Electronic data are stored in the RFETS Soil Water Database.

Both real and QC data for IHSS Group 700-5 are included on the enclosed CD in Microsoft Access 2000 format.

6.2.1 Accuracy

The following measures of accuracy were evaluated:

- LCSs;
- Surrogates;
- Field blanks; and
- Sample MSs.

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

Laboratory Control Sample Evaluation

The frequency of LCS measurements is presented in Table 8. As indicated, LCS analyses were run for all methods except gamma spectroscopy. The on-site laboratories are not required to provide this data.

**Table 8
LCS Summary**

Test Method	Laboratory Batch	LCS Included
Alpha spectroscopy	4156483	Yes
Alpha spectroscopy	4156492	Yes
Alpha spectroscopy	4156496	Yes
Alpha spectroscopy	4164066	Yes
Alpha spectroscopy	4164068	Yes
Alpha spectroscopy	4164069	Yes
SW-846 6010	4154547	Yes
SW-846 6010	4155259	Yes
SW-846 6010	4156462	Yes
SW-846 6010	4157057	Yes
SW-846 6010	4160433	Yes
SW-846 6010	4160434	Yes
SW-846 6010	4162315	Yes
SW-846 6010	4162318	Yes
SW-846 8082	4155346	Yes
SW-846 8082	4156454	Yes
SW-846 8082	4156455	Yes
SW-846 8260	4156380	Yes

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Test Method	Laboratory Batch	LCS Included
SW-846 8260	4157048	Yes
SW-846 8260	MS1 VOA 040527A	Yes
SW-846 8260	MS1 VOA 040601A	Yes
SW-846 8260	MS2 VOA 040602A	Yes
SW-846 8260	MS3 VOA 040527A	Yes
SW-846 8270	4156447	Yes

Minimum and maximum LCS results are tabulated by chemical for the entire project in Table 9. LCS results that were outside of tolerances were reviewed to determine whether a potential bias might be indicated. LCS recoveries are not indicative of matrix effects because they are not prepared using Site samples. LCS results do indicate whether the laboratory may be introducing a bias in the results. Recoveries reported above the upper limit may indicate the actual sample results are less than reported. Because this is environmentally conservative, no further action is needed.

Table 9
LCS Evaluation Summary

Test Method	CAS No.	Analyte	Minimum Result	Maximum Result	Unit
SW-846 8260	71-55-6	1,1,1-Trichloroethane	90.29	101	%REC
SW-846 8260	79-34-5	1,1,2,2-Tetrachloroethane	74.37	97.16	%REC
SW-846 8260	79-00-5	1,1,2-Trichloroethane	86.19	98.25	%REC
SW-846 8260	75-34-3	1,1-Dichloroethane	92.42	116.4	%REC
SW-846 8260	75-35-4	1,1-Dichloroethene	94.98	121	%REC
SW-846 8270	120-82-1	1,2,4-Trichlorobenzene	74	74	%REC
SW-846 8260	120-82-1	1,2,4-Trichlorobenzene	86	100.3	%REC
SW-846 8260	95-50-1	1,2-Dichlorobenzene	88	98.12	%REC
SW-846 8260	107-06-2	1,2-Dichloroethane	94.57	105.1	%REC
SW-846 8260	78-87-5	1,2-Dichloropropane	95.29	106.9	%REC
SW-846 8260	106-46-7	1,4-Dichlorobenzene	87	96.32	%REC
SW-846 8270	95-95-4	2,4,5-Trichlorophenol	80	80	%REC
SW-846 8270	88-06-2	2,4,6-Trichlorophenol	80	80	%REC
SW-846 8270	120-83-2	2,4-Dichlorophenol	75	75	%REC
SW-846 8270	105-67-9	2,4-Dimethylphenol	85	85	%REC
SW-846 8270	51-28-5	2,4-Dinitrophenol	65	65	%REC
SW-846 8270	121-14-2	2,4-Dinitrotoluene	83	83	%REC
SW-846 8270	606-20-2	2,6-Dinitrotoluene	75	75	%REC
SW-846 8260	78-93-3	2-Butanone	82	128	%REC
SW-846 8270	91-58-7	2-Chloronaphthalene	74	74	%REC
SW-846 8270	95-57-8	2-Chlorophenol	71	71	%REC
SW-846 8270	91-57-6	2-Methylnaphthalene	78	78	%REC
SW-846 8270	95-48-7	2-Methylphenol	73	73	%REC
SW-846 8270	88-74-4	2-Nitroaniline	94	94	%REC
SW-846 8270	91-94-1	3,3'-Dichlorobenzidine	66	66	%REC
SW-846 8270	534-52-1	4,6-Dinitro-2-methylphenol	74	74	%REC
SW-846 8270	106-47-8	4-Chloroaniline	74	74	%REC

Test Method	CAS No.	Analyte	Minimum Result	Maximum Result	Unit
SW-846 8260	108-10-1	4-Methyl-2-pentanone	78	120.6	%REC
SW-846 8270	106-44-5	4-Methylphenol	73	73	%REC
SW-846 8270	100-02-7	4-Nitrophenol	106	106	%REC
SW-846 8270	83-32-9	Acenaphthene	74	74	%REC
SW-846 8260	67-64-1	Acetone	68	136.2	%REC
SW-846 6010	7429-90-5	Aluminum	99	104	%REC
SW-846 8270	120-12-7	Anthracene	83	83	%REC
SW-846 6010	7440-36-0	Antimony	89	95	%REC
SW-846 8082	12674-11-2	Aroclor-1016	83	95	%REC
SW-846 8082	11096-82-5	Aroclor-1260	89	111	%REC
SW-846 6010	7440-38-2	Arsenic	89	94	%REC
SW-846 6010	7440-39-3	Barium	98	101	%REC
SW-846 8260	71-43-2	Benzene	94	107.3	%REC
SW-846 8270	56-55-3	Benzo(a)anthracene	77	77	%REC
SW-846 8270	50-32-8	Benzo(a)pyrene	81	81	%REC
SW-846 8270	205-99-2	Benzo(b)fluoranthene	78	78	%REC
SW-846 8270	207-08-9	Benzo(k)fluoranthene	89	89	%REC
SW-846 8270	65-85-0	Benzoic Acid	41	41	%REC
SW-846 8270	100-51-6	Benzyl Alcohol	69	69	%REC
SW-846 6010	7440-41-7	Beryllium	99	103	%REC
SW-846 8270	111-44-4	bis(2-Chloroethyl)ether	58	58	%REC
SW-846 8270	39638-32-9	bis(2-Chloroisopropyl)ether	74	74	%REC
SW-846 8270	117-81-7	bis(2-Ethylhexyl)phthalate	80	80	%REC
SW-846 8260	75-27-4	Bromodichloromethane	92.89	102.1	%REC
SW-846 8260	75-25-2	Bromoform	82.69	96.17	%REC
SW-846 8260	74-83-9	Bromomethane	78.39	100	%REC
SW-846 8270	85-68-7	Butylbenzylphthalate	82	82	%REC
SW-846 6010	7440-43-9	Cadmium	86	94	%REC
SW-846 8260	75-15-0	Carbon Disulfide	74	135.1	%REC
SW-846 8260	56-23-5	Carbon Tetrachloride	88.57	101	%REC
SW-846 8260	108-90-7	Chlorobenzene	89.24	98.1	%REC
SW-846 8260	75-00-3	Chloroethane	93.46	115.6	%REC
SW-846 8260	67-66-3	Chloroform	92.73	105.4	%REC
SW-846 8260	74-87-3	Chloromethane	83	119.3	%REC
SW-846 6010	7440-47-3	Chromium	93	98	%REC
SW-846 8270	218-01-9	Chrysene	76	76	%REC
SW-846 8260	10061-01-5	cis-1,3-Dichloropropene	93.91	104	%REC
SW-846 6010	7440-48-4	Cobalt	90	95	%REC
SW-846 6010	7440-50-8	Copper	92	99	%REC
SW-846 8270	84-74-2	Di-n-butylphthalate	86	86	%REC
SW-846 8270	117-84-0	Di-n-octylphthalate	71	71	%REC
SW-846 8270	53-70-3	Dibenz(a,h)anthracene	79	79	%REC
SW-846 8270	132-64-9	Dibenzofuran	79	79	%REC
SW-846 8260	124-48-1	Dibromochloromethane	84.65	98.02	%REC
SW-846 8270	84-66-2	Diethylphthalate	82	82	%REC

