NOTICE

All drawings located at the end of the document.

DRAFT CLOSEOUT REPORT FOR IHSS GROUP 000-1 SOLAR EVAPORATION PONDS AREA OF CONCERN

December 2002

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ENCLOSURE

ACRONYMS

AL	action level
AOC	Area of Concern
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	contaminant of concern
DOE	U.S. Department of Energy
DQA	Data Quality Assessment
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Procedure
ft	feet
HEPA	high efficiency particulate absorption
IA	Industrial Area
IDC	Item Description Code
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
ITS	Interceptor Trench System
K-H	Kaiser-Hill Company L.L.C.
LLW	low-level waste
mg/kg	milligrams per kilogram
MST	Modular Storage Tanks
NLR	No Longer Representative
NPWL	New Process Waste Lines
OPWL	Original Process Waste Lines
PAC	Potential Area of Concern
PAM	Proposed Action Memorandum
PARCCS	precision, accuracy, representativeness, completeness, comparability and sensitivity
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RL	reporting limit
RSOP	RFCA Standard Operating Procedure
SAP	Sampling and Analysis Plan
SEP	Solar Evaporation Ponds
Site	Rocky Flats Environmental Technology Site
SOR	sum of ratio
SVOC	semivolatile organic compound
ug/kg	micrograms per kilogram
ug/l	micrograms per liter

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 the Individual Hazardous Substance Site (IHSS) Group 000-1 Solar Evaporation Ponds Area of Concern (AOC), which is located at the Rocky Flats Environmental Technology Site. Activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan, the IASAP Addendum #IA-02-07, and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol for Routine Remediation (ER RSOP). Notification of the planned characterization and removal activities was provided in ER RSOP Notification #02-08.

Activities were conducted between August 6 and November 20, 2002, and involved the removal of all concrete slabs, all above-ground waste lines, some below-ground waste lines, a valve pit, miscellaneous valve components, all sumps and pumps, and contaminated soil (hot spots). There were only minor deviations from the Notification. Some below-ground waste lines and drain lines remain, but all of these lines have been disrupted (plugged). Best management practices will be conducted under the Proposed Action Memorandum (PAM) for the Solar Evaporation Ponds (DOE 2002d), and will involve pushing in the berms, adding fill to create a gentle grade to the south, and then seeding the AOC.

The action also involved characterization, including characterization of PAC 900-1310 and excavations where contaminated items and soil were removed. Characterization analytical results indicate that all soil concentrations were below RFCA Tier II Action Levels, except for one beryllium concentration and 16 arsenic concentrations. All exceedances were significantly below the RFCA Tier I ALs. Confirmation sampling results indicate that all soil concentrations were below RFCA Tier II Action Levels, except for one beryllium concentration, which was slightly above the RFCA Tier II Action Level. Results of the data quality assessment conducted confirmed that the data quality objectives were attained relative to sampling power (number and types of samples), confidence in decisions (>90%), and the various verification and validation criteria applied.

Removal activities were consistent with and contributed to the ER RSOP overall long-term remedial action objectives for RFETS soil. The removal of slabs, the valve pit, valve components, line sections, sumps, and hot spots, and the disruption of remaining lines contributed to the protection of human health and the environment because potential sources of contamination were removed or isolated. These actions also minimized the need for long-term maintenance and institutional or engineering controls because potential sources of contamination were removed or isolated. In addition, best management practices were used during the accelerated action to prevent the spread of contamination during the accelerated action (e.g., erosion and duct controls). Air monitoring data during the accelerated action did not indicate any exceedances.

The accelerated action involved three RCRA Units (# 21, 48 and 374.3). RCRA Units 21 and 48 had been partially closed prior to the accelerated action, and removal of the remaining concrete slabs associated with Building 788, the Clarifier, and the pump

transfer station at Building 308A under this accelerated action constitutes final closure of the two RCRA Units. No additional documentation will be submitted for the closure of these RCRA units. RCRA Unit 374.3 consists of the NPWL, and removal of the aboveground line section from Building 910 to Building 774 constitutes partial closure of the RCRA unit (refer to Section 3.0). Closure of the ponds is addressed in the PAM.

Recommendations for near-term institutional controls until final closure and stewardship decisions are implemented include the following:

- Maintain signs and barriers; and
- Control soil excavation through the Site Soil Disturbance Permit process.

Recommendations for long-term stewardship actions include the following:

- Continuing Federal ownership and control over the Site;
- Continuing groundwater treatment via the Solar Pond Plume Treatment System;
- Continuing surface water and groundwater monitoring; and
- Land use restrictions to prevent soil excavation that could access or disturb residual contamination. Specific land use restrictions will be discussed in the Site Long-Term Stewardship Plan and evaluated along with other institutional controls for implementation in the final remedy selection process.

1.0 INTRODUCTION

This closeout report summarizes accelerated action activities conducted at the Individual Hazardous Substance Site (IHSS) Group 000-1 Solar Evaporation Ponds Area of Concern (AOC), which is located at the Rocky Flats Environmental Technology Site (RFETS or Site) in Golden, Colorado. The IHSS Group 000-1 AOC consists of the following:

- The five existing Solar Evaporation Ponds (SEPs), including the berms;
- Leak detection drains and collection sumps;
- Remaining concrete slabs associated with the Building 788 Permacon, the Clarifier, and the 308A Pumphouse, which are units regulated under the Resource Conservation and Recovery Act (RCRA) (Unit 21 includes the Permacon, and Unit 48 includes the Clarifier and Pumphouse);
- Portions of the Original Process Waste Lines (OPWL) and five valve pits, which are part of IHSS 121;
- The above-ground pipeline from Building 910 to Building 374, which is part of the New Process Waste Lines (NPWL) (NPWL constitutes RCRA Unit 374.3);
- The Modular Storage Tanks (MST) return line to Building 910; and
- The Interceptor Trench System (ITS) Water Spill area, which constitutes Potential Area of Concern (PAC) 900-1310.

The location of the IHSS Group 000-1 AOC is shown on Figure 1, and the AOC components are shown on Figure 2.

Characterization and removal activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan (SAP) (DOE 2001), the IASAP Addendum #IA-02-07 (DOE 2002a), and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002b). Notification of the planned characterization and removal activities was provided in ER RSOP Notification #02-08 (DOE 2002c), which was approved by the Colorado Department of Public Health and Environment (CDPHE) on July 30, 2002 (CDPHE 2002).

This report contains the information necessary to demonstrate attainment of cleanup objectives and closure of the IHSS Group 000-1 SEP AOC. This information includes:

- 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 rational for the action and map of the target remediation area,
  - Map of the actual remediation area, including excavation bounds, and dates and durations of specific remedial activities, and
  - Photographs documenting site characterization, remediation, and reclamation activities;
- Confirmation sampling data, including data tables and location maps, as well as a comparison of the confirmation data to applicable cleanup goals;
- Description of RCRA unit closure activities;
- Description of deviations from the ER RSOP,
- Description of near-term stewardship actions and long-term stewardship recommendations;
- Description of site condition after remediation that includes a map of reporting limits (RLs), RFCA Action Levels (ALs), and residual contamination above RFCA Tier II ALs;
- Disposition of wastes;
- Site reclamation;
- Table of No Longer Representative sample locations that have been remediated, which will be used to mark database records so they are not used in the Comprehensive Risk Assessment or other Site analyses; and
- Data quality assessment (DQA), including comparison of confirmation data with project data quality objectives (DQOs).

2.0 SITE CHARACTERIZATION

The SEP AOC was extensively characterized prior to and during the accelerated action. Pre-accelerated action data are summarized in the SEP Proposed Action Memorandum (PAM), entitled *RCRA Closure of the RFETS Solar Evaporation Ponds* (DOE 2002d), and presented in the *Human Health Risk Assessment of the Solar Evaporation Ponds* (an attachment to the PAM). Results of the risk assessment indicate minimal risk to the wildlife refuge worker (WLRW). However, based on the risk assessment, six surface soil locations were identified for soil removal (i.e., SS403093, SS402893, 43793, SS440593, SS400693 & SS402793; refer to Figure 3). These locations were selected because concentrations of americium-241 or plutonium-239 resulted in an excess cancer rate for the WLRW greater than 1×10^{-5}, or concentrations of non-radionuclides (e.g., cadmium) increased the non-carcinogenic risk to the WLRW.

Some surface and subsurface soil data are also presented in the IASAP Addendum #IA-02-07 (DOE 2002a). The Addendum presents soil sampling results from locations at OPWL Pipeline P-26, OPWL pipeline and valve pit southeast of SEP 207C, OPWL P-40, and PAC 900-1310. Results above RFCA Tier II ALs are presented in Table 1 below. No Tier I AL exceedances were found within PAC 900-1310.

Table 1
Pre-Accelerated Action Data on OPWL within the SEP AOC

Location	Media	Analyte	Result (mg/kg)	Tier II AL (mg/kg)
P-26	Surface Soil	Beryllium	3.3	1.04
	Subsurface Soil	Arensic	24	2.99
OPWL & Valve Pit	Surface Soil	Beryllium	1.1	1.04
	Surface Soil	Beryllium	2.2	1.04
	Subsurface Soil	Arensic	13.6	2.99
P-40	Surface Soil	Beryllium	1.8	1.04
	Subsurface Soil	Arensic	17.1	2.99

Based on this previously collected data, only limited characterization was conducted during the accelerated action, primarily to characterize excavations where pond components and soil were removed. Analytical data were collected in accordance with IASAP Addendum #IA-02-07 (DOE 2002a). Sampling specifications, including potential contaminants of concern and media to be sampled, are presented in Table 2. Deviations from the IASAP Addendum are shown in Table 3, and sample locations are shown in Figure 4.

Accelerated action data (i.e., above background mean plus two standard deviations or detection limits) are presented in Figure 5 and Table 4. Appendix C includes a compact disk that includes a complete data set of the accelerated action data. All contaminant concentrations in the sampled areas were below RFCA Tier II ALs, except for one beryllium concentration and 16 arsenic concentrations. Exceedances are highlighted in Table 4 and summarized in Table 5 below. All exceedances were significantly below the RFCA Tier I ALs.

2.1 Sum of Ratios

RFCA Tier II and Tier I sum of ratios (SORs) were calculated for the SEP AOC accelerated action sample locations. SOR calculations were based on accelerated action analytical data and the following list of contaminants of concern (COCs):

- Radionuclides (americium-241, plutonium-239/240, uranium-234, uranium-235, and uranium-238);
- Metals (arsenic, copper, mercury, lead, etc.); and
- Organics [volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs)].

The COCs are based on data that exceed background mean plus two standard deviations or RLs. Metals and organics were grouped together for non-radionuclide SOR calculations. Plutonium, americium, and uranium were grouped together for radionuclide SOR calculations. Table 6 presents the RFCA Tier I and Tier II SORs for surface soil, and Table 7 presents the RFCA Tier I and Tier II SORs for subsurface soils. RFCA Tier II SORs are shown in Figures 6 – 9. SORs were calculated for all locations with analytical results greater than background mean plus two standard deviations or reporting limits. No surface soil SORs for Tier I COCs or surface soil SORs for Tier II radionuclides exceeded 1. Ten surface soil SORs for Tier II non-radionuclides exceeded 1. No subsurface soil SORs for Tier I COCs or subsurface soil SORs for Tier II radionuclides exceeded 1. Seven subsurface soil SORs for Tier II non-radionuclides exceeded 1. SORs, based on accelerated action and confirmation analytical data, are presented in Section 8.0, Post-Remediation Condition.

Tier II SORs greater than 1 are due to beryllium and arsenic concentrations exceeding Tier II ALs. However, all exceedances were significantly below the RFCA Tier I ALs. In accordance with RFCA, additional actions are not warranted.

Table 2
SEP AOC Characterization Sampling Specifications

IHSS Group	IHSS/PAC	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
000-1	SEP AOC	CJ46-000	2084597.28	750700.806	Subsurface Soil	11	11	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ46-001	2084605.76	750700.423	Subsurface Soil	11	11	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ46-002	2084601.35	750704.637	Subsurface Soil	11	11	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ46-003	2084602.4	750693.713	Subsurface Soil	11	11	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ46-004	2084599.47	750696.964	Subsurface Soil	11	11	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ49-DR01	2084820.9	751197.426	Subsurface Soil	4	4	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CK48-003	2084917.58	751048.913	Subsurface Soil	3	3	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CK48-004	2084917.58	751048.913	Subsurface Soil	3	3	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CK48-005	2084917.58	751048.913	Subsurface Soil	3	3	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography

IHSS Group	IHSS/PAC	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CK48-000	2084925.79	750960.476	Subsurface Soil	6	6	Radionuclides	Gamma Spec
								Metals	ICP
		CK48-001	2084910.36	750963.508	Subsurface Soil	6	6	Radionuclides	Gamma Spec
								Metals	ICP
		CK47-002	2084935.7	750957.076	Subsurface Soil	6	6	Radionuclides	Gamma Spec
								Metals	ICP
		CK47-000	2084927.8	750943.958	Subsurface Soil	6	6	Radionuclides	Gamma Spec
								Metals	ICP
		CK47-001	2084910.36	750944.838	Subsurface Soil	6	6	Radionuclides	Gamma Spec
								Metals	ICP
		CH48-000	2084272.54	751019.513	Subsurface Soil	4.5	6.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CH48-016	2084373.83	751011.291	Subsurface Soil	4.5	6.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CI48-000	2084427.65	750996.427	Subsurface Soil	0	3	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
		CI48-001	2084575.11	751005.476	Subsurface Soil	4.5	6.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CI48-002	2084475.69	751007.846	Subsurface Soil	4.5	6.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ46-DR01	2084622.9	750703.025	Subsurface Soil	7.5	7.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ47-000	2084595.74	750942.76	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-001	2084596.83	750920.713	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec

IHSS Group	IHSS/PAC	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
								Metals	6010
		CJ47-002	2084592.78	750919.788	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-003	2084611.91	750860.155	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-004	2084621.43	750843.746	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-005	2084610.35	750830.035	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-006	2084631.85	750859.651	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-007	2084631.86	750828.521	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-008	2084588.91	750883.19	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-009	2084589.14	750835.759	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-010	2084589.27	750816.652	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-011	2084606.42	750859.399	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-012	2084606.58	750835.641	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-013	2084606.8	750820.456	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-014	2084594.28	750896.955	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	6010
		CJ47-DR01	2084556.43	750776.173	Subsurface Soil	4	4	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography

IHSS Group	IHSS/PAC	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CJ47-DR02	2084590.72	750801.171	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
		CJ48-000	2084587.69	750990.666	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
		CJ48-001	2084613.74	750989.133	Surface Soil	0.0	0.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
		CJ48-002	2084771.92	751018.367	Subsurface Soil	4.5	6.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ48-003	2084672.17	751017.481	Subsurface Soil	4.5	6.5	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CJ48-004	2084598.87	750969.479	Subsurface Soil	0.0	6.0	Radionuclides	Gamma Spec
		CM47-000	2085240.65	750924.617	Surface Soil	0.0	0.5	Nitrate	Ion Chromatography
		CM47-001	2085234.21	750889.919	Surface Soil	0.0	0.5	Nitrate	Ion Chromatography
		CM47-002	2085246.96	750888.658	Surface Soil	0.0	0.5	Nitrate	Ion Chromatography
		CM48-000	2085236.13	750960.74	Surface Soil	0.0	0.5	Nitrate	Ion Chromatography
		CM48-001	2085249.95	750960.634	Surface Soil	0.0	0.5	Nitrate	Ion Chromatography
		CM48-002	2085215.68	751075.523	Subsurface Soil	4	4	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CM48-003	2085215.68	751075.523	Subsurface Soil	4	4	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CM48-004	2085215.68	751075.523	Subsurface Soil	4	4	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CM48-005	2085247.26	751024.543	Subsurface Soil	4	4	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography

IHSS Group	IHSS/PAC	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CM48-006	2085247.26	751024.543	Subsurface Soil	4	4	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
		CM48-007	2085247.26	751024.543	Subsurface Soil	4	4	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence
								Nitrate	Ion Chromatography
	900-1310	VALVE PIT #1	2084601.42	750700.944	Subsurface Soil	8	8	Radionuclides	Gamma Spec
								Metals	X-ray Fluorescence

Table 3
Deviations From the IASAP Addendum

IHSS/PAC/UBC Site	Location Code	Easting Planned	Northing Planned	Easting Actual	Northing Actual	Depth Interval Planned (ft)	Depth Interval Actual (ft)	Analyte	Comments
Solar Evaporation Pond – Area of Concern – PAC 900-1310 – Interceptor Trench System Water Spill	CM47-000	2085231.276	750926.308	2085240.65	750924.617	0-0.5'	0-0.5'	Radionuclides Metals Nitrate	Offset because of field conditions
	CM47-001	2085220.549	750880.337	2085234.21	750889.919	0-0.5'	0-0.5'	Radionuclides Metals Nitrate	Offset because of field conditions
	CM47-002	2085245.067	750878.805	2085246.96	750888.658	0-0.5'	0-0.5'	Radionuclides Metals Nitrate	Offset because of field conditions
	CM48-000	2085219.017	750972.278	2085236.13	750960.74	0-0.5'	0-0.5'	Radionuclides Metals Nitrate	Offset because of field conditions
	CM48-001	2085243.534	750975.342	2085249.95	750960.634	0-0.5'	0-0.5'	Radionuclides Metals Nitrate	Offset because of field conditions
RCRA Unit 21	CJ47-000	2084599.952	750938.566	2084595.74	750942.76	0-0.5'	0-0.5'	Radionuclides Metals	Offset because of field conditions
	CJ47-001	2084590.758	750887.999	2084596.83	750920.713	0-0.5'	0-0.5'	Radionuclides Metals	Offset because of field conditions
	CJ48-000	2084587.694	750990.666	2084587.69	750990.666	0-0.5'	0-0.5'	Radionuclides Metals	No change
	CJ48-001	2084613.743	750989.133	2084613.74	750989.133	0-0.5'	0-0.5'	Radionuclides Metals	No change
RCRA Unit 48	CJ47-003	2084612.211	750858.885	2084611.91	750860.155	0-0.5'	0-0.5'	Radionuclides Metals	Offset because of field conditions
	CJ47-004	2084621.405	750845.094	2084621.43	750843.746	0-0.5'	0-0.5'	Radionuclides Metals	Offset because of field conditions
	CJ47-005	2084606.082	750831.303	2084610.35	750830.035	0-0.5'	0-0.5'	Radionuclides Metals	Offset because of field conditions

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IHSS/PAC/UBC Site	Location Code	Easting Planned	Northing Planned	Easting Actual	Northing Actual	Depth Interval Planned (ft)	Depth Interval Actual (ft)	Analyte	Comments
	CJ47-006	2084632.131	750861.949	2084631.85	750859.651	0-0.5'	0-0.5'	Radionuclides Metals	Offset because of field conditions
	CJ47-007	2084633.664	750831.303	2084631.86	750828.521	0-0.5'	4-6	Radionuclides Metals	Offset because of field conditions and to sample beneath RCRA Unit
	CK47-000	2084911.017	750955.422	2084278.0	750944.0	0-0.5'	4-6	Radionuclides Metals	Offset because of field conditions and to sample beneath RCRA Unit
	CK47-001	2084907.952	750946.228	2084910.36	750944.8	0-0.5'	4-6	Radionuclides Metals	Offset because of field conditions and to sample beneath RCRA Unit
	CK47-002	2084918.679	750946.228	2084935.7	750957.076	0-0.5'	4-6	Radionuclides Metals	Offset because of field conditions and to sample beneath RCRA Unit
	CK48-000	2084903.355	750964.616	2084925.79	750960.5	0-0.5'	4-6	Radionuclides Metals	Offset because of field conditions and to sample beneath RCRA Unit
	CK48-001	2084921.743	750963.084	2084910.36	750963.508	0-0.5'	4-6	Radionuclides Metals	Offset because of field conditions and to sample beneath RCRA Unit
OPWL Valve Vault Southeastern Side of AOC	CK45-000	2084921.401	750425.699			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
	CK45-001	2084913.061	750430.703			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
	CK45-002	2084909.725	750417.358			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
	CK45-003	2084931.409	750419.027			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
	CL45-012	2084938.081	750432.371			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
OPWL Valve Vault Southwestern Side of AOC	CJ45-000	2084601.141	750445.715			4.5'-6.5'		Radionuclides Metals	Valve Vault not found

IHSS/PAC/UBC Site	Location Code	Easting Planned	Northing Planned	Easting Actual	Northing Actual	Depth Interval Planned (ft)	Depth Interval Actual (ft)	Analyte	Comments
								Nitrate	
	CJ45-001	2084614.485	750432.371			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
	CJ45-002	2084631.166	750449.051			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
	CJ45-003	2084624.494	750420.695			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
	CJ45-004	2084601.141	750420.695			4.5'-6.5'		Radionuclides Metals Nitrate	Valve Vault not found
OPWL Valve Vault West of Pond 207A	CJ46-000	2084589.465	750725.942	2084597.28	750700.806	4.5'-6.5'	11	Radionuclides	Soil was analyzed for radionuclides, metals, and nitrates Offset because of field conditions
	CJ46-001	2084609.481	750729.278	2084605.76	750700.423	4.5'-6.5'	11	Radionuclides Metals Nitrate	Offset because of field conditions
	CJ46-002	2084599.473	750722.606	2084601.35	750704.637	4.5'-6.5'	11	Radionuclides Metals Nitrate	Offset because of field conditions
	CJ46-003	2084609.481	750714.266	2084602.4	750693.713	4.5'-6.5'	11	Radionuclides Metals Nitrate	Offset because of field conditions
	CJ46-004	2084591.133	750714.266	2084599.47	750696.964	4.5'-6.5'	11	Radionuclides Metals Nitrate	Offset because of field conditions
Potential Leaking OPWL	CH48-000	2084272.542	751019.513	2084272.54	751019.513	4.5'-6.5'	4.5'-6.5'	Radionuclides Metals Nitrate	No change
	CK48-002	2084836.332	751002.833	2084810.8	751023.8	4.5'-6.5'	4.5'-6.5'	Radionuclides Metals Nitrate	No lat/long

IHSS/PAC/UBC Site	Location Code	Easting Planned	Northing Planned	Easting Actual	Northing Actual	Depth Interval Planned (ft)	Depth Interval Actual (ft)	Analyte	Comments
Miscellaneous Sumps	CK48-003	2084895.607	751054.361	2084917.58	751048.913	0-0.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CK48-003	2084895.607	751054.361	2084917.58	751048.913	0.5'-2.5'		Radionuclides Metals Nitrate	Not sampled This interval not sampled, sampled beneath sump
	CK48-003	2084895.607	751054.361	2084917.58	751048.913	2.5'-4.5'	3	Radionuclides Metals Nitrate	Offset because of field conditions
	CK48-004	2084913.541	751057.777	2084917.58	751048.913	0-0.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CK48-004	2084913.541	751057.777	2084917.58	751048.913	0.5'-2.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CK48-004	2084913.541	751057.777	2084917.58	751048.913	2.5'-4.5'	3	Radionuclides Metals Nitrate	Offset because of field conditions
	CK48-005	2084905.001	751041.551	2084917.58	751048.913	0-0.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CK48-005	2084905.001	751041.551	2084917.58	751048.913	0.5'-2.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CK48-005	2084905.001	751041.551	2084917.58	751048.913	2.5'-4.5'	3	Radionuclides Metals Nitrate	Offset because of field conditions
	CM48-002	2085162.062	751026.179	2085215.68	751075.523	0-0.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CM48-002	2085162.062	751026.179	2085215.68	751075.523	0.5'-2.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CM48-002	2085162.062	751026.179	2085215.68	751075.523	2.5'-4.5'	4	Radionuclides Metals Nitrate	Offset because of field conditions
	CM48-003	2085153.522	751013.368	2085215.68	751075.523	0-0.5'		Radionuclides Metals	Not sampled; same location as CM48-002

IHSS/PAC/UBC Site	Location Code	Easting Planned	Northing Planned	Easting Actual	Northing Actual	Depth Interval Planned (ft)	Depth Interval Actual (ft)	Analyte	Comments
								Nitrate	
	CM48-003	2085153.522	751013.368	2085215.68	751075.523	0.5'-2.5'		Radionuclides Metals Nitrate	Not sampled; same location as CM48-002
	CM48-003	2085153.522	751013.368	2085215.68	751075.523	2.5'-4.5'	4	Radionuclides Metals Nitrate	Not sampled; same location as CM48-002
	CM48-004	2085168.895	751012.514	2085215.68	751075.523	0-0.5'		Radionuclides Metals Nitrate	Not sampled; same location as CM48-002
	CM48-004	2085168.895	751012.514	2085215.68	751075.523	0.5'-2.5'		Radionuclides Metals Nitrate	Not sampled; same location as CM48-002
	CM48-004	2085168.895	751012.514	2085215.68	751075.523	2.5'-4.5'	4	Radionuclides Metals Nitrate	Not sampled; same location as CM48-002
	CM48-005	2085191.099	751005.682	2085247.26	751024.543	0-0.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CM48-005	2085191.099	751005.682	2085247.26	751024.543	0.5'-2.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump
	CM48-005	2085191.099	751005.682	2085247.26	751024.543	2.5'-4.5'	4	Radionuclides Metals Nitrate	Offset because of field conditions
	CM48-006	2085181.705	750992.017	2085247.26	751024.543	0-0.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sum.p Same latitude & longitude as CM48-005.
	CM48-006	2085181.705	750992.017	2085247.26	751024.543	0.5'-2.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump. Same latitude & longitude as CM48-005.
	CM48-006	2085181.705	750992.017	2085247.26	751024.543	2.5'-4.5'	4	Radionuclides Metals Nitrate	Offset because of field conditions. Same latitude & longitude as CM48-005.

IHSS/PAC/UBC Site	Location Code	Easting Planned	Northing Planned	Easting Actual	Northing Actual	Depth Interval Planned (ft)	Depth Interval Actual (ft)	Analyte	Comments
	CM48-007	2085201.348	750992.872	2085247.26	751024.543	0-0.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump. Same latitude & longitude as CM48-005.
	CM48-007	2085201.348	750992.872	2085247.26	751024.543	0.5'-2.5'		Radionuclides Metals Nitrate	This interval not sampled, sampled beneath sump. Same latitude & longitude as CM48-005.
	CM48-007	2085201.348	750992.872	2085247.26	751024.543	2.5'-4.5'	4	Radionuclides Metals Nitrate	Offset because of field conditions. Same latitude & longitude as CM48-005.
	CJ47-DR01			2084556.43	750776.173		4	Radionuclides Metals Nitrates	Not in SAP Addendum; SE Corner Pond 207A.
	CJ47-DR02			2084590.72	750801.171		0.0-0.5	Radionuclides Metals	Not in SAP Addendum; sample outside Building 788
	CJ46-DR01			2084622.9	750703.025		7.5	Radionuclides Metals Nitrates	Not in SAP Addendum; western side of Pond 207A
	VALVE PIT #1			2084601.42	750700.944		8	Radionuclides Metals	Not in SAP Addendum

35 mm DRAWING

Table 4
SEP AOC Accelerated Action Characterization Data Greater Than Background Means Plus Two Standard Deviations or Method Detection Limit

Location Code	Depth Interval (ft)	Analyte	Result	Reporting Limit	Background Mean Plus 2 Standard Deviations	Tier I AL	Tier II AL	Unit
CK48-000	6	Cadmium	20.0	0.05	1.70	1920.00	1920.00	mg/kg
CK48-001		Cadmium	530	0.06	1.70	1920.00	1920.00	mg/kg
		Lithium	41.0	0.22	34.66	38400.00	38400.00	mg/kg
CK47-002	6	Cadmium	30.0	0.05	1.70	1920.00	1920.00	mg/kg
		Lithium	38.0	0.18	34.66	38400.00	38400.00	mg/kg
CK47-000	6	Cadmium	89.0	0.05	1.70	1920.00	1920.00	mg/kg
		Copper	41.0	0.16	38.21	71100.00	71100.00	mg/kg
		Lead	48.0	0.20	24.97	1000.00	1000.00	mg/kg
		Zinc	150	0.22	139.10	576000.00	576000.00	mg/kg
CK47-001	6	Aluminum	40000	1.50	35373.17	1000000.00	1000000.00	mg/kg
		Barium	290	0.05	289.38	133000.00	133000.00	mg/kg
CH48-000	4.5 – 6.0	Barium	841	150.00	289.38	133000.00	133000.00	mg/kg
		Cadmium	2.40	85.00	1.70	1920.00	1920.00	mg/kg
		Copper	65.0	300.00	38.21	71100.00	71100.00	mg/kg
CH48-016	4.5 – 6.0	Barium	1060	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	73.0	300.00	38.21	71100.00	71100.00	mg/kg
CI48-001	4.5 – 6.0	Barium	590	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	49.0	300.00	38.21	71100.00	71100.00	mg/kg
CI48-002	4.5 – 6.0	Barium	500	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	41.0	300.00	38.21	71100.00	71100.00	mg/kg
		Vanadium	89.0	100.00	88.49	13400.00	13400.00	mg/kg
CJ46-000	11	Americium-241	26.0	4.00	0.02	209.00	38.00	pCi/g
		Arsenic	**15.0**	**25.00**	**13.14**	**299.00**	**2.99**	**mg/kg**
		Barium	739	150.00	289.38	133000.00	133000.00	mg/kg
		Cadmium	7.30	85.00	1.70	1920.00	1920.00	mg/kg
		Chromium	79.0	90.00	68.27	44300.00	4410.00	mg/kg
		Copper	81.0	300.00	38.21	71100.00	71100.00	mg/kg
		Lead	44.7	20.00	24.97	1000.00	1000.00	mg/kg
		Nickel	65.3	60.00	62.21	38400.00	38400.00	mg/kg
		Strontium	261	250.00	211.38	1000000.00	1000000.00	mg/kg
		Vanadium	205	100.00	88.49	13400.00	13400.00	mg/kg
CJ46-000		Zinc	270	300.00	139.10	576000.00	576000.00	mg/kg
CJ46-001	11	Americium-241	5.00	4.00	0.02	209.00	38.00	pCi/g
		Barium	631	150.00	289.38	133000.00	133000.00	mg/kg
		Cadmium	9.30	85.00	1.70	1920.00	1920.00	mg/kg
		Copper	64.0	300.00	38.21	71100.00	71100.00	mg/kg
		Lead	25.5	20.00	24.97	1000.00	1000.00	mg/kg
		Strontium	268	250.00	211.38	1000000.00	1000000.00	mg/kg