Test Method	CAS No.	Analyte	Minimum Result	Maximum Result	Unit
SW-846 8270	131-11-3	Dimethylphthalate	80	80	%REC
SW-846 8260	100-41-4	Ethylbenzene	87.46	100.3	%REC
SW-846 8270	206-44-0	Fluoranthene	85	85	%REC
SW-846 8270	86-73-7	Fluorene	76	76	%REC
SW-846 8270	118-74-1	Hexachlorobenzene	78	78	%REC
SW-846 8260	87-68-3	Hexachlorobutadiene	83	99.74	%REC
SW-846 8270	87-68-3	Hexachlorobutadiene	80	80	%REC
SW-846 8270	77-47-4	Hexachlorocyclopentadiene	70	70	%REC
SW-846 8270	67-72-1	Hexachloroethane	77	77	%REC
SW-846 8270	193-39-5	Indeno(1,2,3-cd)pyrene	77	77	%REC
SW-846 6010	7439-89-6	Iron	100	102	%REC
SW-846 8270	78-59-1	Isophorone	77	77	%REC
SW-846 6010	7439-92-1	Lead	91	96	%REC
SW-846 6010	7439-93-2	Lithium	94	95	%REC
SW-846 6010	7439-96-5	Manganese	91	98	%REC
SW-846 6010	7439-97-6	Mercury	98	104	%REC
SW-846 8260	75-09-2	Methylene chloride	94.22	135.9	%REC
SW-846 6010	7439-98-7	Molybdenum	91	96	%REC
SW-846 8270	86-30-6	n-Nitrosodiphenylamine	89	89	%REC
SW-846 8270	621-64-7	n-Nitrosodipropylamine	72	72	%REC
SW-846 8270	91-20-3	Naphthalene	69	69	%REC
SW-846 8260	91-20-3	Naphthalene	79	98.85	%REC
SW-846 6010	7440-02-0	Nickel	92	96	%REC
SW-846 8270	98-95-3	Nitrobenzene	77	77	%REC
SW-846 8270	87-86-5	Pentachlorophenol	78	78	%REC
SW-846 8270	108-95-2	Phenol	71	71	%REC
SW-846 8270	129-00-0	Pyrene	76	76	%REC
SW-846 6010	7782-49-2	Selenium	90	94	%REC
SW-846 6010	7440-22-4	Silver	94	100	%REC
SW-846 6010	7440-24-6	Strontium	97	100	%REC
SW-846 8260	100-42-5	Styrene	90	106.5	%REC
SW-846 8260	127-18-4	Tetrachloroethene	80.72	98.33	%REC
SW-846 6010	7440-31-5	Tin	84	90	%REC
SW-846 8260	108-88-3	Toluene	84.3	99.7	%REC
SW-846 8260	10061-02-6	trans-1,3-Dichloropropene	89	105.4	%REC
SW-846 8260	79-01-6	Trichloroethene	93.63	108	%REC
SW-846 6010	11-09-6	Uranium, Total	99	101	%REC
SW-846 6010	7440-62-2	Vanadium	94	98	%REC
SW-846 8260	75-01-4	Vinyl chloride	97.47	117.9	%REC
SW-846 8260	1330-20-7	Xylene	88.5	107.2	%REC
SW-846 6010	7440-66-6	Zinc	94	97	%REC

Analytes with unacceptable low recoveries were evaluated as described here. If the maximum sample result divided by the lowest LCS recovery for that analyte is less than the WRW AL, no further action is taken because any indicated bias is not great enough to

affect project decisions. All metal and organic LCS recoveries for IHSS Group 700-5 passed the criterion, and therefore, did not impact project decisions. Any qualifications of individual results because of LCS performance exceeding upper or lower tolerance limits are also captured in the V&V flags, described in Section 6.2.3.

Surrogate Evaluation

The frequency of surrogate measurements, relative to each laboratory batch, is given in Table 10. The minimum and maximum surrogate results are tabulated, by chemical, for the entire project. Surrogates are added to every VOC sample, and, therefore, surrogate recoveries only impact individual samples. Unacceptable surrogate recoveries can indicate potential matrix effects. Surrogate recoveries reported above 100 percent may indicate the actual sample results are less than reported. Because this is environmentally conservative, no further action is needed. Therefore, only the lowest recoveries were evaluated. If the maximum sample result divided by the lowest surrogate recovery is less than the WRW AL for that analyte, no further action is taken because any indicated bias is not great enough to affect project decisions. All VOC analytes passed this criterion. Therefore, surrogate recoveries did not impact project decisions with respect to IHSS Group 700-5.

**Table 10
Surrogate Recovery Summary**

VOC Surrogate Recoveries				
Number of Samples	Analyte	Minimum Result	Maximum Result	Unit
10	4-Bromofluorobenzene	91	124.9	% REC
10	Deuterated 1,2-dichloroethane	92	108	% REC
10	Deuterated toluene	85	118	% REC
SVOC Surrogate Recoveries				
Number of Samples	Analyte	Minimum Result	Maximum Result	Unit
2	2-Fluorobiphenyl	64	72	% REC
2	2-Fluorophenol	67	68	% REC
2	Deuterated Nitrobenzene	73	74	% REC
2	p-Terphenyl-d14	76	89	% REC

Field Blank Evaluation

Results of the field blank analyses are provided in Table 11. Detectable (non-“U” laboratory qualified) amounts of contaminants within the blanks, which could indicate possible cross-contamination of samples, are evaluated if the same contaminant is detected in the associated real samples. Evaluation consists of multiplying the field blank results by 10 (for laboratory contaminants) or 5 (for non-laboratory contaminants) and comparing them to the WRW ALs. When the corrected field blank result is less than the WRW AL, the associated real results are considered acceptable. In the IHSS Group 700-

5 data, none of the field blank results multiplied by 10 exceeded their WRW ALs. Therefore, blank contamination did not adversely impact project decisions.