Location Code	Depth Interval (ft)	Analyte	Result	Reporting Limit	Background Mean Plus 2 Standard Deviations	Tier I AL	Tier II AL	Unit
		Vanadium	183	100.00	88.49	13400.00	13400.00	mg/kg
CJ46-002	11	Americium-241	32.0	4.00	0.02	209.00	38.00	pCi/g
		Barium	809	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	61.0	300.00	38.21	71100.00	71100.00	mg/kg
		Lead	47.2	20.00	24.97	1000.00	1000.00	mg/kg
		Strontium	230	250.00	211.38	1000000.00	1000000.00	mg/kg
		Vanadium	145	100.00	88.49	13400.00	13400.00	mg/kg
		Zinc	260	300.00	139.10	576000.00	576000.00	mg/kg
CJ46-003	11	**Arsenic**	**18.0**	**25.00**	**13.14**	**299.00**	2.99	**mg/kg**
		Barium	842	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	79.0	300.00	38.21	71100.00	71100.00	mg/kg
		Lead	29.4	20.00	24.97	1000.00	1000.00	mg/kg
		Strontium	240	250.00	211.38	1000000.00	1000000.00	mg/kg
		Vanadium	155	100.00	88.49	13400.00	13400.00	mg/kg
		Zinc	140	300.00	139.10	576000.00	576000.00	mg/kg
CJ46-004	11	Americium-241	5.50	4.00	0.02	209.00	38.00	pCi/g
		Barium	664	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	65.0	300.00	38.21	71100.00	71100.00	mg/kg
		Lead	29.8	20.00	24.97	1000.00	1000.00	mg/kg
		Vanadium	221	100.00	88.49	13400.00	13400.00	mg/kg
		Zinc	170	300.00	139.10	576000.00	576000.00	mg/kg
CJ47-000	0.0 – 0.5	**Arsenic**	**34.2**	**25**	**10.09**	**299.00**	**2.99**	**mg/kg**
		Barium	669	150	141.26	133000.00	133000.00	mg/kg
		Chromium	26.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	47.0	300	18.06	71100.00	71100.00	mg/kg
		Strontium	467	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	112	100	45.59	13400.00	13400.00	mg/kg
CJ47-001	0.0 – 0.5	**Arsenic**	**33.5**	**25**	**10.09**	**299.00**	**2.99**	mg/kg
		Barium	669	150	141.26	133000.00	133000.00	mg/kg
		Copper	91.0	300	18.06	71100.00	71100.00	mg/kg
		Strontium	429	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	80.0	100	45.59	13400.00	13400.00	mg/kg
CJ47-002	0.0 – 0.5	**Arsenic**	**30.5**	**25**	**10.09**	**299.00**	**2.99**	**mg/kg**
		Barium	657	150	141.26	133000.00	133000.00	mg/kg
		Chromium	23.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	35.0	300	18.06	71100.00	71100.00	mg/kg
		Strontium	430	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	88.0	100	45.59	13400.00	13400.00	mg/kg
CJ47-003	0.0 – 0.5	Aluminum	17000	11	16902	1000000.00	1000000.00	mg/kg
		Chromium	17.0	0.54	16.99	44300.00	4410.00	mg/kg
		Lithium	15.0	5.4	11.55	38400.00	38400.00	mg/kg
CJ47-005	0.0 – 0.5	Aluminum	20000	10	16902	1000000.00	1000000.00	mg/kg

Location Code	Depth Interval (ft)	Analyte	Result	Reporting Limit	Background Mean Plus 2 Standard Deviations	Tier I AL	Tier II AL	Unit
		Beryllium	**1.10**	**0.52**	**0.966**	**104.00**	**1.04**	**mg/kg**
		Chromium	19.0	0.52	16.99	44300.00	4410.00	mg/kg
		Lithium	17.0	5.2	11.55	38400.00	38400.00	mg/kg
		Nickel	15.0	4.2	14.91	38400.00	38400.00	mg/kg
CJ47-006	0.0 – 0.5	Cadmium	4.80	0.52	1.612	1920.00	1920.00	mg/kg
		Chromium	20.0	0.52	16.99	44300.00	4410.00	mg/kg
		Lithium	12.0	5.2	11.55	38400.00	38400.00	mg/kg
		Strontium	54.0	1	48.94	1000000.00	1000000.00	mg/kg
CJ47-007	0.0 – 0.5	Barium	250	1	141.26	133000.00	133000.00	mg/kg
		Lithium	14.0	5.2	11.55	38400.00	38400.00	mg/kg
		Zinc	80.0	2.1	73.76	576000.00	576000.00	mg/kg
CJ47-009	0.0 – 0.5	Americium-241	13.0	4	0.0227	215.00	38.00	pCi/g
CJ47-010	0.0 – 0.5	Americium-241	10.0	4	0.0227	215.00	38.00	pCi/g
CJ47-011	0.0 – 0.5	Americium-241	16.0	4	0.0227	215.00	38.00	pCi/g
CJ47-014	0.0 – 0.5	Barium	640	150	141.26	133000.00	133000.00	mg/kg
		Cadmium	5.70	85	1.612	1920.00	1920.00	mg/kg
		Chromium	158	90	16.99	44300.00	4410.00	mg/kg
		Lead	56.9	20	54.62	1000.00	1000.00	mg/kg
		Manganese	574	200	365.08	83600.00	83600.00	mg/kg
		Strontium	255	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	141	100	45.59	13400.00	13400.00	mg/kg
CJ48-000	0.0 – 0.5	**Arsenic**	**36.3**	**25**	**10.09**	**299.00**	**2.99**	**mg/kg**
		Barium	624	150	141.26	133000.00	133000.00	mg/kg
		Chromium	17.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	45.0	300	18.06	71100.00	71100.00	mg/kg
		Strontium	428	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	83.0	100	45.59	13400.00	13400.00	mg/kg
CJ48-001	0.0 – 0.5	**Arsenic**	**31.1**	**25**	**10.09**	**299.00**	**2.99**	**mg/kg**
		Barium	669	150	141.26	133000.00	133000.00	mg/kg
		Chromium	23.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	55.0	300	18.06	71100.00	71100.00	mg/kg
		Strontium	430	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	98.0	100	45.59	13400.00	13400.00	mg/kg
CJ48-002	4.5 – 6.5	Barium	611	150.00	289.38	133000.00	133000.00	mg/kg
CJ48-003	4.5 – 6.5	Barium	639	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	67.0	300.00	38.21	71100.00	71100.00	mg/kg
		Strontium	343	250.00	211.38	1000000.00	1000000.00	mg/kg
CK48-002	4.5 – 6.5	Barium	537	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	48.0	300.00	38.21	71100.00	71100.00	mg/kg
		Vanadium	95.0	100.00	88.49	13400.00	13400.00	mg/kg
CK48-003	3	**Arsenic**	**15.1**	**25.00**	**13.14**	**299.00**	**2.99**	**mg/kg**
		Barium	909	150.00	289.38	133000.00	133000.00	mg/kg

Location Code	Depth Interval (ft)	Analyte	Result	Reporting Limit	Background Mean Plus 2 Standard Deviations	Tier I AL	Tier II AL	Unit
		Cadmium	267	85.00	1.70	1920.00	1920.00	mg/kg
		Chromium	86.2	90.00	68.27	44300.00	4410.00	mg/kg
		Copper	120	300.00	38.21	71100.00	71100.00	mg/kg
		Iron	49100	2500.00	41046.52	576000.00	576000.00	mg/kg
		Lead	35.4	20.00	24.97	1000.00	1000.00	mg/kg
		Manganese	5900	200.00	901.62	83600.00	83600.00	mg/kg
		Nickel	253	60.00	62.21	38400.00	38400.00	mg/kg
		Strontium	248	250.00	211.38	1000000.00	1000000.00	mg/kg
		Vanadium	223	100.00	88.49	13400.00	13400.00	mg/kg
		Zinc	223	300.00	139.10	576000.00	576000.00	mg/kg
CK48-004	3	**Arsenic**	**22.4**	**25.00**	**13.14**	**299.00**	**2.99**	**mg/kg**
		Barium	969	150.00	289.38	133000.00	133000.00	mg/kg
		Cadmium	75.9	85.00	1.70	1920.00	1920.00	mg/kg
		Copper	104	300.00	38.21	71100.00	71100.00	mg/kg
		Iron	181000	2500.00	41046.52	576000.00	576000.00	mg/kg
		Manganese	1070	200.00	901.62	83600.00	83600.00	mg/kg
		Nickel	215	60.00	62.21	38400.00	38400.00	mg/kg
		Strontium	222	250.00	211.38	1000000.00	1000000.00	mg/kg
		Vanadium	240	100.00	88.49	13400.00	13400.00	mg/kg
		Zinc	149	300.00	139.10	576000.00	576000.00	mg/kg
CK48-005	3	Barium	853	150.00	289.38	133000.00	133000.00	mg/kg
		Cadmium	97.3	85.00	1.70	1920.00	1920.00	mg/kg
		Copper	77.9	300.00	38.21	71100.00	71100.00	mg/kg
		Iron	44900	2500.00	41046.52	576000.00	576000.00	mg/kg
		Lead	36.8	20.00	24.97	1000.00	1000.00	mg/kg
		Manganese	1510	200.00	901.62	83600.00	83600.00	mg/kg
		Nickel	114	60.00	62.21	38400.00	38400.00	mg/kg
		Strontium	219	250.00	211.38	1000000.00	1000000.00	mg/kg
		Vanadium	233	100.00	88.49	13400.00	13400.00	mg/kg
		Zinc	141	300.00	139.10	576000.00	576000.00	mg/kg
CM47-000	0.0 – 0.5	**Arsenic**	**17.0**	**25**	**10.09**	**299.00**	**2.99**	**mg/kg**
		Barium	665	150	141.26	133000.00	133000.00	mg/kg
		Cadmium	12.0	85	1.612	1920.00	1920.00	mg/kg
		Chromium	83.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	47.0	300	18.06	71100.00	71100.00	mg/kg
		Iron	41900	2500	18037	576000.00	576000.00	mg/kg
		Manganese	460	200	365.08	83600.00	83600.00	mg/kg
		Nickel	64.9	60	14.91	38400.00	38400.00	mg/kg
		Strontium	240	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	115	100	45.59	13400.00	13400.00	mg/kg
		Zinc	120	300	73.76	576000.00	576000.00	mg/kg
CM47-001	0.0 – 0.	Barium	567	150	141.26	133000.00	133000.00	mg/kg

Location Code	Depth Interval (ft)	Analyte	Result	Reporting Limit	Background Mean Plus 2 Standard Deviations	Tier I AL	Tier II AL	Unit
		Cadmium	5.30	85	1.612	1920.00	1920.00	mg/kg
		Chromium	51.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	42.0	300	18.06	71100.00	71100.00	mg/kg
		Iron	31400	2500	18037	576000.00	576000.00	mg/kg
		Nickel	46.0	60	14.91	38400.00	38400.00	mg/kg
		Strontium	481	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	54.0	100	45.59	13400.00	13400.00	mg/kg
CM47-002	0.0 – 0.	**Arsenic**	**15.0**	**25**	**10.09**	**299.00**	**2.99**	**mg/kg**
		Barium	733	150	141.26	133000.00	133000.00	mg/kg
		Cadmium	5.00	85	1.612	1920.00	1920.00	mg/kg
		Chromium	59.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	87.0	300	18.06	71100.00	71100.00	mg/kg
		Iron	35600	2500	18037	576000.00	576000.00	mg/kg
		Manganese	392	200	365.08	83600.00	83600.00	mg/kg
		Nickel	51.0	60	14.91	38400.00	38400.00	mg/kg
		Strontium	350	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	102	100	45.59	13400.00	13400.00	mg/kg
		Zinc	110	300	73.76	576000.00	576000.00	mg/kg
CM48-000	0.0 – 0.	Barium	613	150	141.26	133000.00	133000.00	mg/kg
		Cadmium	4.90	85	1.612	1920.00	1920.00	mg/kg
		Chromium	56.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	35.0	300	18.06	71100.00	71100.00	mg/kg
		Iron	37500	2500	18037	576000.00	576000.00	mg/kg
		Manganese	368	200	365.08	83600.00	83600.00	mg/kg
		Nickel	46.0	60	14.91	38400.00	38400.00	mg/kg
		Strontium	288	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	75.0	100	45.59	13400.00	13400.00	mg/kg
CM48-001	0.0 – 0.	**Arsenic**	**13.0**	**25**	**10.09**	**299.00**	**2.99**	**mg/kg**
		Barium	611	150	141.26	133000.00	133000.00	mg/kg
		Cadmium	23.0	85	1.612	1920.00	1920.00	mg/kg
		Chromiium	51.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	52.0	300	18.06	71100.00	71100.00	mg/kg
		Iron	37500	2500	18037	576000.00	576000.00	mg/kg
		Manganese	502	200	365.08	83600.00	83600.00	mg/kg
		Nickel	55.0	60	14.91	38400.00	38400.00	mg/kg
		Strontium	220	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	115	100	45.59	13400.00	13400.00	mg/kg
		Zinc	110	300	73.76	576000.00	576000.00	mg/kg
Valve Pit #1	8	**Arsenic**	**16.0**	**25.00**	**13.14**	**299.00**	**2.99**	**mg/kg**
		Barium	798	150.00	289.38	133000.00	133000.00	mg/kg
		Chromium	104	90.00	68.27	44300.00	4410.00	mg/kg
		Copper	71.0	300.00	38.21	71100.00	71100.00	mg/kg

Location Code	Depth Interval (ft)	Analyte	Result	Reporting Limit	Background Mean Plus 2 Standard Deviations	Tier I AL	Tier II AL	Unit
		Iron	58100	2500.00	41046.52	576000.00	576000.00	mg/kg
		Manganese	1410	200.00	901.62	83600.00	83600.00	mg/kg
		Nickel	72.9	60.00	62.21	38400.00	38400.00	mg/kg
		Strontium	230	250.00	211.38	1000000.00	1000000.00	mg/kg
		Vanadium	121	100.00	88.49	13400.00	13400.00	mg/kg
CJ46-DR01	7.5 – 7.5	**Arsenic**	**30.9**	**25.00**	**13.14**	**299.00**	**2.99**	**mg/kg**
		Barium	893	150.00	289.38	133000.00	133000.00	mg/kg
		Cadmium	4.67	85.00	1.70	1920.00	1920.00	mg/kg
		Chromium	69.8	90.00	68.27	44300.00	4410.00	mg/kg
		Copper	54.4	300.00	38.21	71100.00	71100.00	mg/kg
		Iron	58000	2500.00	41046.52	576000.00	576000.00	mg/kg
		Nickel	105	60.00	62.21	38400.00	38400.00	mg/kg
		Vanadium	267	100.00	88.49	13400.00	13400.00	mg/kg
		Zinc	188	300.00	139.10	576000.00	576000.00	mg/kg
CJ47-DR01	4 - 4	**Arsenic**	**24.2**	**25.00**	**13.14**	**299.00**	**2.99**	**mg/kg**
		Barium	666	150.00	289.38	133000.00	133000.00	mg/kg
		Copper	44.2	300.00	38.21	71100.00	71100.00	mg/kg
		Iron	41900	2500.00	41046.52	576000.00	576000.00	mg/kg
		Vanadium	204	100.00	88.49	13400.00	13400.00	mg/kg
CJ47-DR02	0.0 – 0.5	**Arsenic**	**20.4**	**25**	**10.09**	**299.00**	**2.99**	**mg/kg**
		Barium	686	150	141.26	133000.00	133000.00	mg/kg
		Chromium	36.0	90	16.99	44300.00	4410.00	mg/kg
		Copper	42.0	300	18.06	71100.00	71100.00	mg/kg
		Nickel	18.4	60	14.91	38400.00	38400.00	mg/kg
		Strontium	347	250	48.94	1000000.00	1000000.00	mg/kg
		Vanadium	100	100	45.59	13400.00	13400.00	mg/kg
CJ49-DR01	4 - 4	Barium	1100	150.00	289.38	133000.00	133000.00	mg/kg
		Vanadium	128	100.00	88.49	13400.00	13400.00	mg/kg
CK47-DR01	1 - 1	Barium	475	150.00	289.38	133000.00	133000.00	mg/kg
		Strontium	219	250.00	211.38	1000000.00	1000000.00	mg/kg

Table 5
RFCA Tier II Exceedances

Location	Contaminant	Results	Detection Limit	Background	Tier I AL	Tier II AL	Unit
CJ46-000	Arsenic	15	25	13.14	299	2.99	mg/kg
CJ46-003	Arsenic	18	25	13.14	299	2.99	mg/kg
CJ46-DR01	Arsenic	30.9	25	13.14	299	2.99	mg/kg
CJ47-000	Arsenic	34.2	25	13.14	299	2.99	mg/kg
CJ47-001	Arsenic	33.5	25	13.14	299	2.99	mg/kg
CJ47-002	Arsenic	30.5	25	13.14	299	2.99	mg/kg
CJ47-005	Beryllium	1.10	0.52	0.966	104	1.04	mg/kg
CJ47-DR01	Arsenic	24.2	25	13.14	299	2.99	mg/kg
CJ47-DR02	Arsenic	20.49	25	13.14	299	2.99	mg/kg
CJ48-000	Arsenic	36.3	25	13.14	299	2.99	mg/kg
CJ48-001	Arsenic	31.1	25	13.14	299	2.99	mg/kg
CK48-003	Arsenic	15.1	25	13.14	299	2.99	mg/kg
CK48-004	Arsenic	22.4	25	13.14	299	2.99	mg/kg
CM47-000	Arsenic	17	25	13.14	299	2.99	mg/kg
CM47-002	Arsenic	15	25	13.14	299	2.99	mg/kg
CM48-001	Arsenic	13	25	13.14	299	2.99	mg/kg
Valve Pit #1	Arsenic	16	25	13.14	299	2.99	mg/kg

Table 6
RFCA Sum of Ratios for SEP AOC Surface Soil

SOR Tye	Location	Easting	Northing	Tier I SOR	Tier II SOR
NON RAD	CJ48-000	2084587.694	750990.666	0.13	12.16
NON RAD	CJ47-000	2084595.74	750942.76	0.13	11.46
NON RAD	CJ47-001	2084596.833	750920.713	0.12	11.22
NON RAD	CJ48-001	2084613.743	750989.133	0.12	10.42
NON RAD	CJ47-002	2084592.78	750919.788	0.11	10.22
NON RAD	CM47-000	2085240.646	750924.617	0.16	5.81
NON RAD	CM47-002	2085246.958	750888.658	0.14	5.12
NON RAD	CM48-001	2085249.954	750960.634	0.14	4.46
NON RAD	CJ47-005	2084610.347	750830.035	0.03	1.08
NON RAD	CJ47-014	2084594.283	750896.955	0.09	0.12
NON RAD	CM48-000	2085236.129	750960.74	0.09	0.10
NON RAD	CM47-001	2085234.206	750889.919	0.07	0.08
NON RAD	CJ47-003	2084611.914	750860.155	0.02	0.02
NON RAD	CJ47-006	2084631.854	750859.651	0.00	0.01
NON RAD	CJ47-007	2084631.861	750828.521	0.00	0.00
NON RAD	CJ47-004	2084621.427	750843.746	NA	NA
RAD	CJ47-011	2084606.422	750859.399	0.07	0.42
RAD	CJ47-009	2084589.139	750835.759	0.06	0.34
RAD	CJ47-010	2084589.27	750816.652	0.05	0.26

N/A – Not applicable. Contaminants may be present but at concentrations below background plus two standard deviations or RL.

Table 7
RFCA Sum of Ratios for SEP AOC Subsurface Soil

SOR TYPE	Location	Easting	Northing	Sample Depth (feet)	TIER I SOR	TIER II SOR
NON RAD	308A NE	2084925.791	750960.476	6 - 6	0.01	0.01
NON RAD	308A NW	2084910.361	750963.508	6 - 6	0.28	0.28
NON RAD	308A OPWL	2084935.696	750957.076	6 - 6	0.02	0.02
NON RAD	308A SE	2084927.803	750943.958	6 - 6	0.10	0.10
NON RAD	308A SW	2084910.357	750944.838	6 - 6	0.04	0.04
NON RAD	CH48-000	2084272.542	751019.513	4.5 - 6.5	0.01	0.01
NON RAD	CH48-016	2084373.825	751011.291	4.5 - 6.5	0.01	0.01
NON RAD	CI48-001	2084575.112	751005.476	4.5 - 6.5	0.01	0.01
NON RAD	CI48-002	2084475.687	751007.846	4.5 - 6.5	0.01	0.01
NON RAD	CJ46-000	2084597.275	750700.806	11 - 11	0.12	5.11
NON RAD	CJ46-001	2084605.759	750700.423	11 - 11	0.05	0.05
NON RAD	CJ46-002	2084601.353	750704.637	11 - 11	0.07	0.07
NON RAD	CJ46-003	2084602.402	750693.713	11 - 11	0.11	6.07
NON RAD	CJ46-004	2084599.472	750696.964	11 - 11	0.05	0.05
NON RAD	CJ48-002	2084771.922	751018.367	4.5 - 6.5	0.00	0.00
NON RAD	CJ48-003	2084672.168	751017.481	4.5 - 6.5	0.01	0.01
NON RAD	CK48-002	2084810.77	751023.837	4.5 - 6.5	0.01	0.01
NON RAD	CK48-003	2084917.579	751048.913	3 - 3	0.42	5.43
NON RAD	CK48-004	2084917.579	751048.913	3 - 3	0.47	7.89
NON RAD	CK48-005	2084917.579	751048.913	3 - 3	0.21	0.21
NON RAD	VALVE PIT #1	2084601.421	750700.944	8 - 8	0.19	5.51
RAD	CJ46-000	2084597.275	750700.806	11 - 11	0.12	0.68
RAD	CJ46-001	2084605.759	750700.423	11 - 11	0.02	0.13
RAD	CJ46-002	2084601.353	750704.637	11 - 11	0.15	0.84
RAD	CJ46-004	2084599.472	750696.964	11 - 11	0.03	0.14

3.0 ACCELERATED ACTION

Accelerated action objectives were developed and described in ER RSOP Notification #02-08 (DOE 2002c). ER RSOP remedial action objectives 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 accelerated action remediation goals for IHSS Group 000-1 SEPs AOC include the following:

- Conduct actions that are consistent with the proposed future site use as a wildlife refuge;
- Remove the RCRA Units 21 and 48 concrete slabs and dispose of offsite;
- Remove soil with contaminant concentrations greater than RFCA Tier I ALs associated with RCRA Units 21 and 48;
- Remove the OPWL (IHSS 121) valve pits and associated soil with contaminant concentrations greater than RFCA Tier I ALs;
- Remove soil with contaminant concentrations greater than RFCA Tier I ALs at PAC 900-1310;
- Remove soil hot spots as agreed to through the consultative process;
- Remove OPWL (IHSS 121) at the edges of the SEPs berms and disrupt potential pathways;
- Disrupt MST return line;
- Disrupt 207B and 207C Ponds leak detection drains;
- Remove collection sumps; and
- Remove section of the above-ground pipeline running from Building 910 to Building 774, a portion of RCRA Unit 374.3 (from Box 5 at Building 910 to the 779 fence).

All accelerated action remedial goals were met. Activities were conducted between August 6 and November 20, 2002. Start and end dates of significant activities are listed in Table 8. Key components removed are shown in Figure 10, as well as those remaining and not found. Photographs of site activities are provided in Appendix A.

Table 8
Dates of Accelerated Action Activities

Activity	Start Date	End Date	Duration
Characterization Sampling	August 8, 2002	October 18, 2002	73 Day
Removal of Concrete Slabs	August 6, 2002	October 18, 2002	75 Days
Removal of Waste Lines and Valve Pits	August 7, 2002	November 20, 2002	70 Days
Removal of Drains and Collection Sumps	August 15, 2002	September 23, 2002	40 Days
Removal of Contaminated Soil	October 4, 2002	October 18, 2002	15 Days

RCRA Slabs and Other Concrete Items

The concrete slabs associated with RCRA Units 21 and 48 (i.e., slabs for B788 and 788A, the clarifier, B308A, and ancillary equipment) were removed and disposed of as low level mixed waste (LLMW). Associated foundation footings and grade beams were removed and disposed of as low level waste (LLW). The Class 6 roadbase, which was used to keep the slabs stable, was removed and will be used as backfill within the IHSS Group. During the removal of the Building 788 slab, another slab under Building 788A was encountered and removed. It was approximately 12' x 12', and was the building foundation of a small shed where a transfer line pump was stationed. This slab was disposed of as LLMW. In addition, several miscellaneous concrete items were removed and disposed of as LLW, including:

- Ramps and heater pads between Ponds 207A and 207B;
- The slab and retaining wall for the concrete mixer, which was located near the northeast corner of Pond 207C; and
- Concrete pipe supports and power poles.

The silo foundation pad and dry bulk storage facility, located near the site of the concrete mixer, were removed and placed on the Building 980 concrete rubble pile to be recycled.

Slabs were cut up into sections using saws, and the water and slurry from saw cutting was collected using a HEPA vacuum. LLMW concrete was placed in lined intermodal containers. LLW concrete was placed in lined cargo containers, and foam was added to provide load stability. The water and slurry was sampled and placed into a large poly tank and treated offsite at the Alternative Waste Treatment System as LLMW.

Waste Lines and Valve Pits

Various sections of waste lines were tapped and drained, and then removed, including sections of the OPWL (IHSS 121) less than three feet below the surface, all sections of the OPWL within the berms, and the above-ground pipeline from Building 910 to Building 374. For example, Line P-26 (IHSS 149.1/149.2) was removed across the north side of Pond 207A (i.e., from the discharge point in the pond back to the west border of the pond). Two small sections of the reverse osmosis line were removed. The above-ground line was part of RCRA Unit 374.3 (the NPWL), and over 1,200 linear feet were removed, from Box 5 at Building 910 to the south side of Building 774. The remaining

end of the line was capped off. The MST return line was disrupted (i.e., cut at one location and filled with grout). In addition, two other lines were encountered when excavating on the east side of Pond 207B North. One may have been the return line from the ITS pumphouse, which pumped water back to Pond 207B North. These lines were disrupted. The valve assemblies were removed, and both ends of the lines were grouted. The section going to the pond was removed.

Valve pit #1 (southeast of Pond 207C) was removed, and lines associated with the pit were either removed or filled with grout. The two valve pits in the Pond 207B berms were not removed, because they are located more than six feet below grade. However, the valve stems and casings were removed. Other valve pits were not located.

Removed line sections were filled with grout or foam. Removed line sections and valve components were placed in IP-2 or ST-90 containers and disposed of as LLMW. The valve pit was placed in an intermodal and disposed of as LLMW Remaining sections of lines, including the equalizer lines between the B ponds, were also grouted or foamed. The location of each remaining end was recorded, and the inside of each end was measured for radioactivity (refer to Project File/Administrative Record). Water encountered in lines (e.g., OPWL and the aboveground line) was sampled and placed into a large poly tank and treated offsite at the Alternative Waste Treatment System as LLMW. Details of line removals and disruptions, including drawings and photographs, are provided in the Project File/Administrative Record.

Drains, Sumps and Lysimeters

The Pond 207B, 207A and 207C drain/leak detection lines were disrupted where they discharged to a sump and were filled with grout or foam. The discharge ends of the 207B and 207A lines were removed. Five associated sumps were removed, as well as the submersible pumps contained in each sump. Numerous lysimeters in the area also were removed.

Sumps, associated sediments, pumps, valve assemblies, and the removed line section were placed in IP-2 or ST-90 containers and disposed of as LLMW. Water encountered in the sumps was sampled and placed into a large poly tank and will be treated offsite at the Alternative Waste Treatment System as LLMW. Lysimeters were placed in intermodals and disposed of as LLMW. Excavations were backfilled with the excavated soil.

Contaminated Soil and Asphalt

Soils associated with the six risk reduction areas (i.e., hot spots; refer to Figure 3) were removed. Approximately 1 square meter area was excavated down 0.5 feet from each of the areas. At one location (43793), a lysimeter was found to be contaminated, and therefore, additional soil was removed (an area approximately 5 meters by 5 meters was excavated down 1 foot). Sampling was conducted to determine the extent of contamination and needed remediation, and to confirm that residual contaminant concentrations were below the RFCA Tier II ALs (refer to Section 4.0). The soil was placed in ST-90s and disposed of as LLMW.

Asphalt in the area was removed. The asphalt from the road entrance west of Pond 207A was disposed of as sanitary waste, and the asphalt close to the Building 788 pad was disposed of as LLW (placed in lined cargo containers).

4.0 HOT SPOT REMOVAL AND CONFIRMATION SAMPLING

Sampling was conducted during removal of the six hot spots (refer to Figure 3) to determine the extent of removal required. In-process sampling results (above background mean plus two standard deviations or detection limits) are presented in Table 9. Confirmation sampling was then conducted in the excavations where the six hot spot soils were removed to confirm that sufficient soil had been removed (i.e., that residual contaminant concentrations were below RFCA Tier II ALs). Confirmation samples were analyzed in conformance with the IA SAP (e.g., alpha spectroscopy was used to analyze for radionuclides). Results (i.e., above background mean plus two standard deviations or detection limits) are presented in Table 10 and Figure 11. All contaminant concentrations were below RFCA Tier II ALs, except for one beryllium concentration, which was slightly above the RFCA Tier Action Level.

5.0 RCRA UNIT CLOSURE

The accelerated action involved three RCRA Units (# 21, 48 and 374.3). RCRA Units 21 and 48 had been partially closed prior to the accelerated action (DOE 2002c), and removal of the remaining concrete slabs associated with Building 788, the Clarifier, and the pump transfer station at Building 308A under this accelerated action constitutes final closure of the two RCRA Units. The slabs included the 12' x 12' slab under the Building 788A slab where a transfer pump was stationed (refer to Section 3.0). All slabs were disposed of as LLMW (refer to Section 3.0). RCRA Unit 374.3 consists of the NPWL, and removal of the aboveground line section from Building 910 to Building 774 constitutes partial closure of the RCRA unit (refer to Section 3.0). Closure of the SEPs is addressed in the SEP PAM (DOE 2002d).

6.0 STEWARDSHIP EVALUATION

The Group 000-1 stewardship evaluation was conducted through ongoing consultation with the regulatory agencies. The regulatory agencies were informed through frequent project updates, e-mails, telephone contact, and personal contact throughout the project duration. Copies of ER Regulatory Contact Records are provided in Appendix B.

6.1 Accelerated Action Stewardship

Stewardship actions that were implemented during the accelerated action included erosion and dust control, posting signs and barriers, including yellow chain and jersey barriers.