Table 11
Field Blank Summary

Laboratory	CAS No.	Analyte	Sample QC Code	Detected Result	Unit
URS	15117-96-1	Uranium-235	FB	0.155	pCi/g
URS	15117-96-1	Uranium-235	RNS	0.12	pCi/g
URS	7440-61-1	Uranium-238	FB	1.72	pCi/g
URS	7440-61-1	Uranium-238	RNS	1.79	pCi/g

Field blank (EB = equipment, field = FB, rinse = RNS, trip = TB) results greater than detection limits (not "U" qualified)

Sample Matrix Spike Evaluation

Table 12 provides a summary of the minimum and maximum MS results by chemical for the project. According to the EPA data validation guidelines (1994b), if organic MS recoveries are low, the LCS recovery should be checked. If the recovery is acceptable, no action is taken. LCS recoveries for organic analyses with potentially low, unacceptable MS recoveries were reviewed. For this project, these checks indicate no decisions were impacted for organic analytes with low MS recoveries (refer to previous section).

Table 12
Sample MS Evaluation Summary

Test Method Name	CAS	Analyte	Minimum Result	Maximum Result	Unit	Number of MS Samples	Number of Lab Batches
SW-846 8260	71-55-6	1,1,1-Trichloroethane	99.84	115	%REC	2	2
SW-846 8260	79-34-5	1,1,2,2-Tetrachloroethane	96	115.3	%REC	2	2
SW-846 8260	79-00-5	1,1,2-Trichloroethane	101	106.6	%REC	2	2
SW-846 8260	75-34-3	1,1-Dichloroethane	101.4	118	%REC	2	2
SW-846 8260	75-35-4	1,1-Dichloroethene	92.15	121	%REC	2	2
SW-846 8260	120-82-1	1,2,4-Trichlorobenzene	56.88	78	%REC	2	2
SW-846 8260	95-50-1	1,2-Dichlorobenzene	92.4	93	%REC	2	2
SW-846 8260	107-06-2	1,2-Dichloroethane	97.88	115	%REC	2	2
SW-846 8260	78-87-5	1,2-Dichloropropane	95.09	113	%REC	2	2
SW-846 8260	106-46-7	1,4-Dichlorobenzene	93.86	95	%REC	2	2
SW-846 8260	78-93-3	2-Butanone	74.02	100	%REC	2	2
SW-846 8260	108-10-1	4-Methyl-2-pentanone	91	93.58	%REC	2	2
SW-846 8260	67-64-1	Acetone	59.37	78	%REC	2	2
SW-846 6010	7429-90-5	Aluminum	5440	5440	%REC	1	1
SW-846 6010	7440-36-0	Antimony	42	42	%REC	1	1
SW-846 8082	12674-11-2	Aroclor-1016	95	95	%REC	1	1
SW-846 8082	11096-82-5	Aroclor-1260	136	136	%REC	1	1
SW-846 6010	7440-38-2	Arsenic	87	87	%REC	1	1
SW-846 6010	7440-39-3	Barium	99	99	%REC	1	1

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SW-846 8260	71-43-2	Benzene	93.9	119	%REC	2	2
SW-846 6010	7440-41-7	Beryllium	91	91	%REC	1	1
SW-846 8260	75-27-4	Bromodichloromethane	67.96	111	%REC	2	2
SW-846 8260	75-25-2	Bromoform	56.15	97	%REC	2	2
SW-846 8260	74-83-9	Bromomethane	100.3	112	%REC	2	2
SW-846 6010	7440-43-9	Cadmium	85	85	%REC	1	1
SW-846 8260	75-15-0	Carbon Disulfide	73.1	92	%REC	2	2
SW-846 8260	56-23-5	Carbon Tetrachloride	89.34	113	%REC	2	2
SW-846 8260	108-90-7	Chlorobenzene	98.38	103	%REC	2	2
SW-846 8260	75-00-3	Chloroethane	97.4	105	%REC	2	2
SW-846 8260	67-66-3	Chloroform	106	115	%REC	2	2
SW-846 8260	74-87-3	Chloromethane	84.92	102	%REC	2	2
SW-846 6010	7440-47-3	Chromium	128	128	%REC	1	1
SW-846 8260	10061-01-5	cis-1,3-Dichloropropene	80.31	114	%REC	2	2
SW-846 6010	7440-48-4	Cobalt	88	88	%REC	1	1
SW-846 6010	7440-50-8	Copper	94	94	%REC	1	1
SW-846 8260	124-48-1	Dibromochloromethane	60.8	101	%REC	2	2
SW-846 8260	100-41-4	Ethylbenzene	93.52	106	%REC	2	2
SW-846 8260	87-68-3	Hexachlorobutadiene	45.2	60	%REC	2	2
SW-846 6010	7439-89-6	Iron	890	890	%REC	1	1
SW-846 6010	7439-92-1	Lead	90	90	%REC	1	1
SW-846 6010	7439-93-2	Lithium	93	93	%REC	1	1
SW-846 6010	7439-96-5	Manganese	87	87	%REC	1	1
SW-846 6010	7439-97-6	Mercury	91	91	%REC	1	1
SW-846 8260	75-09-2	Methylene chloride	116.5	118	%REC	2	2
SW-846 6010	7439-98-7	Molybdenum	87	87	%REC	1	1
SW-846 8260	91-20-3	Naphthalene	78	83.8	%REC	2	2
SW-846 6010	7440-02-0	Nickel	89	89	%REC	1	1
SW-846 6010	7782-49-2	Selenium	88	88	%REC	1	1
SW-846 6010	7440-22-4	Silver	91	91	%REC	1	1
SW-846 6010	7440-24-6	Strontium	93	93	%REC	1	1
SW-846 8260	100-42-5	Styrene	91.36	100	%REC	2	2
SW-846 8260	127-18-4	Tetrachloroethene	90.8	107	%REC	2	2
SW-846 6010	7440-31-5	Tin	82	82	%REC	1	1
SW-846 8260	108-88-3	Toluene	101.4	107	%REC	2	2
SW-846 8260	10061-02-6	trans-1,3-Dichloropropene	85.02	102	%REC	2	2
SW-846 8260	79-01-6	Trichloroethene	89.7	116	%REC	2	2
SW-846 6010	11-09-6	Uranium, Total	92	92	%REC	1	1
SW-846 6010	7440-62-2	Vanadium	125	125	%REC	1	1
SW-846 8260	75-01-4	Vinyl chloride	83.85	112	%REC	2	2
SW-846 8260	1330-20-7	Xylene	93.19	103	%REC	2	2
SW-846 6010	7440-66-6	Zinc	146	146	%REC	1	1

6.2.2 Precision

Precision is measured by evaluating both MSDs and field duplicates, as described in the following sections.