Table 9
Hot Spot Removal In-Process Sampling Data

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
CJ45-005	2084610.024	750543.097	1	Americium-241	17.00	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	7.70	0.55	1.70	1920.00	1920.00	mg/kg
CJ45-006	2084610.024	750543.097	1	Americium-241	15.00	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	7.30	0.56	1.70	1920.00	1920.00	mg/kg
CJ45-007	2084610.024	750543.097	1	Copper	62.00	2.10	38.21	71100.00	71100.00	mg/kg
CJ45-009	2084610.024	750543.097	1	Cadmium	1.80	0.53	1.70	1920.00	1920.00	mg/kg
CJ46-DR03	2084610.015	750678.013	0.0-0.5	Copper	56.00	2.2	18.06	71100.00	71100.00	mg/kg
				Iron	22000.00	11	18037	576000.00	576000.00	mg/kg
				Manganese	490.00	1.1	365.08	83600.00	83600.00	mg/kg
				Selenium	1.40	1.4	1.224	9610.00	9610.00	mg/kg
				Zinc	170.00	2.2	73.76	576000.00	576000.00	mg/kg
CJ46-DR04	2084610.015	750678.013	0.0-0.5	Copper	29.00	2.2	18.06	71100.00	71100.00	mg/kg
CJ46-DR05	2084610.015	750678.013	0.0-0.5	Copper	19.00	2.1	18.06	71100.00	71100.00	mg/kg
CJ46-DR06	2084610.015	750678.013	0.0-0.5	Copper	77.00	2.1	18.06	71100.00	71100.00	mg/kg
				Iron	26000.00	11	18037	576000.00	576000.00	mg/kg
				Lithium	12.00	5.4	11.55	38400.00	38400.00	mg/kg
				Manganese	610.00	1.1	365.08	83600.00	83600.00	mg/kg
				Zinc	74.00	2.1	73.76	576000.00	576000.00	mg/kg
CK46-000	2084908.05	750687.859	1	Americium-241	5.90	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	140.00	0.55	1.70	1920.00	1920.00	mg/kg
CK46-001	2084908.05	750687.859	1	Americium-241	16.00	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	43.00	0.53	1.70	1920.00	1920.00	mg/kg
CK46-002	2084908.05	750687.859	1	Americium-241	8.90	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	24.00	0.53	1.70	1920.00	1920.00	mg/kg
				Copper	41.00	2.10	38.21	71100.00	71100.00	mg/kg
CK46-003	2084908.05	750687.859	1	Americium-241	14.00	4.00	0.02	209.00	38.00	pCi/g

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
				Cadmium	22.00	0.53	1.70	1920.00	1920.00	mg/kg
CK46-004	2084908.05	750687.859	1	Cadmium	4.60	0.53	1.70	1920.00	1920.00	mg/kg
CK46-005	2084908.05	750687.859	1	Americium-241	6.90	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	17.00	0.54	1.70	1920.00	1920.00	mg/kg
				Copper	46.00	2.20	38.21	71100.00	71100.00	mg/kg
				Zinc	990.00	2.20	139.10	576000.00	576000.00	mg/kg
CK46-006	2084908.05	750687.859	1	Americium-241	13.00	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	10.00	0.53	1.70	1920.00	1920.00	mg/kg
				Copper	46.00	2.10	38.21	71100.00	71100.00	mg/kg
CK46-007	2084908.05	750687.859	1	Americium-241	52.00	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	110.00	0.54	1.70	1920.00	1920.00	mg/kg
				Lead	26.00	0.86	24.97	1000.00	1000.00	mg/kg
CK46-008	2084908.05	750687.859	0.0-0.5	Aluminum	21000.00	12	16902	1000000.00	1000000.00	mg/kg
				Americium-241	41.00	4	0.0227	215.00	38.00	pCi/g
				Beryllium	3.20	0.6	0.966	104.00	1.04	mg/kg
				Cadmium	36.00	0.6	1.612	1920.00	1920.00	mg/kg
				Chromium	29.00	0.6	16.99	44300.00	4410.00	mg/kg
				Copper	28.00	2.4	18.06	71100.00	71100.00	mg/kg
				Lithium	23.00	6	11.55	38400.00	38400.00	mg/kg
				Nickel	21.00	4.8	14.91	38400.00	38400.00	mg/kg
				Strontium	76.00	1.2	48.94	1000000.00	1000000.00	mg/kg
				Zinc	740.00	2.4	73.76	576000.00	576000.00	mg/kg
CK46-009	2084908.05	750687.859	1	Cadmium	8.10	0.58	1.70	1920.00	1920.00	mg/kg
CK46-010	2084908.05	750687.859	1	Americium-241	50.00	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	46.00	0.56	1.70	1920.00	1920.00	mg/kg
CK46-011	2084908.05	750687.859	1	Americium-241	9.30	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	22.00	0.52	1.70	1920.00	1920.00	mg/kg
				Copper	47.00	2.10	38.21	71100.00	71100.00	mg/kg

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
CK46-012	2084908	750688	2	Americium-241	4.20	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	19.00	0.54	1.70	1920.00	1920.00	mg/kg
CK46-013	2084908	750688	2	Cadmium	11.00	0.53	1.70	1920.00	1920.00	mg/kg
CK46-014	2084908	750688	2	Cadmium	3.80	0.56	1.70	1920.00	1920.00	mg/kg
CK46-015	2084908	750688	2	Cadmium	10.00	0.56	1.70	1920.00	1920.00	mg/kg
CK46-016	2084908	750688	2	Cadmium	12.00	0.53	1.70	1920.00	1920.00	mg/kg
CK46-017	2084908	750688	2	Cadmium	4.20	0.53	1.70	1920.00	1920.00	mg/kg
CK46-018	2084908	750688	2	Americium-241	6.60	4.00	0.02	209.00	38.00	pCi/g
				Cadmium	15.00	0.52	1.70	1920.00	1920.00	mg/kg
CK46-019	2084908	750688	2	Cadmium	3.70	0.55	1.70	1920.00	1920.00	mg/kg
CK46-DR01	2084889.935	750671.032	0.0 – 0.5	Cadmium	23.00	0.039	1.612	1920.00	1920.00	mg/kg
				Chromium	20.00	0.079	16.99	44300.00	4410.00	mg/kg
				Copper	41.00	0.21	18.06	71100.00	71100.00	mg/kg
				Lithium	19.00	0.12	11.55	38400.00	38400.00	mg/kg
				Mercury	0.31	0.0027	0.134	576.00	576.00	mg/kg
				Nickel	20.00	0.2	14.91	38400.00	38400.00	mg/kg
CK46-DR02	2084889.935	750671.032	0.0 – 0.5	Cadmium	25.00	0.039	1.612	1920.00	1920.00	mg/kg
				Chromium	21.00	0.078	16.99	44300.00	4410.00	mg/kg
				Copper	38.00	0.21	18.06	71100.00	71100.00	mg/kg
				Lithium	16.00	0.12	11.55	38400.00	38400.00	mg/kg
				Nickel	19.00	0.19	14.91	38400.00	38400.00	mg/kg
CK46-DR03	2084889.935	750671.032	0.0 – 0.5	Cadmium	26.00	0.04	1.612	1920.00	1920.00	mg/kg
				Chromium	27.00	0.081	16.99	44300.00	4410.00	mg/kg
				Copper	60.00	0.21	18.06	71100.00	71100.00	mg/kg
				Lithium	18.00	0.12	11.55	38400.00	38400.00	mg/kg
				Mercury	0.36	0.0028	0.134	576.00	576.00	mg/kg
				Nickel	19.00	0.2	14.91	38400.00	38400.00	mg/kg
CK46-DR04	2084889.935	750671.032	0.0 – 0.5	Aluminum	21000.00	2.4	16902	1000000.00	1000000.00	mg/kg

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
				Cadmium	20.00	0.041	1.612	1920.00	1920.00	mg/kg
				Chromium	26.00	0.082	16.99	44300.00	4410.00	mg/kg
				Copper	47.00	0.22	18.06	71100.00	71100.00	mg/kg
				Lithium	28.00	0.12	11.55	38400.00	38400.00	mg/kg
				Mercury	0.22	0.0028	0.134	576.00	576.00	mg/kg
				Nickel	22.00	0.2	14.91	38400.00	38400.00	mg/kg
CK46-DR05	2084889.935	750671.032	0.0 – 0.5	Cadmium	23.00	0.039	1.612	1920.00	1920.00	mg/kg
				Chromium	22.00	0.077	16.99	44300.00	4410.00	mg/kg
				Copper	43.00	0.2	18.06	71100.00	71100.00	mg/kg
				Lithium	18.00	0.12	11.55	38400.00	38400.00	mg/kg
				Mercury	0.25	0.0027	0.134	576.00	576.00	mg/kg
				Nickel	19.00	0.19	14.91	38400.00	38400.00	mg/kg
CK46-DR06	2084908.05	750687.859	0.0 – 0.5	Aluminum	17000.00	11	16902	1000000.00	1000000.00	mg/kg
				Americium-241	20.00	4	0.0227	215.00	38.00	pCi/g
				Cadmium	16.00	0.56	1.612	1920.00	1920.00	mg/kg
				Chromium	20.00	0.56	16.99	44300.00	4410.00	mg/kg
				Copper	26.00	2.2	18.06	71100.00	71100.00	mg/kg
				Lithium	19.00	5.6	11.55	38400.00	38400.00	mg/kg
				Nickel	17.00	4.4	14.91	38400.00	38400.00	mg/kg
				Strontium	53.00	1.1	48.94	1000000.00	1000000.00	mg/kg
CK46-DR07	2084908.05	750687.859	0.0 – 0.5	Americium-241	30.00	4	0.0227	215.00	38.00	pCi/g
				Beryllium	2.70	0.54	0.966	104.00	1.04	mg/kg
				Cadmium	270.00	0.54	1.612	1920.00	1920.00	mg/kg
				Chromium	29.00	0.54	16.99	44300.00	4410.00	mg/kg
				Copper	32.00	2.2	18.06	71100.00	71100.00	mg/kg
				Lithium	14.00	5.4	11.55	38400.00	38400.00	mg/kg
				Nickel	16.00	4.3	14.91	38400.00	38400.00	mg/kg
				Selenium	1.40	1.4	1.224	9610.00	9610.00	mg/kg

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
CK46-DR08	2084908.05	750687.859	0.0 – 0.5	Americium-241	39.00	4	0.0227	215.00	38.00	pCi/g
				Beryllium	2.20	0.57	0.966	104.00	1.04	mg/kg
				Cadmium	52.00	0.57	1.612	1920.00	1920.00	mg/kg
				Chromium	26.00	0.57	16.99	44300.00	4410.00	mg/kg
				Copper	26.00	2.3	18.06	71100.00	71100.00	mg/kg
				Lithium	17.00	5.7	11.55	38400.00	38400.00	mg/kg
				Nickel	19.00	4.6	14.91	38400.00	38400.00	mg/kg
CK46-DR09	2084908.05	750687.859	0.0 – 0.5	Aluminum	22000.00	12	16902	1000000.00	1000000.00	mg/kg
				Americium-241	41.00	4	0.0227	215.00	38.00	pCi/g
				Barium	160.00	1.2	141.26	133000.00	133000.00	mg/kg
				Beryllium	3.90	0.58	0.966	104.00	1.04	mg/kg
				Cadmium	37.00	0.58	1.612	1920.00	1920.00	mg/kg
				Chromium	47.00	0.58	16.99	44300.00	4410.00	mg/kg
				Copper	37.00	2.3	18.06	71100.00	71100.00	mg/kg
				Lithium	23.00	5.8	11.55	38400.00	38400.00	mg/kg
				Nickel	28.00	4.6	14.91	38400.00	38400.00	mg/kg
				Strontium	85.00	1.2	48.94	1000000.00	1000000.00	mg/kg
				Zinc	1900.00	2.3	73.76	576000.00	576000.00	mg/kg
CK46-DR10	2084908.05	750687.859	0.0 – 0.5	Americium-241	12.00	4	0.0227	215.00	38.00	pCi/g
				Cadmium	23.00	0.53	1.612	1920.00	1920.00	mg/kg
				Chromium	46.00	0.53	16.99	44300.00	4410.00	mg/kg
				Copper	37.00	2.1	18.06	71100.00	71100.00	mg/kg
				Lithium	17.00	5.3	11.55	38400.00	38400.00	mg/kg
				Nickel	18.00	4.2	14.91	38400.00	38400.00	mg/kg
CK48-DR02	2084870.064	750992.838	0.0 – 0.5	Americium-241	5.80	4	0.0227	215.00	38.00	pCi/g
				Cadmium	5.00	0.56	1.612	1920.00	1920.00	mg/kg
				Chromium	22.00	0.54	16.99	44300.00	4410.00	mg/kg
				Lithium	18.00	5.4	11.55	38400.00	38400.00	mg/kg

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
CK48-DR03	2084870.064	750992.838	0.0 – 0.5	Barium	170.00	1.1	141.26	133000.00	133000.00	mg/kg
				Cadmium	2.10	0.54	1.612	1920.00	1920.00	mg/kg
				Chromium	19.00	0.54	16.99	44300.00	4410.00	mg/kg
				Iron	23000.00	11	18037	576000.00	576000.00	mg/kg
				Lithium	16.00	5.4	11.55	38400.00	38400.00	mg/kg
				Manganese	1000.00	1.1	365.08	83600.00	83600.00	mg/kg
				Nickel	15.00	4.3	14.91	38400.00	38400.00	mg/kg
CK48-DR04	2084870.064	750992.838	0.0 – 0.5	Americium-241	17.00	4	0.0227	215.00	38.00	pCi/g
				Beryllium	0.98	0.54	0.966	104.00	1.04	mg/kg
				Cadmium	5.50	0.54	1.612	1920.00	1920.00	mg/kg
				Chromium	22.00	0.54	16.99	44300.00	4410.00	mg/kg
				Lithium	16.00	5.4	11.55	38400.00	38400.00	mg/kg
CK48-DR05	2084870.064	750992.838	0.0 – 0.5	Americium-241	4.70	4	0.0227	215.00	38.00	pCi/g
				Chromium	19.00	0.51	16.99	44300.00	4410.00	mg/kg
				Lithium	14.00	5.1	11.55	38400.00	38400.00	mg/kg
				Cadmium	2.10	0.57	1.70	1920.00	1920.00	mg/kg
				Cadmium	4.00	0.59	1.70	1920.00	1920.00	mg/kg

Table 10
Hot Spot Removal Confirmation Sampling Data, by Surface and Subsurface Locations

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
Surface Locations										
CJ45-005	2084610	750543	0.0 - 0.50	Beryllium	1.10	0.04	0.97	104.00	1.04	mg/kg
				Cadmium	7.70	0.04	1.61	1920.00	1920.00	mg/kg
CJ45-006	2084610	750543	0.0 - 0.50	Cadmium	7.30	0.04	1.61	1920.00	1920.00	mg/kg
				Copper	19.00	0.21	18.06	71100.00	71100.00	mg/kg
				Mercury	0.58	0.00	0.13	576.00	576.00	mg/kg
				Zinc	74.00	0.59	73.76	576000.00	576000.00	mg/kg
CJ45-007	2084610	750543	0.0 - 0.50	Beryllium	1.00	0.04	0.97	104.00	1.04	mg/kg
				Copper	62.00	0.20	18.06	71100.00	71100.00	mg/kg
				Iron	26000.00	1.70	18037.00	576000.00	576000.00	mg/kg
				Manganese	640.00	0.04	365.08	83600.00	83600.00	mg/kg
CJ45-008	2084610	750543	0.0 - 0.50	Beryllium	1.00	0.04	0.97	104.00	1.04	mg/kg
				Copper	30.00	0.20	18.06	71100.00	71100.00	mg/kg
				Iron	24000.00	1.70	18037.00	576000.00	576000.00	mg/kg
				Manganese	550.00	0.04	365.08	83600.00	83600.00	mg/kg
				Nickel	16.00	0.19	14.91	38400.00	38400.00	mg/kg
				Vanadium	49.00	0.15	45.59	13400.00	13400.00	mg/kg
CJ45-009	2084610	750543	0.0 - 0.50	Aluminum	18000.00	2.20	16902.00	1000000.00	1000000.00	mg/kg
				Cadmium	1.80	0.04	1.61	1920.00	1920.00	mg/kg
				Chromium	17.00	0.08	16.99	44300.00	4410.00	mg/kg
				Copper	20.00	0.20	18.06	71100.00	71100.00	mg/kg
				Lithium	14.00	0.12	11.55	38400.00	38400.00	mg/kg
				Strontium	57.00	0.05	48.94	1000000.00	1000000.00	mg/kg
CJ46-DR03	2084610	750678	0.0 - 0.50	Copper	56.00	0.21	18.06	71100.00	71100.00	mg/kg
				Iron	22000.00	1.70	18037.00	576000.00	576000.00	mg/kg
				Manganese	490.00	0.04	365.08	83600.00	83600.00	mg/kg

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Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
				PU-239/240	0.58	0.29	0.07	1429.00	252.00	pci/g
				Selenium	1.40	0.55	1.22	9610.00	9610.00	mg/kg
				Zinc	170.00	0.58	73.76	576000.00	576000.00	mg/kg
CJ46-DR04	2084610	750678	0.0 - 0.50	Copper	29.00	0.20	18.06	71100.00	71100.00	mg/kg
CJ46-DR05	2084610	750678	0.0 - 0.50	AM-241	0.29	0.22	0.02	215.00	38.00	pci/g
				Copper	19.00	0.20	18.06	71100.00	71100.00	mg/kg
				U-235	0.16	0.11	0.09	135.00	24.00	pci/g
CJ46-DR06	2084610	750678	0.0 - 0.50	Copper	77.00	0.20	18.06	71100.00	71100.00	mg/kg
				Iron	26000.00	1.70	18037.00	576000.00	576000.00	mg/kg
				Lithium	12.00	0.12	11.55	38400.00	38400.00	mg/kg
				Manganese	610.00	0.04	365.08	83600.00	83600.00	mg/kg
				U-235	0.15	0.13	0.09	135.00	24.00	pci/g
				Zinc	74.00	0.57	73.76	576000.00	576000.00	mg/kg
CJ46-DR07	2084610	750678	0.0 - 0.50	U-233/234	5.63	0.24	2.25	1738.00	307.00	pci/g
				U-235	0.34	0.25	0.09	135.00	24.00	pci/g
CK46-DR01	2084890	750671	0.0 - 0.50	AM-241	1.66	0.36	0.02	215.00	38.00	pci/g
				Cadmium	23.00	0.04	1.61	1920.00	1920.00	mg/kg
				Chromium	20.00	0.08	16.99	44300.00	4410.00	mg/kg
				Copper	41.00	0.21	18.06	71100.00	71100.00	mg/kg
				Lithium	19.00	0.12	11.55	38400.00	38400.00	mg/kg
				Mercury	0.31	0.00	0.13	576.00	576.00	mg/kg
				Nickel	20.00	0.20	14.91	38400.00	38400.00	mg/kg
				PU-239/240	10.40	0.17	0.07	1429.00	252.00	pci/g
				U-233/234	11.00	0.18	2.25	1738.00	307.00	pci/g
				U-235	1.28	0.21	0.09	135.00	24.00	pci/g
				U-238	2.70	0.19	2.00	586.00	103.00	pci/g
CK46-DR02	2084890	750671	0.0 - 0.50	AM-241	1.16	0.47	0.02	215.00	38.00	pci/g
				Cadmium	25.00	0.04	1.61	1920.00	1920.00	mg/kg

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
				Chromium	21.00	0.08	16.99	44300.00	4410.00	mg/kg
				Copper	38.00	0.21	18.06	71100.00	71100.00	mg/kg
				Lithium	16.00	0.12	11.55	38400.00	38400.00	mg/kg
				Nickel	19.00	0.19	14.91	38400.00	38400.00	mg/kg
				PU-239/240	3.87	0.13	0.07	1429.00	252.00	pci/g
				U-233/234	4.26	0.06	2.25	1738.00	307.00	pci/g
				U-235	0.65	0.07	0.09	135.00	24.00	pci/g
CK46-DR03	2084890	750671	0.0 - 0.50	AM-241	0.88	0.16	0.02	215.00	38.00	pci/g
				Cadmium	26.00	0.04	1.61	1920.00	1920.00	mg/kg
				Chromium	27.00	0.08	16.99	44300.00	4410.00	mg/kg
				Copper	60.00	0.21	18.06	71100.00	71100.00	mg/kg
				Lithium	18.00	0.12	11.55	38400.00	38400.00	mg/kg
				Mercury	0.36	0.00	0.13	576.00	576.00	mg/kg
				Nickel	19.00	0.20	14.91	38400.00	38400.00	mg/kg
				PU-239/240	14.30	0.29	0.07	1429.00	252.00	pci/g
				U-233/234	8.47	0.13	2.25	1738.00	307.00	pci/g
				U-235	0.35	0.12	0.09	135.00	24.00	pci/g
				U-238	3.77	0.11	2.00	586.00	103.00	pci/g
CK46-DR04	2084890	750671	0.0 - 0.50	Aluminum	21000.00	2.40	16902.00	1000000.00	1000000.00	mg/kg
				AM-241	1.93	0.29	0.02	215.00	38.00	pci/g
				Cadmium	20.00	0.04	1.61	1920.00	1920.00	mg/kg
				Chromium	26.00	0.08	16.99	44300.00	4410.00	mg/kg
				Copper	47.00	0.22	18.06	71100.00	71100.00	mg/kg
				Lithium	28.00	0.12	11.55	38400.00	38400.00	mg/kg
				Mercury	0.22	0.00	0.13	576.00	576.00	mg/kg
				Nickel	22.00	0.20	14.91	38400.00	38400.00	mg/kg
				PU-239/240	11.00	0.28	0.07	1429.00	252.00	pci/g
				U-233/234	7.11	0.20	2.25	1738.00	307.00	pci/g

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
				U-235	0.29	0.24	0.09	135.00	24.00	pci/g
				U-238	2.46	0.21	2.00	586.00	103.00	pci/g
CK46-DR05	2084890	750671	0.0 - 0.50	Cadmium	23.00	0.04	1.61	1920.00	1920.00	mg/kg
				Chromium	22.00	0.08	16.99	44300.00	4410.00	mg/kg
				Copper	43.00	0.20	18.06	71100.00	71100.00	mg/kg
				Lithium	18.00	0.12	11.55	38400.00	38400.00	mg/kg
				Mercury	0.25	0.00	0.13	576.00	576.00	mg/kg
				Nickel	19.00	0.19	14.91	38400.00	38400.00	mg/kg
				PU-239/240	4.87	0.23	0.07	1429.00	252.00	pci/g
				U-233/234	11.90	0.19	2.25	1738.00	307.00	pci/g
				U-235	0.53	0.20	0.09	135.00	24.00	pci/g
				U-238	4.81	0.20	2.00	586.00	103.00	pci/g
CK48-DR01	2084870	750992.8	0.0 - 0.50	Chromium	22.00	0.08	16.99	44300.00	4410.00	mg/kg
				Lithium	18.00	0.12	11.55	38400.00	38400.00	mg/kg
				PU-239/240	0.69	0.30	0.07	1429.00	252.00	pci/g
				U-235	1.97	0.23	0.09	135.00	24.00	pci/g
				U-238	2.02	0.19	2.00	586.00	103.00	pci/g
CK48-DR02	2084870	750992.8	0.0 - 0.50	AM-241	0.49	0.28	0.02	215.00	38.00	pci/g
				Cadmium	5.00	0.04	1.61	1920.00	1920.00	mg/kg
				Chromium	18.00	0.08	16.99	44300.00	4410.00	mg/kg
				Lithium	14.00	0.12	11.55	38400.00	38400.00	mg/kg
				U-233/234	2.55	0.07	2.25	1738.00	307.00	pci/g
				U-235	0.18	0.07	0.09	135.00	24.00	pci/g
CK48-DR03	2084870	750992.8	0.0 - 0.50	Barium	170.00	0.37	141.26	133000.00	133000.00	mg/kg
				Cadmium	2.10	0.04	1.61	1920.00	1920.00	mg/kg
				Chromium	19.00	0.08	16.99	44300.00	4410.00	mg/kg
				Iron	23000.00	1.70	18037.00	576000.00	576000.00	mg/kg
				Lithium	16.00	0.12	11.55	38400.00	38400.00	mg/kg

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
				Manganese	1000.00	0.04	365.08	83600.00	83600.00	mg/kg
				Nickel	15.00	0.19	14.91	38400.00	38400.00	mg/kg
CK48-DR04	2084870	750992.8	0.0 - 0.50	Beryllium	0.98	0.04	0.97	104.00	1.04	mg/kg
				Cadmium	5.50	0.04	1.61	1920.00	1920.00	mg/kg
				Chromium	22.00	0.08	16.99	44300.00	4410.00	mg/kg
				Lithium	16.00	0.12	11.55	38400.00	38400.00	mg/kg
				U-233/234	3.85	0.27	2.25	1738.00	307.00	pci/g
CK48-DR05	2084870	750992.8	0.0 - 0.50	Chromium	19.00	0.07	16.99	44300.00	4410.00	mg/kg
				Lithium	14.00	0.11	11.55	38400.00	38400.00	mg/kg
Subsurface Locations										
CJ45-005	2084610.024	750543.097	1.00 - 1.00	AM-241	13.50	0.34	0.02	209.00	38.00	pCi/g
				PU-239/240	2.97	0.08	0.02	1088.00	252.00	pCi/g
CJ45-006	2084610.024	750543.097	1.00 - 1.00	AM-241	12.30	0.89	0.02	209.00	38.00	pCi/g
				PU-239/240	0.91	0.08	0.02	1088.00	252.00	pCi/g
CJ45-007	2084610.024	750543.097	1.00 - 1.00	PU-239/240	0.08	0.07	0.02	1088.00	252.00	pCi/g
CJ45-008	2084610.024	750543.097	1.00 - 1.00	PU-239/240	0.57	0.15	0.02	1088.00	252.00	pCi/g
CJ45-009	2084610.024	750543.097	1.00 - 1.00	PU-239/240	4.00	0.08	0.02	1088.00	252.00	pCi/g
CK46-012	2084908	750688	2.00 - 2.00	PU-239/240	3.55	0.07	0.02	1088.00	252.00	pCi/g
				U-233/234	2.75	0.12	2.64	1627.00	307.00	pCi/g
				U-235	1.38	0.16	0.12	113.00	24.00	pCi/g
CK46-013	2084908	750688	2.00 - 2.00	AM-241	3.68	0.54	0.02	209.00	38.00	pCi/g
				PU-239/240	1.52	0.20	0.02	1088.00	252.00	pCi/g
				U-235	1.64	0.16	0.12	113.00	24.00	pCi/g
				U-238	1.56	0.13	1.49	506.00	103.00	pCi/g
CK46-014	2084908	750688	2.00 - 2.00	AM-241	2.70	0.31	0.02	209.00	38.00	pCi/g
				PU-239/240	0.72	0.17	0.02	1088.00	252.00	pCi/g
CK46-015	2084908	750688	2.00 - 2.00	AM-241	2.40	0.32	0.02	209.00	38.00	pCi/g
				PU-239/240	0.67	0.08	0.02	1088.00	252.00	pCi/g

Location Code	Easting	Northing	Depth (feet)	Analyte	Result	Detection Limit	Background Mean Plus Two Standard Deviations	Tier I AL	Tier II AL	Unit
				U-235	0.86	0.11	0.12	113.00	24.00	pCi/g
CK46-016	2084908	750688	2.00 - 2.00	AM-241	2.49	0.12	0.02	209.00	38.00	pCi/g
				PU-239/240	0.93	0.08	0.02	1088.00	252.00	pCi/g
CK46-017	2084908	750688	2.00 - 2.00	AM-241	1.23	0.21	0.02	209.00	38.00	pCi/g
				PU-239/240	0.34	0.18	0.02	1088.00	252.00	pCi/g
CK46-018	2084908	750688	2.00 - 2.00	AM-241	5.10	0.27	0.02	209.00	38.00	pCi/g
				PU-239/240	1.74	0.08	0.02	1088.00	252.00	pCi/g
CK46-019	2084908	750688	2.00 - 2.00	AM-241	2.36	0.40	0.02	209.00	38.00	pCi/g
				PU-239/240	0.94	0.06	0.02	1088.00	252.00	pCi/g
CK48-DR06	2084919.923	751074.863	1.00 - 1.00	AM-241	0.51	0.24	0.02	209.00	38.00	pCi/g
				Cadmium	2.10	0.04	1.70	1920.00	1920.00	mg/kg
				PU-239/240	0.61	0.14	0.02	1088.00	252.00	pCi/g
CK48-DR07	2084919.923	751074.863	1.00 - 1.00	AM-241	0.45	0.19	0.02	209.00	38.00	pCi/g
				PU-239/240	0.36	0.20	0.02	1088.00	252.00	pCi/g
CK48-DR08	2084919.923	751074.863	1.00 - 1.00	AM-241	0.42	0.26	0.02	209.00	38.00	pCi/g
				PU-239/240	0.61	0.14	0.02	1088.00	252.00	pCi/g
CK48-DR09	2084919.923	751074.863	1.00 - 1.00	AM-241	0.53	0.27	0.02	209.00	38.00	pCi/g
				Cadmium	4.00	0.04	1.70	1920.00	1920.00	mg/kg
				PU-239/240	0.54	0.15	0.02	1088.00	252.00	pCi/g
CK48-DR10	2084919.923	751074.863	1.00 - 1.00	PU-239/240	0.36	0.14	0.02	1088.00	252.00	pCi/g
				U-233/234	34.80	0.11	2.64	1627.00	307.00	pCi/g
				U-235	3.94	0.11	0.12	113.00	24.00	pCi/g
				U-238	19.40	0.10	1.49	506.00	103.00	pCi/g

6.2 Current Site Conditions

As discussed in Section 3.0, accelerated actions at IHSS Group 000-1 consisted of the removal of all concrete slabs, all above-ground waste lines, some below-ground waste lines, a valve pit, valve components, all sumps and pumps, and contaminated soil (hot spots). Some below-ground waste lines and drain lines remain, but all of these lines have been disrupted (plugged). Removed and remaining items are shown in Figure 10. Residual soil contamination, based on pre-accelerated action data, does not present an unacceptable risk (DOE 2002d). Soil concentrations, based on accelerated action and confirmation sampling, are all below RFCA Tier II ALs, except for one beryllium concentration and 16 arsenic concentrations. All exceedances were significantly below the RFCA Tier I ALs. Refer to Sections 4.0 and 8.0.

6.3 Stewardship Recommendations

Near- and long-term stewardship recommendations are based on remaining waste and drain lines, residual contamination, and the stewardship evaluations presented in ER RSOP Notification #02-08 (DOE 2002c) and the PAM (DOE 2002d). The remaining lines were disrupted. In addition, surface water and groundwater monitoring will be continued to determine if the SEP AOC is adversely impacting water quality.

- Recommendations for near-term institutional controls until final closure and stewardship decisions are implemented include the following:
  - Maintain signs and barriers; and
  - Control soil excavation through the Site Soil Disturbance Permit process.
- Recommendations for long-term stewardship actions include the following:
  - Continuing Federal ownership and control over the Site;
  - Continuing groundwater treatment via the Solar Pond Plume Treatment System;
  - Continuing surface water and groundwater monitoring; and
  - Land use restrictions to prevent soil excavation that could access or disturb residual contamination. Specific land use restrictions will be discussed in the Site Long-Term Stewardship Plan and evaluated along with other institutional controls for implementation in the final remedy selection process.

These recommendations may change based on the results of on-going surface water and groundwater monitoring, the Comprehensive Risk Assessment, and other future Site remedial activities.