Matrix Spike Duplicate Evaluation

Laboratory precision is measured through the use of MSDs, as summarized in Table 13. Analytes with the highest relative percent differences (RPDs) (greater than 35 percent) were reviewed by comparing the highest sample result to the WRW AL. For analytes with RPDs greater than 35 percent, if the highest sample results were sufficiently below the ALs, no further action was needed. For this project, all analytes with RPDs greater than 35 percent had maximum values considerably below their ALs, and therefore, project decisions were not impacted.

Table 13
Sample MSD Evaluation

Test Method	CAS No.	Analyte	Maximum RPD
SW-846 8260	71-55-6	1,1,1-Trichloroethane	1.846
SW-846 8260	79-34-5	1,1,2,2-Tetrachloroethane	11.269
SW-846 8260	79-00-5	1,1,2-Trichloroethane	6.609
SW-846 8260	75-34-3	1,1-Dichloroethane	0.295
SW-846 8260	75-35-4	1,1-Dichloroethene	3.361
SW-846 8260	120-82-1	1,2,4-Trichlorobenzene	10.909
SW-846 8260	95-50-1	1,2-Dichlorobenzene	8.247
SW-846 8260	107-06-2	1,2-Dichloroethane	5.092
SW-846 8260	78-87-5	1,2-Dichloropropane	0.881
SW-846 8260	106-46-7	1,4-Dichlorobenzene	6.122
SW-846 8260	78-93-3	2-Butanone	17.610
SW-846 8260	108-10-1	4-Methyl-2-pentanone	17.047
SW-846 8260	67-64-1	Acetone	21.613
SW-846 6010	7429-90-5	Aluminum	35.753
SW-846 6010	7440-36-0	Antimony	11.236
SW-846 8082	12674-11-2	Aroclor-1016	5.405
SW-846 8082	11096-82-5	Aroclor-1260	2.182
SW-846 6010	7440-38-2	Arsenic	3.390
SW-846 6010	7440-39-3	Barium	1.015
SW-846 8260	71-43-2	Benzene	0.470
SW-846 6010	7440-41-7	Beryllium	2.174
SW-846 8260	75-27-4	Bromodichloromethane	2.926
SW-846 8260	75-25-2	Bromoform	9.534
SW-846 8260	74-83-9	Bromomethane	1.386
SW-846 6010	7440-43-9	Cadmium	7.910
SW-846 8260	75-15-0	Carbon Disulfide	3.315
SW-846 8260	56-23-5	Carbon Tetrachloride	4.525

SW-846 8260	108-90-7	Chlorobenzene	3.810
SW-846 8260	75-00-3	Chloroethane	12.121
SW-846 8260	67-66-3	Chloroform	0.568
SW-846 8260	74-87-3	Chloromethane	1.450
SW-846 6010	7440-47-3	Chromium	11.070
SW-846 8260	10061-01-5	cis-1,3-Dichloropropene	3.072
SW-846 6010	7440-48-4	Cobalt	3.352
SW-846 6010	7440-50-8	Copper	3.141
SW-846 8260	124-48-1	Dibromochloromethane	4.714
SW-846 8260	100-41-4	Ethylbenzene	1.927
SW-846 8260	87-68-3	Hexachlorobutadiene	11.024
SW-846 6010	7439-89-6	Iron	76.827
SW-846 6010	7439-92-1	Lead	11.518
SW-846 6010	7439-93-2	Lithium	2.128
SW-846 6010	7439-96-5	Manganese	4.494
SW-846 6010	7439-97-6	Mercury	3.243
SW-846 8260	75-09-2	Methylene chloride	2.510
SW-846 6010	7439-98-7	Molybdenum	2.273
SW-846 8260	91-20-3	Naphthalene	16.328
SW-846 6010	7440-02-0	Nickel	8.602
SW-846 6010	7782-49-2	Selenium	2.247
SW-846 6010	7440-22-4	Silver	3.243
SW-846 6010	7440-24-6	Strontium	2.174
SW-846 8260	100-42-5	Styrene	4.878
SW-846 8260	127-18-4	Tetrachloroethene	4.566
SW-846 6010	7440-31-5	Tin	1.212
SW-846 8260	108-88-3	Toluene	2.765
SW-846 8260	10061-02-6	trans-1,3-Dichloropropene	6.084
SW-846 8260	79-01-6	Trichloroethene	1.954
SW-846 6010	11-09-6	Uranium, Total	3.209
SW-846 6010	7440-62-2	Vanadium	9.205
SW-846 8260	75-01-4	Vinyl chloride	1.386
SW-846 8260	1330-20-7	Xylene	1.923
SW-846 6010	7440-66-6	Zinc	76.271

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 14 indicates that all field duplicate frequencies were greater than 5 percent.

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Table 14
Field Duplicate Sample Frequency Summary

Test Method Name	Number of Real Samples	Number of Duplicate Samples	% Duplicate Samples
Alpha Spectroscopy	3	2	66.67%
Gamma Spectroscopy	14	2	14.29%
SW-846 6010	14	2	14.29%
SW-846 8082	12	2	16.67%
SW-846 8260	10	1	10.00%
SW-846 8270	2	2	100.00%
SW-846 8290	2	2	100.00%

The RPD values indicate how much variation exists in the field duplicate analyses. EPA data validation guidelines state that "there are no required review criteria for field duplicate analyses comparability" (EPA 1994b). For the DQA, the highest RPD values (Table 15) were reviewed. The highest concentrations for analytes with high RPD values (>35 percent) were multiplied by three, and the resulting values were compared to the ALs. For this project, all analytes with RPDs greater than 35 percent had maximum values considerably below their ALs, and therefore, project decisions were not impacted.