7.0 DEVIATIONS FROM THE ER RSOP

All accelerated action objectives specified in the ER RSOP Notification and Section 3.0 were achieved. Deviations from the ER RSOP Notification are listed below:

- Two valve pits (located in the southwestern corner of Pond 207A and the southwestern corner of Pond 207B) were never found, and therefore, could not be removed. Even though they appear in some drawings, they may never have been installed.
- The two valves in the Pond 207B berms were not removed, because they are located more than six feet below grade. The valve stems and casings were removed.
- Five sumps, instead of three, and their associated pumps were found and removed.
- A longer section of the aboveground pipeline to Building 374 was removed. Approximately 1,200 feet were removed, from Building 910 to the south side of Building 774.
- Two unanticipated lines were encountered east of Pond 207B North. These lines were disrupted, and the valve assemblies and line section going to be pond were removed.

8.0 POST-REMEDIATION CONDITIONS

Post remediation conditions at IHSS Group 000-1 are described below.

8.1 Residual Contamination

Residual contamination was determined for the areas within the SEP AOC associated with the RSOP accelerated action, and based on accelerated action characterization and post soil removal confirmation sampling. Pre-accelerated action characterization indicated acceptable risk to the WLRW, except for six hot spots (refer to Figure 3 and DOE 2002d). These hot spots were removed, as described in Section 3.0. Residual concentrations were confirmed to be below RFCA Tier II ALs, except for one beryllium concentration, which was slightly above the RFCA Tier Action Level (refer to Section 4.0). Accelerated action characterization indicated no contaminant concentrations in surface and subsurface soils greater than RFCA Tier II ALs, except for one beryllium concentration and 16 arsenic concentrations (refer to Section 2.0). All exceedances were significantly below the RFCA Tier I ALs. Waste and drain lines that were not removed during the accelerated action are shown on Figure 10. As discussed in Section 3.0, the ends of waste and drain lines were grouted or foamed.

SORs for RFCA Tier I and Tier II ALs were calculated for surface and subsurface soils based on accelerated action and confirmation data. Data from sample locations that are no longer representative were excluded (i.e., pre-accelerated action data on the hot spots; refer to Section 11.0). Tier I and Tier II SORs are listed in Tables 11 and 12, for surface and subsurface soils, respectively, and Tier II SORs are shown in Figures 12 - 15. SORs were calculated for all locations with analytical results greater than background mean plus two standard deviations or reporting limits. No surface soil SORs for Tier I COCs or surface soil

SORs for Tier II radionuclides exceeded 1. Thirteen surface soil SORs for Tier II non-radionuclides exceeded 1 (10 characterization locations and 3 confirmation locations). No subsurface soil SORs for Tier I COCs or subsurface soil SORs for Tier II radionuclides exceeded 1. Seven subsurface soil SORs for Tier II non-radionuclides exceeded 1 (all characterization locations).

Table 11
Sum of Ratios for Surface Soils Based on Remedial Contamination

Sample Purpose	SOR Type	Location	Easting	Northing	TIER I SOR	TIER II SOR
Characterization	NON RAD	CJ48-000	2084587.694	750990.666	0.13	12.16
Characterization	NON RAD	CJ47-000	2084595.74	750942.76	0.13	11.46
Characterization	NON RAD	CJ47-001	2084596.833	750920.713	0.12	11.22
Characterization	NON RAD	CJ48-001	2084613.743	750989.133	0.12	10.42
Characterization	NON RAD	CJ47-002	2084592.78	750919.788	0.11	10.22
Characterization	NON RAD	CJ47-DR02	2084590.72	750801.171	0.08	6.84
Characterization	NON RAD	CM47-000	2085240.646	750924.617	0.16	5.81
Characterization	NON RAD	CM47-002	2085246.958	750888.658	0.14	5.12
Characterization	NON RAD	CM48-001	2085249.954	750960.634	0.14	4.46
Characterization	NON RAD	CJ47-005	2084610.347	750830.035	0.03	1.08
Characterization	NON RAD	CJ47-014	2084594.283	750896.955	0.09	0.12
Characterization	NON RAD	CM48-000	2085236.129	750960.74	0.09	0.10
Characterization	NON RAD	CM47-001	2085234.206	750889.919	0.07	0.08
Characterization	NON RAD	CJ47-003	2084611.914	750860.155	0.02	0.02
Characterization	NON RAD	CJ47-006	2084631.854	750859.651	0.00	0.01
Characterization	NON RAD	CJ47-007	2084631.861	750828.521	0.00	0.00
Characterization	NON RAD	CJ47-004	2084621.427	750843.746	NA	NA
Characterization	RAD	CJ47-011	2084606.422	750859.399	0.07	0.42
Characterization	RAD	CJ47-009	2084589.139	750835.759	0.06	0.34
Characterization	RAD	CJ47-010	2084589.27	750816.652	0.05	0.26
Confirmation	NON RAD	CJ45-005	2084610	750543	0.01	1.06
Confirmation	NON RAD	CJ45-006	2084610	750543	0.01	0.01
Confirmation	NON RAD	CJ45-007	2084610	750543	0.06	1.02
Confirmation	NON RAD	CJ45-008	2084610	750543	0.06	1.01
Confirmation	NON RAD	CJ45-009	2084610	750543	0.02	0.02
Confirmation	NON RAD	CJ46-DR03	2084610.015	750678.013	0.05	0.05
Confirmation	NON RAD	CJ46-DR04	2084610.015	750678.013	0.00	0.00
Confirmation	NON RAD	CJ46-DR05	2084610.015	750678.013	0.00	0.00
Confirmation	NON RAD	CJ46-DR06	2084610.015	750678.013	0.05	0.05
Confirmation	NON RAD	CJ46-DR07	2084610.015	750678.013	NA	NA
Confirmation	NON RAD	CK46-DR01	2084889.935	750671.032	0.01	0.02
Confirmation	NON RAD	CK46-DR02	2084889.935	750671.032	0.01	0.02
Confirmation	NON RAD	CK46-DR03	2084889.935	750671.032	0.02	0.02
Confirmation	NON RAD	CK46-DR04	2084889.935	750671.032	0.03	0.04
Confirmation	NON RAD	CK46-DR05	2084889.935	750671.032	0.01	0.02
Confirmation	NON RAD	CK48-DR01	2084870.064	750992.838	0.00	0.01
Confirmation	NON RAD	CK48-DR02	2084870.064	750992.838	0.00	0.01

Confirmation	NON RAD	CK48-DR03	2084870.064	750992.838	0.06	0.06
Confirmation	NON RAD	CK48-DR04	2084870.064	750992.838	0.01	0.95
Confirmation	NON RAD	CK48-DR05	2084870.064	750992.838	0.00	0.00
Confirmation	RAD	CJ46-DR03	2084610.015	750678.013	0.00	0.00
Confirmation	RAD	CJ46-DR05	2084610.015	750678.013	0.00	0.01
Confirmation	RAD	CJ46-DR06	2084610.015	750678.013	0.00	0.01
Confirmation	RAD	CJ46-DR07	2084610.015	750678.013	0.01	0.03
Confirmation	RAD	CK46-DR01	2084889.935	750671.032	0.04	0.20
Confirmation	RAD	CK46-DR02	2084889.935	750671.032	0.02	0.09
Confirmation	RAD	CK46-DR03	2084889.935	750671.032	0.03	0.16
Confirmation	RAD	CK46-DR04	2084889.935	750671.032	0.03	0.15
Confirmation	RAD	CK46-DR05	2084889.935	750671.032	0.02	0.13
Confirmation	RAD	CK48-DR01	2084870.064	750992.838	0.02	0.10
Confirmation	RAD	CK48-DR02	2084870.064	750992.838	0.01	0.03
Confirmation	RAD	CK48-DR04	2084870.064	750992.838	0.00	0.01

Table 12
Sum of Ratios for Subsurface Soils Based on Remedial Contamination

Sample Purpose	SOR TYPE	Location	Easting	Northing	Depth (feet)	TIER I SOR	TIER II SOR
Characterization	NON RAD	CK48-000	2084925.791	750960.476	6 - 6	0.01	0.01
Characterization	NON RAD	CK48-001	2084910.361	750963.508	6 - 6	0.28	0.28
Characterization	NON RAD	CK47-002	2084935.696	750957.076	6 - 6	0.02	0.02
Characterization	NON RAD	CK47-000	2084927.803	750943.958	6 - 6	0.10	0.10
Characterization	NON RAD	CK47-001	2084910.357	750944.838	6 - 6	0.04	0.04
Characterization	NON RAD	CH48-000	2084272.542	751019.513	4.5 - 6.5	0.01	0.01
Characterization	NON RAD	CH48-016	2084373.825	751011.291	4.5 - 6.5	0.01	0.01
Characterization	NON RAD	CI48-001	2084575.112	751005.476	4.5 - 6.5	0.01	0.01
Characterization	NON RAD	CI48-002	2084475.687	751007.846	4.5 - 6.5	0.01	0.01
Characterization	NON RAD	CJ46-000	2084597.275	750700.806	11 - 11	0.12	5.11
Characterization	NON RAD	CJ46-001	2084605.759	750700.423	11 - 11	0.05	0.05
Characterization	NON RAD	CJ46-002	2084601.353	750704.637	11 - 11	0.07	0.07
Characterization	NON RAD	CJ46-003	2084602.402	750693.713	11 - 11	0.11	6.07
Characterization	NON RAD	CJ46-004	2084599.472	750696.964	11 - 11	0.05	0.05
Characterization	NON RAD	CJ46-DR01	2084622.896	750703.025	7.5 - 7.5	0.24	10.48
Characterization	NON RAD	CJ47-DR01	2084556.433	750776.173	4 - 4	0.17	8.19
Characterization	NON RAD	CJ49-DR01	2084820.897	751197.426	4 - 4	0.02	0.02
Characterization	NON RAD	CK47-DR01	2084891.478	750941.338	1 - 1	0.00	0.00
Characterization	NON RAD	CK48-003	2084917.579	751048.913	3 - 3	0.42	5.43
Characterization	NON RAD	CK48-004	2084917.579	751048.913	3 - 3	0.47	7.89
Characterization	NON RAD	CK48-005	2084917.579	751048.913	3 - 3	0.21	0.21
Characterization	NON RAD	Valve Pit #1	2084601.421	750700.944	8 - 8	0.19	5.51
Characterization	RAD	CJ46-000	2084597.275	750700.806	11 - 11	0.12	0.68
Characterization	RAD	CJ46-001	2084605.759	750700.423	11 - 11	0.02	0.13
Characterization	RAD	CJ46-002	2084601.353	750704.637	11 - 11	0.15	0.84

Characterization	RAD	CJ46-004	2084599.472	750696.964	11 - 11	0.03	0.14
Confirmation	NON RAD	CK48-DR06	2084919.923	751074.863	1 - 1	0.00	0.00
Confirmation	NON RAD	CK48-DR07	2084919.923	751074.863	1 - 1	NA	NA
Confirmation	NON RAD	CK48-DR08	2084919.923	751074.863	1 - 1	NA	NA
Confirmation	NON RAD	CK48-DR09	2084919.923	751074.863	1 - 1	0.00	0.00
Confirmation	NON RAD	CK48-DR10	2084919.923	751074.863	1 - 1	NA	NA
Confirmation	RAD	CJ45-005	2084610.024	750543.097	1 - 1	0.07	0.37
Confirmation	RAD	CJ45-006	2084610.024	750543.097	1 - 1	0.06	0.33
Confirmation	RAD	CJ45-007	2084610.024	750543.097	1 - 1	0.00	0.00
Confirmation	RAD	CJ45-008	2084610.024	750543.097	1 - 1	0.00	0.00
Confirmation	RAD	CJ45-009	2084610.024	750543.097	1 - 1	0.00	0.02
Confirmation	RAD	CK46-012	2084908	750688	2 - 2	0.02	0.08
Confirmation	RAD	CK46-013	2084908	750688	2 - 2	0.04	0.19
Confirmation	RAD	CK46-014	2084908	750688	2 - 2	0.01	0.07
Confirmation	RAD	CK46-015	2084908	750688	2 - 2	0.02	0.10
Confirmation	RAD	CK46-016	2084908	750688	2 - 2	0.01	0.07
Confirmation	RAD	CK46-017	2084908	750688	2 - 2	0.01	0.03
Confirmation	RAD	CK46-018	2084908	750688	2 - 2	0.03	0.14
Confirmation	RAD	CK46-019	2084908	750688	2 - 2	0.01	0.07
Confirmation	RAD	CK48-DR06	2084919.923	751074.863	1 - 1	0.00	0.02
Confirmation	RAD	CK48-DR07	2084919.923	751074.863	1 - 1	0.00	0.01
Confirmation	RAD	CK48-DR08	2084919.923	751074.863	1 - 1	0.00	0.01
Confirmation	RAD	CK48-DR09	2084919.923	751074.863	1 - 1	0.00	0.02
Confirmation	RAD	CK48-DR10	2084919.923	751074.863	1 - 1	0.09	0.47

9.0 WASTE MANAGEMENT

Waste from the SEP AOC accelerated action consisted of waste lines, valve components, sump drums and pumps, concrete, asphalt, and soil. Concrete was disposed of as LLW or LLMW, or taken to the on-site concrete rubble pile to be recycled. LLW concrete was placed in lined cargo containers, and LLMW concrete was placed in intermodal containers. Waste lines, valve components, and sump drums and pumps were placed into IP-2 or ST-90 containers and disposed of as LLMW. Valve Pit # 1 and the lysimeters were placed in intermodal containers and disposed of as LLMW. Hot spot soils were placed into ST-90s and disposed of as LLMW. Asphalt was disposed of as sanitary waste or LLW (in lined cargo containers). Water encountered in the waste lines and sumps, and water and slurry generated during concrete sawing were placed into a large poly tank and treated offsite at the Alternative Waste Treatment System as LLMW. Waste types, volumes, and disposition are presented in Table 13. Waste characterization data are summarized in Table 14.

10.0 SITE RECLAMATION

Site reclamation will involve pushing in the berms, adding fill to create a gentle grade to the south, and then seeding the AOC. Refer to the SEP Proposed Action Memorandum (PAM), entitled *RCRA Closure of the RFETS Solar Evaporation Ponds* (DOE 2002d).

11.0 NO LONGER REPRESENTATIVE SAMPLING LOCATIONS

Sampling locations that are no longer representative include the six historical locations associated with the hot spots (i.e., SS400693, SS402793, SS400593, 43793, SS402893 and SS403093) and five in-process sampling locations (i.e., CK46-002, CK46-007, CK46-008, CK46-010 and CK46-011). These locations were impacted when the hot spots were excavated. No longer representative sampling locations are shown on Figure 16.

12.0 COMPLETION OF REMEDIAL ACTION OBJECTIVES

ER RSOP Notification #02-08 accelerated action project objectives were achieved through the following:

- Removal of slabs associated with RCRA Units 21 and 48;
- Removal of OPWL valve pit, valve components, and line sections;
- Disruption of the leak detection drains, remaining OPWL sections, the MST return line, and the ITS return line; Removal of above-ground pipeline from B910 to B774;
- Removal of drain sumps and pumps; and
- Removal of hot spots identified in the PAM (DOE 2002d).

Removal activities were consistent with and contributed to the ER RSOP overall long-term remedial action objectives (RAOs) for RFETS soil. This contribution is described below.