Table 15
RPD Evaluation Summary

Lab Code	Test Method	Analyte	Max of Result RPD
ESTLDEN	SW-846 8260	1,1,1,2-Tetrachloroethane	2.857
ESTLDEN	SW-846 8260	1,1-Dichloropropene	2.857
ESTLDEN	SW-846 8260	1,2,3-Trichlorobenzene	2.857
ESTLDEN	SW-846 8260	1,2,4-Trichlorobenzene	2.857
ESTLDEN	SW-846 8270	1,2,4-Trichlorobenzene	9.524
ESTLDEN	SW-846 8260	1,2-Dibromoethane	2.857
ESTLDEN	SW-846 8260	2,2-Dichloropropane	2.857
ESTLDEN	SW-846 8270	2,4,5-Trichlorophenol	9.524
ESTLDEN	SW-846 8270	2,4,6-Trichlorophenol	9.524
ESTLDEN	SW-846 8270	2,4-Dichlorophenol	9.524
ESTLDEN	SW-846 8270	2,4-Dimethylphenol	3.243
ESTLDEN	SW-846 8270	2,4-Dinitrophenol	3.846
ESTLDEN	SW-846 8270	2-Chloronaphthalene	9.524
ESTLDEN	SW-846 8270	2-Chlorophenol	9.524
ESTLDEN	SW-846 8270	2-Methylnaphthalene	76.923
ESTLDEN	SW-846 8270	2-Methylphenol	3.243
ESTLDEN	SW-846 8270	2-Nitroaniline	3.846
ESTLDEN	SW-846 8270	2-Nitrophenol	9.524
ESTLDEN	SW-846 8270	3,3'-Dichlorobenzidine	4.878
ESTLDEN	SW-846 8270	3-Nitroaniline	3.846
ESTLDEN	SW-846 8270	4,6-Dinitro-2-Methylphenol	3.846

ESTLDEN	SW-846 8270	4-Bromodiphenyl Ether	9.524
ESTLDEN	SW-846 8270	4-Chloro-3-Methylphenol	4.878
ESTLDEN	SW-846 8270	4-Chloroaniline	4.878
ESTLDEN	SW-846 8270	4-Chlorophenyl Phenyl Ether	9.524
ESTLDEN	SW-846 8260	4-Methyl-2-Pentanone	0.000
ESTLDEN	SW-846 8270	4-Methylphenol	3.243
ESTLDEN	SW-846 8270	4-Nitroaniline	3.846
ESTLDEN	SW-846 8270	4-Nitrophenol	3.846
ESTLDEN	SW-846 8270	Acenaphthene	96.000
ESTLDEN	SW-846 8270	Acenaphthylene	3.846
ESTLDEN	SW-846 6010	Aluminum	17.143
ESTLDEN	SW-846 8270	Anthracene	181.862
ESTLDEN	SW-846 8082	Aroclor-1016	66.667
ESTLDEN	SW-846 8082	Aroclor-1221	66.667
ESTLDEN	SW-846 8082	Aroclor-1232	66.667
ESTLDEN	SW-846 8082	Aroclor-1242	66.667
ESTLDEN	SW-846 8082	Aroclor-1254	76.190
ESTLDEN	SW-846 8082	Aroclor-1260	66.667
ESTLDEN	SW-846 6010	Barium	24.000
ESTLDEN	SW-846 8260	Benzene	2.857
ESTLDEN	SW-846 8260	Benzene, 1,2,4-Trimethyl	2.857
ESTLDEN	SW-846 8270	Benzo(A)Anthracene	118.367
ESTLDEN	SW-846 8270	Benzo(A)Pyrene	116.484
ESTLDEN	SW-846 8270	Benzo(B)Fluoranthene	35.294
ESTLDEN	SW-846 8270	Benzo(G,H,I)Perylene	105.882
ESTLDEN	SW-846 8270	Benzo(K)Fluoranthene	122.727
ESTLDEN	SW-846 8270	Benzoic Acid	3.846
ESTLDEN	SW-846 8270	Benzyl Alcohol	4.878
ESTLDEN	SW-846 6010	Beryllium	12.022
ESTLDEN	SW-846 8270	Bis(2-Chloroethoxy)Methane	9.524
ESTLDEN	SW-846 8270	Bis(2-Chloroethyl)Ether	9.524
ESTLDEN	SW-846 8270	Bis(2-Chloroisopropyl)Ether	9.524
ESTLDEN	SW-846 8270	Bis(2-Ethylhexyl)Phthalate	85.714
ESTLDEN	SW-846 8260	Bromobenzene	2.857
ESTLDEN	SW-846 8260	Bromochloromethane	2.857
ESTLDEN	SW-846 8260	Bromodichloromethane	2.857
ESTLDEN	SW-846 8260	Bromoform	2.857
ESTLDEN	SW-846 8270	Butylbenzylphthalate	9.524
ESTLDEN	SW-846 6010	Calcium	19.549
ESTLDEN	SW-846 8260	Carbon Disulfide	2.857
ESTLDEN	SW-846 8260	Chlorobenzene	2.857
ESTLDEN	SW-846 8260	Chloroform	2.857
ESTLDEN	SW-846 6010	Chromium	58.462
ESTLDEN	SW-846 8270	Chrysene	123.636
ESTLDEN	SW-846 8260	Cis-1,3-Dichloropropene	2.857
ESTLDEN	SW-846 6010	Cobalt	13.115

ESTLDEN	SW-846 6010	Copper	27.027
ESTLDEN	SW-846 8270	Di-N-Butylphthalate	126.957
ESTLDEN	SW-846 8270	Di-N-Octylphthalate	9.524
ESTLDEN	SW-846 8270	Dibenz(A,H)Anthracene	7.229
ESTLDEN	SW-846 8270	Dibenzofuran	95.652
ESTLDEN	SW-846 8260	Dibromochloromethane	2.857
ESTLDEN	SW-846 8270	Diethylphthalate	9.524
ESTLDEN	SW-846 8270	Dimethylphthalate	9.524
ESTLDEN	SW-846 8270	Fluoranthene	44.156
ESTLDEN	SW-846 8270	Fluorene	100.000
ESTLDEN	SW-846 8270	Hexachlorobenzene	9.524
ESTLDEN	SW-846 8270	Hexachlorobutadiene	9.524
ESTLDEN	SW-846 8270	Hexachlorocyclopentadiene	9.524
ESTLDEN	SW-846 8270	Hexachloroethane	9.524
ESTLDEN	SW-846 8270	Indeno(1,2,3-Cd)Pyrene	96.000
ESTLDEN	SW-846 6010	Iron	6.897
ESTLDEN	SW-846 8270	Isophorone	9.524
ESTLDEN	SW-846 8260	Isopropylbenzene	2.857
ESTLDEN	SW-846 6010	Lead	45.161
URS	Gamma Spectroscopy	Lead-212	67.535
ESTLDEN	SW-846 6010	Lithium	15.686
ESTLDEN	SW-846 8260	m-Dichlorobenzene	2.857
ESTLDEN	SW-846 8270	m-Dichlorobenzene	9.524
ESTLDEN	SW-846 6010	Magnesium	8.000
ESTLDEN	SW-846 6010	Manganese	14.194
ESTLDEN	SW-846 6010	Mercury	19.355
ESTLDEN	SW-846 8260	Methylene Chloride	2.857
ESTLDEN	SW-846 8270	N-Nitrosodiphenylamine	9.524
ESTLDEN	SW-846 8270	N-Nitrosodipropylamine	9.524
ESTLDEN	SW-846 8270	Naphthalene	73.684
ESTLDEN	SW-846 6010	Nickel	35.897
ESTLDEN	SW-846 8270	Nitrobenzene	9.524
ESTLDEN	SW-846 8270	Pentachlorophenol	3.846
ESTLDEN	SW-846 8270	Phenanthrene	111.765
ESTLDEN	SW-846 8270	Phenol	3.243
ESTLDEN	SW-846 6010	Potassium	12.500
URS	Gamma Spectroscopy	Potassium-40	66.818
ESTLDEN	SW-846 8270	Pyrene	55.556
ESTLDEN	SW-846 6010	Silica	8.696
ESTLDEN	SW-846 6010	Strontium	13.043
ESTLDEN	SW-846 8260	Styrene	2.857
ESTLDEN	SW-846 6010	Titanium	17.391
ESTLDEN	SW-846 8260	Toluene	2.857
ESTLDEN	SW-846 8260	Trichloroethene	2.857
ESTLDEN	SW-846 8260	Trichlorofluoromethane	2.857
ESTLDEN	SW-846 6010	Vanadium	14.634

ESTLDEN	SW-846 6010	Zinc	73.171
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6.2.3 Completeness

Based on original program 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 16 presents 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 (none for the IHSS Group 700-5 project) for each analyte group. For this project, the percentages of SVOC and PCB analyses validated were below Program requirements; however, the ER Program V&V goal of 25 percent is being met.

**Table 16
V&V Summary**

Validation Qualifier Code	Total of CAS Numbers	Alpha Spectroscopy Results	Gamma Spectroscopy Results	SW-846 6010 Results	SW-846 8082 Results	SW-846 8260 Results	SW-846 8270 Results
J	21	0	0	20	0	1	0
J1	66	0	0	65	0	1	0
UJ	5	0	0	1	0	4	0
UJ1	22	0	0	15	0	5	2
V	277	5	12	71	14	175	0
V1	608	10	30	150	70	246	102
Total	999	15	42	322	84	432	104
Validated	303	5	12	92	14	180	0
% Validated	30.33%	33.33%	28.57%	28.57%	16.67%	41.67%	0.00%
Verified	696	10	30	230	70	252	104
% Verified	69.67%	66.67%	71.43%	71.43%	83.33%	58.33%	100.00%

Validations: J = Estimated, JB = Estimated with possible laboratory contamination, R = Rejected, UJ = Estimated detection limit, V = Validated

Verifications: J1 = Estimated, JB1 = Estimated with possible laboratory contamination, R1 = Rejected, UJ1 = Estimated detection limit, V1 = Validated

6.2.4 Sensitivity

RLs, in units of micrograms per kilogram ($\mu\text{g}/\text{kg}$) for organics, milligrams per kilogram (mg/kg) for metals, and picocuries per gram (pCi/g) for radionuclides, were compared with RFCA ALs. Adequate sensitivities of analytical methods were attained for all COCs that affect project decisions. "Adequate" sensitivity is defined as an RL less than an analyte's associated AL, typically less than one-half the AL.

6.3 Summary of Data Quality

LCS, surrogate, MS and MSD recoveries and field blank analyses are acceptable. No records were rejected, and over 25 percent of the results for most of the analytical

methods (2/3) were validated. Data collected and used for IHSS Group 700-5 are adequate for decision making.

7.0 PROJECT CONCLUSIONS

Results of the accelerated action justify an NFAA determination for IHSS Group 700-5. This justification is based on the following:

- Contaminant concentrations within IHSS Group 700-5 are below WRW ALs, except for surface and subsurface Aroclor 1254 concentrations at Sampling Location CG49-012. This location will be remediated under the IHSS Group 700-11 project.
- NFAA is justified based on the SSRS.

8.0 REFERENCES

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EPA, 1994b, U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, 540/R-94/012.

EPA, 1994c, U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, 540/R-94/013.

EPA, 1998, Guidance for the Data Quality Assessment Process, Practical Methods for Data Analysis, QA/G-9.

K-H, 2002a, General Guidelines for Data Verification and Validation, DA-GR01-v2, October.

K-H, 2002b, V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v2, October.

K-H, 2002c, V&V Guidelines for Volatile Organics, DA-SS01-v3, October.

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K-H, 2002e, V&V Guidelines for Metals, DA-SS05-v3, October.

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APPENDIX A
CORRESPONDENCE

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

Date/Time: March 23, 2004/ 9:00 a.m.

Site Contact(s): Greg Pudlik and Gerry Kelly
Phone: 303-966-7698 or x4979

Regulatory Contact: Harlen Ainscough
Phone: 303-692-3337

Agency: CDPHE

Purpose of Contact: Agreement of proposed SAP Addendum sampling locations in drainage to Bowman's Pond (IHSS Group 700-11, #IA-04-10)

Discussion

Met with Mr. Harlen Ainscough at Bowman's Pond to discuss the proposed sampling locations in the drainage leading into the pond. During the field check it was agreed by all parties to sample three locations in the drainage. These locations were originally proposed and approved in the SAP Addendum for 700-5 (UBC770); however, the data results will be included in the Closeout Report for 700-11 as well.

The first location (CG49-012) targets runoff from B770 in an open concrete channel near the downspout on the southeast corner of the building. The second sample targets the influent to the east-west trending culvert that leads to the pond. This sample (CG49-015) is also located directly downgradient of a north-south trending storm drain leading away from B774. The third location (CG49-016) is located in the upstream cattail area of the pond and directly downgradient of a second storm drain from the B774 area. This third location is also near the location of the highest recorded PCB detections in the area; therefore, this sample will include analysis for dioxins.

Mr. Ainscough was informed that the 700-11 SAP Addendum would have the agreed upon locations incorporated into the document along with previously discussed and resolved comments from the March 4, 2004 Comment Resolution Meeting at the Mountain View office.

Contact Record Prepared By: Greg Pudlik

Required Distribution

S. Bell, RFFO	M. Keating, K-H RISS	A. Primrose, K-H RISS
J. Berardini, K-H	G. Kleeman, USEPA	T. Rehder, USEPA
L. Brooks, K-H ESS	D. Kruchek, CDPHE	S. Serreze, RISS
M. Broussard, K-H RISS	D. Mayo, K-H RISS	D. Shelton, K-H
L. Butler, K-H RISS	R. McCalister, DOE	C. Spreng, CDPHE
G. Carnival, K-H RISS	J. Mead, K-H ESS	S. Surovchak, RFFO
N. Castaneda, RFFO	S. Nesta, K-H RISS	K. Wiemelt, K-H RISS
C. Deck, K-H Legal	L. Norland, K-H RISS	C. Zahm, K-H
R. DiSalvo, RFFO	K. North, K-H ESS	
S. Gunderson, CDPHE	E. Pottorff, CDPHE	

ENCLOSURE

Complete Data Set Compact Disc

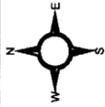
Accelerated Action Data

39
39

Figure 1
IHSS Group 700-5
Location

KEY

-  IHSS Group 700-5
-  Demolished building
-  Standing building
-  Paved road



100 0 100 200 300 400 500 Feet

Scale = 1:4,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:



Prepared for:



File: w:\projects\2003\700-5\

Date: 07/14/04

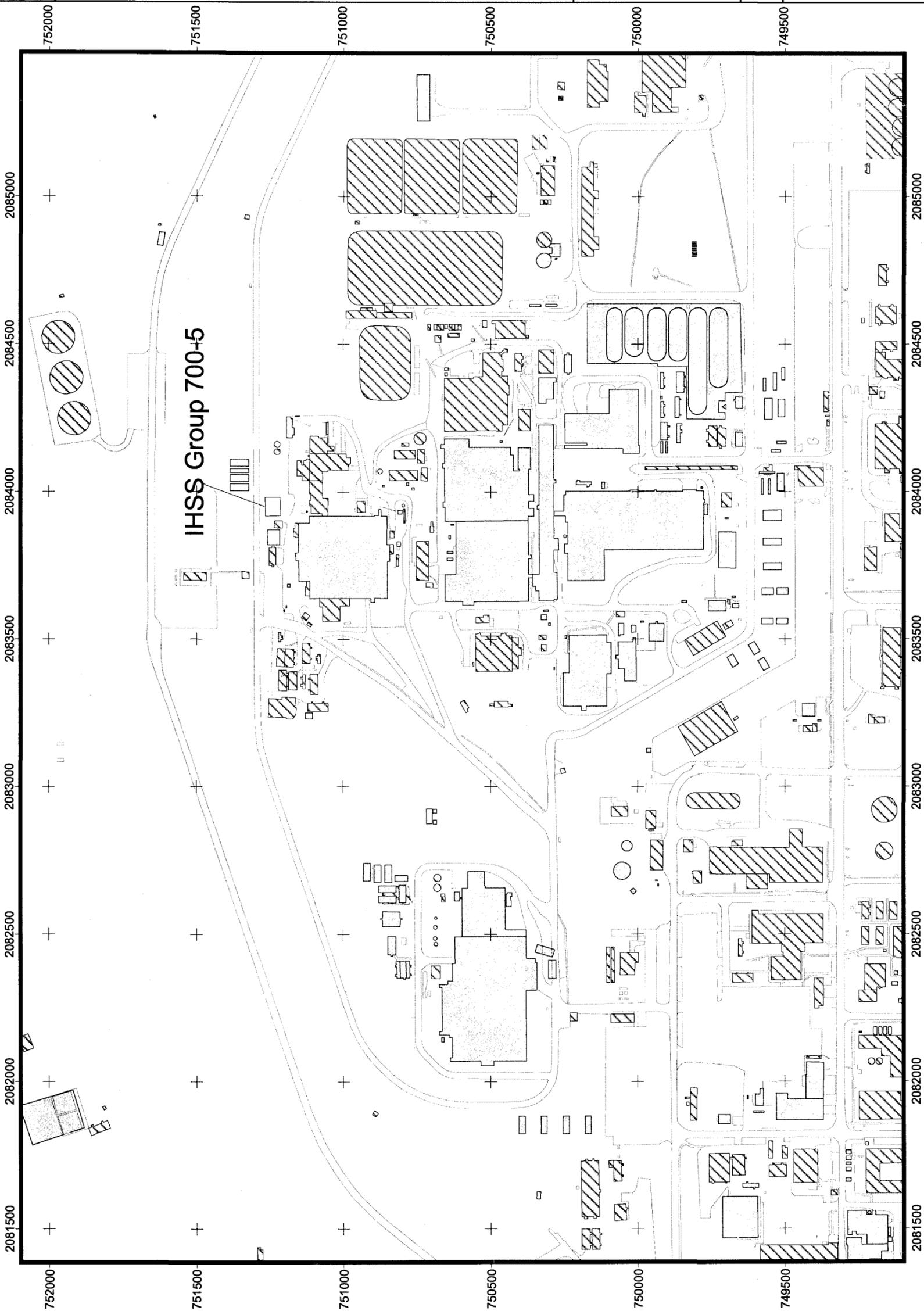


Figure 3
IHSS Group 700-5
Accelerated Action Sampling
Locations and Results

KEY

- Soil location with concentrations greater than WRW ALs and greater than background means plus 2 standard deviations or reporting limits
- Soil location with concentrations less than WRW ALs and greater than background means plus 2 standard deviations or reporting limits

UBC 770

IHSS

PAC

Building

OPWL

Foundation Drain

Storm Sewer

Stream

Fence

Paved Road



100 0 100 Feet

Scale 1:800

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:



Prepared for:

File: w:\projects\2003\700-5\700-5.apr Date: 07/20/04

IA-A-002344 Pg. 12

Location	Analyte	Result	RI	Background	Wrw	Unit	Startdepth	Enddepth
CG49-008	Aluminum	18000.000	NA.000	16902.000	228000.0	mg/kg	0.0	5.0
CG49-008	Arsoicr-1254	46.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-008	Cadmium	21.000	NA.000	16.990	40800.0	mg/kg	0.0	5.0
CG49-008	Copper	19.000	NA.000	14.970	20400.0	mg/kg	0.0	5.0
CG49-008	Lithium	16.000	NA.000	2.253	351.0	mg/kg	0.0	5.0
CG49-008	Strontium	89.000	NA.000	2.000	30.0	mg/kg	0.0	5.0
CG49-008	Uranium	1.000	NA.000	7.940	8.0	mg/kg	0.0	5.0
CG49-008	Zinc	1.000	NA.000	0.1490	351.0	mg/kg	0.0	5.0

Location	Analyte	Result	RI	Background	Wrw	Unit	Startdepth	Enddepth
CG49-011	Americium-241	9.250	NA.000	0.023	75.000	pCi/g	0.0	5.0
CG49-011	Americium-241	160.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-011	Barium	2.000	NA.000	16.990	26400.0	mg/kg	0.0	5.0
CG49-011	Cadmium	19.000	NA.000	16.990	26400.0	mg/kg	0.0	5.0
CG49-011	Chromium	23.000	NA.000	35.910	20400.0	mg/kg	0.0	5.0
CG49-011	Lithium	23.000	NA.000	2.253	351.0	mg/kg	0.0	5.0
CG49-011	Manganese	23.000	NA.000	16.990	20400.0	mg/kg	0.0	5.0
CG49-011	Nickel	6.136	NA.000	48.940	81.30000.0	mg/kg	0.0	5.0
CG49-011	Plutonium-239/240	0.136	NA.000	0.094	8.0	pCi/g	0.0	5.0
CG49-011	Uranium-235	280.000	NA.000	NA.000	12400.0	mg/kg	0.0	5.0
CG49-011	Uranium-238	400.000	NA.000	NA.000	12400.0	mg/kg	0.0	5.0
CG49-011	Zinc	160.000	NA.000	1.35100	357.0000.0	mg/kg	0.0	5.0
CG49-011	Zinc	1.413	NA.000	0.020	85.0	mg/kg	0.0	5.0

Location	Analyte	Result	RI	Background	Wrw	Unit	Startdepth	Enddepth
CG49-013	Americium-241	1.450	NA.000	0.023	75.0	pCi/g	0.0	5.0
CG49-013	Americium-241	1300.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-013	Barium	3.700	NA.000	16.990	26400.0	mg/kg	0.0	5.0
CG49-013	Cadmium	2.000	NA.000	16.990	26400.0	mg/kg	0.0	5.0
CG49-013	Chromium	2.000	NA.000	35.910	20400.0	mg/kg	0.0	5.0
CG49-013	Copper	2.000	NA.000	14.970	20400.0	mg/kg	0.0	5.0
CG49-013	Lithium	2.000	NA.000	2.253	351.0	mg/kg	0.0	5.0
CG49-013	Nickel	2.000	NA.000	48.940	81.30000.0	mg/kg	0.0	5.0
CG49-013	Plutonium-239/240	2.000	NA.000	0.094	8.0	pCi/g	0.0	5.0
CG49-013	Zinc	440.000	NA.000	NA.000	12400.0	mg/kg	0.0	5.0
CG49-013	Zinc	9.690	NA.000	1.35100	357.0000.0	mg/kg	0.0	5.0
CG49-013	Zinc	1.413	NA.000	0.020	85.0	mg/kg	0.0	5.0

Location	Analyte	Result	RI	Background	Wrw	Unit	Startdepth	Enddepth
CG49-012	Americium-241	1.450	NA.000	0.023	75.0	pCi/g	0.0	5.0
CG49-012	Americium-241	1460.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-012	Arsoicr-1254	2.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-012	Barium	2.000	NA.000	16.990	26400.0	mg/kg	0.0	5.0
CG49-012	Cadmium	2.000	NA.000	16.990	26400.0	mg/kg	0.0	5.0
CG49-012	Chromium	2.000	NA.000	35.910	20400.0	mg/kg	0.0	5.0
CG49-012	Copper	2.000	NA.000	14.970	20400.0	mg/kg	0.0	5.0
CG49-012	Lithium	2.000	NA.000	2.253	351.0	mg/kg	0.0	5.0
CG49-012	Nickel	2.000	NA.000	48.940	81.30000.0	mg/kg	0.0	5.0
CG49-012	Plutonium-239/240	2.000	NA.000	0.094	8.0	pCi/g	0.0	5.0
CG49-012	Uranium-235	2.000	NA.000	NA.000	12400.0	mg/kg	0.0	5.0
CG49-012	Uranium-238	2.000	NA.000	NA.000	12400.0	mg/kg	0.0	5.0
CG49-012	Zinc	3.000	NA.000	1.35100	357.0000.0	mg/kg	0.0	5.0
CG49-012	Zinc	3.000	NA.000	0.020	85.0	mg/kg	0.0	5.0

Location	Analyte	Result	RI	Background	Wrw	Unit	Startdepth	Enddepth
CG49-010	Aluminum-154	18000.000	NA.000	16902.000	228000.0	mg/kg	0.0	5.0
CG49-010	Barium	160.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-010	Cadmium	18.000	NA.000	16.990	26400.0	mg/kg	0.0	5.0
CG49-010	Chromium	16.000	NA.000	14.970	20400.0	mg/kg	0.0	5.0
CG49-010	Lithium	3.333	NA.000	2.253	351.0	mg/kg	0.0	5.0
CG49-010	Uranium-234	1600.000	NA.000	2.000	30.0	mg/kg	0.0	5.0
CG49-010	Uranium-235	7.340	NA.000	7.940	8.0	mg/kg	0.0	5.0
CG49-010	Uranium-238	0.392	NA.000	0.1490	351.0	mg/kg	0.0	5.0
CG49-010	Uranium-238	4.645	NA.000	0.1490	351.0	mg/kg	0.0	5.0

Location	Analyte	Result	RI	Background	Wrw	Unit	Startdepth	Enddepth
CG49-022	Barium	150.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-022	Strontium	46.000	NA.000	48.940	81.30000.0	mg/kg	0.0	5.0
CG49-022	Uranium-235	0.183	NA.000	0.094	8.0	pCi/g	0.0	5.0

Location	Analyte	Result	RI	Background	Wrw	Unit	Startdepth	Enddepth
CG49-021	Acetone	99.000	6.000	102000000.0	102000000.0	ug/kg	0.0	5.0
CG49-021	Benium	200.000	NA.000	16902.000	228000.0	mg/kg	0.0	5.0
CG49-021	Benium	200.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-021	Chromium	16.000	NA.000	11.990	20400.0	mg/kg	0.0	5.0
CG49-021	Lithium	2.000	NA.000	2.253	351.0	mg/kg	0.0	5.0
CG49-021	Nickel	7.000	NA.000	0.066	50.0	pCi/g	0.0	5.0
CG49-021	Strontium	2.000	NA.000	48.940	81.30000.0	mg/kg	0.0	5.0
CG49-021	Toluene	2.000	1.000	NA.000	61300000.0	ug/kg	0.0	5.0

Location	Analyte	Result	RI	Background	Wrw	Unit	Startdepth	Enddepth
CG49-008	Aluminum-154	21000.000	NA.000	16902.000	228000.0	mg/kg	0.0	5.0
CG49-008	Barium	180.000	NA.000	141.260	26400.0	mg/kg	0.0	5.0
CG49-008	Chromium	17.000	NA.000	11.990	20400.0	mg/kg	0.0	5.0
CG49-008	Copper	16.000	NA.000	14.970	20400.0	mg/kg	0.0	5.0
CG49-008	Lithium	5.000	NA.000	2.253	351.0	mg/kg	0.0	5.0
CG49-008	Uranium-234	9.000	NA.000	2.000	30.0	mg/kg	0.0	5.0
CG49-008	Uranium-238	9.000	NA.000	2.000	30.0	mg/kg	0.0	5.0

770

150.1

771

Figure 2
IHSS Group 700-5
Existing Soil Sampling Results
Greater Than Background Means
Plus 2 Standard Deviations or
Method Detection Limits

KEY

- Less than WRW ALs and greater than background or MDLs
- Less than background or MDLs

UBC 770

IHSS

PAC

Building

OPWL

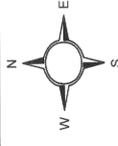
Foundation drain

Storm sewer

Stream

Fence

Paved road



0 100 Feet

Scale 1:600

State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD 27

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File: w:\projects\2003\700-5\700-5.apr Date: 07/20/04

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