Table 13
Waste Summary

Container Number	Extended Number	Type of Container	Volume (cu ft)	Type of Waste	IDC
X30463	spon00001	CST	1190	LLW	5001
X30407	spon00003	CST	1190	LLW	5001
X30494	spon00006	CST	1190	LLW	5001
X30495	spon00007	CST	1190	LLW	5001
X30373	spon00005	CST	1190	LLW	5001
X30488	spon00008	CST	1190	LLW	5001
X30405	spon00004	CST	1190	LLW	5001
X30489	spon00009	CST	1190	LLW	5001
X30361	spon00010	CST	1190	LLW	5001
X30362	spon00011	CST	1190	LLW	5001
B03908	spon00012	IP2	106	LLM	5001
B03909	spon00013	IP2	106	LLMW	5001
B03900	spon00014	IP2	106	LLMW	5001
B03907	spon00015	IP2	106	LLMW	5001
X30363	spon00016	CST	1190	LLMW	5001
X30364	spon00017	CST	1190	LLMW	5001
X30365	spon00018	CST	1190	LLMW	5001
X30358	spon00019	CST	1190	LLMW	5001
X30402	spon00020	CST	1190	LLMW	5001
X30465	spon00021	CST	1190	LLMW	5001
X30466	spon00022	CST	1190	LLMW	5001
X30467	spon00023	CST	1190	LLMW	5001
X30468	spon00024	CST	1190	LLMW	5001
X30400	spon00025	CST	1190	LLMW	5001
X30401	spon00026	CST	1190	LLMW	5001
X30462	spon00027	CST	1190	LLMW	5001
X30473	spon00028	CST	1190	LLMW	5001

Container Number	Extended Number	Type of Container	Volume (cu ft)	Type of Waste	IDC
B03905	spon00029	IP2	106	LLMW	0324
B03906	spon00030	IP2	106	LLMW	0324
WATER1	N/A	Polytank	Unknown	LLMW	N/A
WATER2	N/A	Polytank	Unknown	LLMW	N/A
WATER3	N/A	Polytank	Unknown	LLMW	N/A
WATER4	N/A	Polytank	Unknown	LLMW	N/A
WATER5	N/A	Polytank	Unknown	LLMW	N/A
B03963	spon00032	IP2	106	LLMW	0324
B03974	spon00034	IP2	106	LLMW	5001
B03976	N/A	IP2	106	LLMW	5001
X30442	spon00039	CST	1190	LLW	5001
X30443	spon00040	CST	1190	LLW	5001
B03971	spon00041	IP2	106	LLMW	5001
B03972	spon00042	IP2	106	LLMW	5001
B03973	spon00043	IP2	106	LLMW	5001
B03976	spon00044	IP2	106	LLMW	5001
X30319	spon00045	CST	1190	LLW	5001
X30320	spon00046	CST	1190	LLW	5001
X30444	spon00048	CST	1190	LLW	5001
X30391	spon00049	CST	1190	LLW	5001
X30593	spon00050	CST	1190	LLW	5001
X30590	spon00051	CST	1190	LLW	5001
X30591	spon00052	CST	1190	LLW	5001
X30588	spon00053	CST	1190	LLW	5001
X30377	spon00054	CST	1190	LLW	5001
X30445	spon00055	CST	1190	LLW	5001
X30481	spon00056	CST	1190	LLW	5001
X30446	spon00057	CST	1190	LLW	5001
X30447	spon00058	CST	1190	LLW	5001

Container Number	Extended Number	Type of Container	Volume (cu ft)	Type of Waste	IDC
B03975	spon00059	IP2	106	LLMW	5001
X30523	spon00060	CST	1190	LLW	5001
X30524	spon00061	CST	1190	LLW	5001
B03964	spon00062	IP2	106	LLW	5001
BO2845	spon00063	ST90	90	LLW	0323
B03663	spon00064	ST90	90	LLW	0323
X30376	spon00065	CST	1190	LLW	5001
L00891	spon00066	IML	675	LLMW	5001
B03664	spon00067	ST90	90	LLW	0323
X30607	spon00068	CST	1190	LLMW	5001
X30608	spon00069	CST	1190	LLMW	5001
L00887	spon00070	IML	675	LLMW	5001
L00888	spon00071	IML	675	LLMW	5001
L00889	spon00072	IML	675	LLMW	5001
L00890	spon00073	IML	675	LLMW	5001
B03662	spon00074	ST90	90	LLW	0323
L00870	spon00075	IML	675	LLMW	5001
L00871	spon00076	IML	675	LLMW	5001
L00872	spon00077	IML	675	LLMW	5001
L00873	spon00078	IML	675	LLMW	5001

LLW – low level radioactive waste
LLMW – low level radioactive mixed waste
CST – strong tight container
IML – intermodal container

Table 14
Waste Characterization Data Summary – Detected Analytes

Matrix Type	Analyte	Maximum	Number Samples	Detection Frequency	Units
Concrete	AC-228	2.76	4	1	pCi/g
Concrete	AM-241	8.92	4	0.5	pCi/g
Concrete	BI-212	2	4	1	pCi/g
Concrete	BI-214	0.973	4	1	pCi/g
Concrete	CS-137	0	4	1	pCi/g
Concrete	K-40	20.3	4	1	pCi/g
Concrete	PA-234	0	4	1	pCi/g
Concrete	PA-234M	0	4	1	pCi/g
Concrete	PB-212	2.2	4	1	pCi/g
Concrete	PB-214	0.939	4	1	pCi/g
Concrete	PO-210	0	4	1	pCi/g
Concrete	RA-226	4.19	4	1	pCi/g
Concrete	TH-230	0	4	1	pCi/g
Concrete	Th-231	0	4	1	pCi/g
Concrete	TL-208	0.942	4	1	pCi/g
Sediment	Ac-228	0	1	1	pCi/g
Sediment	Bi-212	0	1	1	pCi/g
Sediment	Bi-214	0.69	1	1	pCi/g
Sediment	Cs-137	0	1	1	pCi/g
Sediment	K-40	5	1	1	pCi/g
Sediment	Pa-234	0	1	1	pCi/g
Sediment	Pa-234m	0	1	1	pCi/g
Sediment	Pb-212	0.24	1	1	pCi/g
Sediment	Pb-214	0.46	1	1	pCi/g
Sediment	Po-210	0	1	1	pCi/g
Sediment	Ra-226	0	1	1	pCi/g
Sediment	Th-230	0	1	1	pCi/g
Sediment	Th-231	0	1	1	pCi/g
Sediment	Tl-208	0.07	1	1	pCi/g
Sludge	Aluminum	11000	5	1	mg/kg
Sludge	Antimony	11.7	10	0.7	mg/kg
Sludge	Arsenic	13	10	1	mg/kg
Sludge	Barium	727	10	1	mg/kg
Sludge	Beryllium	24	5	1	mg/kg
Sludge	Cadmium	132	10	1	mg/kg
Sludge	Calcium	154000	10	1	mg/kg
Sludge	Chromium	380	10	1	mg/kg
Sludge	Cobalt	6.8	10	1	mg/kg
Sludge	Copper	1160	10	1	mg/kg
Sludge	Iron	138000	10	1	mg/kg

Matrix Type	Analyte	Maximum	Number Samples	Detection Frequency	Units
Sludge	Lead	374	10	1	mg/kg
Sludge	Lithium	230	5	1	mg/kg
Sludge	Magnesium	5900	5	1	mg/kg
Sludge	Manganese	648	10	1	mg/kg
Sludge	Molybdenum	17	10	1	mg/kg
Sludge	Nickel	128	10	1	mg/kg
Sludge	Nitrate as N	65	15	0.8	mg/kg
Sludge	Potassium	78200	10	1	mg/kg
Sludge	Selenium	5.3	10	0.9	mg/kg
Sludge	Silver	12	10	1	mg/kg
Sludge	Sodium	120000	5	1	mg/kg
Sludge	Strontium	700	10	1	mg/kg
Sludge	Thallium	2.5	5	0.6	mg/kg
Sludge	Tin	59.5	10	1	mg/kg
Sludge	Vanadium	165	10	1	mg/kg
Sludge	Zinc	4270	10	1	mg/kg
Sludge	Ac-228	3.1	4	1	pCi/g
Sludge	AM241	64.4	2	1	pCi/g
Sludge	Am-241	78	4	0.25	pCi/g
Sludge	Bi-212	1.8	4	1	pCi/g
Sludge	Bi-214	1.3	4	1	pCi/g
Sludge	Cs-137	0.4	4	1	pCi/g
Sludge	K-40	42	4	1	pCi/g
Sludge	Pa-234	0	4	1	pCi/g
Sludge	Pa-234m	0	4	1	pCi/g
Sludge	Pb-212	2.9	4	1	pCi/g
Sludge	Pb-214	1.6	4	1	pCi/g
Sludge	Po-210	0	4	1	pCi/g
Sludge	PU239240	54.2	2	1	pCi/g
Sludge	Ra-226	37	4	1	pCi/g
Sludge	Th-230	0	4	1	pCi/g
Sludge	Th-231	2.5	4	1	pCi/g
Sludge	Tl-208	1	4	1	pCi/g
Sludge	U233234	28.4	2	1	pCi/g
Sludge	U235	2.23	2	1	pCi/g
Sludge	U-235	3	4	0.75	pCi/g
Sludge	U238	26.6	2	1	pCi/g
Sludge	U238/234	64	4	1	pCi/g
Sludge	1,2-Dichloroethane-d4	3889.61021832398	2	1	ug/kg
Sludge	4-Bromofluorobenzene	3468.25381552279	2	1	ug/kg
Sludge	Fluorobenzene	3607.50344864031	2	1	ug/kg
Sludge	Toluene	314.574300721435	2	1	ug/kg

Matrix Type	Analyte	Maximum	Number Samples	Detection Frequency	Units
Slurry	Antimony	6.7	6	1	mg/kg
Slurry	Arsenic	9.5	6	1	mg/kg
Slurry	Barium	670	6	1	mg/kg
Slurry	Cadmium	1.4	6	1	mg/kg
Slurry	Calcium	88700	6	1	mg/kg
Slurry	Chromium	64	6	1	mg/kg
Slurry	Cobalt	672	6	1	mg/kg
Slurry	Copper	130	6	1	mg/kg
Slurry	Iron	28400	6	1	mg/kg
Slurry	Lead	25.4	6	1	mg/kg
Slurry	Manganese	660	6	1	mg/kg
Slurry	Molybdenum	0	6	1	mg/kg
Slurry	Nickel	72.8	6	1	mg/kg
Slurry	Potassium	23700	6	1	mg/kg
Slurry	Selenium	0.91	6	1	mg/kg
Slurry	Silver	5.2	6	1	mg/kg
Slurry	Strontium	509	6	1	mg/kg
Slurry	Tin	5	6	1	mg/kg
Slurry	Vanadium	95	6	1	mg/kg
Slurry	Zinc	110	6	1	mg/kg
Slurry	Ac-228	2.7	6	1	pCi/g
Slurry	Am-241	7	6	0.333333	pCi/g
Slurry	Bi-212	3.5	6	1	pCi/g
Slurry	Bi-214	1.3	6	1	pCi/g
Slurry	Cs-137	0	6	1	pCi/g
Slurry	K-40	25	6	1	pCi/g
Slurry	Pa-234	0	6	1	pCi/g
Slurry	Pa-234m	0	6	1	pCi/g
Slurry	Pb-212	3.1	6	1	pCi/g
Slurry	Pb-214	1.4	6	1	pCi/g
Slurry	Po-210	14000	6	1	pCi/g
Slurry	Ra-226	9.8	6	1	pCi/g
Slurry	Th-230	0	6	1	pCi/g
Slurry	Th-231	0	6	1	pCi/g
Slurry	Tl-208	1.2	6	1	pCi/g
Slurry	U238/234	10	6	0.666667	pCi/g
Soil	Antimony	0	3	1	mg/kg
Soil	Arsenic	30.5	3	1	mg/kg
Soil	Barium	1580	3	1	mg/kg
Soil	Cadmium	613	3	1	mg/kg
Soil	Calcium	175000	3	1	mg/kg
Soil	Chromium	153	3	1	mg/kg

Matrix Type	Analyte	Maximum	Number Samples	Detection Frequency	Units
Soil	Cobalt	0	3	1	mg/kg
Soil	Copper	281	3	1	mg/kg
Soil	Iron	129000	3	1	mg/kg
Soil	Lead	34.6	3	1	mg/kg
Soil	Manganese	14000	3	1	mg/kg
Soil	Molybdenum	0	3	1	mg/kg
Soil	Nickel	331	3	1	mg/kg
Soil	Potassium	19300	3	1	mg/kg
Soil	Selenium	0	3	1	mg/kg
Soil	Silver	11.4	3	1	mg/kg
Soil	Strontium	394	3	1	mg/kg
Soil	Tin	67.1	3	1	mg/kg
Soil	Vanadium	302	3	1	mg/kg
Soil	Zinc	417	3	1	mg/kg
Soil	Ac-228	8.8	2	1	pCi/g
Soil	Am-241	16	2	0.5	pCi/g
Soil	Bi-212	11	2	1	pCi/g
Soil	Bi-214	1.9	2	1	pCi/g
Soil	Cs-137	0	2	1	pCi/g
Soil	K-40	32	2	1	pCi/g
Soil	Pa-234	0	2	1	pCi/g
Soil	Pa-234m	0	2	1	pCi/g
Soil	Pb-212	8.6	2	1	pCi/g
Soil	Pb-214	2.6	2	1	pCi/g
Soil	Po-210	0	2	1	pCi/g
Soil	Ra-226	59	2	1	pCi/g
Soil	Th-230	0	2	1	pCi/g
Soil	Th-231	0	2	1	pCi/g
Soil	Tl-208	2.8	2	1	pCi/g
Soil	U238/234	54	2	0.5	pCi/g
Soil	1-Hexanol, 2-Ethyl-	38	4	1	ug/kg
Soil	4-Bromofluorobenzene	67.826006671101	2	1	ug/kg
Soil	Acetone	55	6	0.666667	ug/kg
Soil	Fluorobenzene	66.133001 8243965	2	1	ug/kg
Soil	Toluene	14.4566741988131	6	0.333333	ug/kg
Solid	Ac-228	0	5	1	pCi/g
Solid	Am-241	740	6	1	pCi/g
Solid	Bi-212	8.1	5	1	pCi/g
Solid	Bi-214	0	5	1	pCi/g
Solid	Cs-137	0	5	1	pCi/g
Solid	K-40	120	5	1	pCi/g
Solid	Pa-234	0	5	1	pCi/g

Matrix Type	Analyte	Maximum	Number Samples	Detection Frequency	Units
Solid	Pa-234m	100	5	1	pCi/g
Solid	Pb-212	2.1	5	1	pCi/g
Solid	Pb-214	0	5	1	pCi/g
Solid	Po-210	0	5	1	pCi/g
Solid	Pu-239	0	5	1	pCi/g
Solid	Ra-226	36	5	1	pCi/g
Solid	Th-230	0	5	1	pCi/g
Solid	Th-231	21	5	1	pCi/g
Solid	Tl-208	0.56	5	1	pCi/g
Solid	U-235	4.3	5	0.8	pCi/g
Solid	U238/234	100	5	1	pCi/g
Solid	1,2,4-Trimethylbenzene	4690.36055056538	5	0.2	ug/kg
Solid	1,3,5-Trimethylbenzene	1527.80473959784	5	0.2	ug/kg
Solid	4-Bromofluorobenzene	51944.0131612672	5	1	ug/kg
Solid	4-Isopropyltoluene	931.960891154685	5	0.2	ug/kg
Solid	Acetone	26209.490307801	5	1	ug/kg
Solid	Ethylbenzene	802.097488288868	5	0.2	ug/kg
Solid	Fluorobenzene	46536.4747905995	5	1	ug/kg
Solid	Naphthalene	2337.5412515847	5	0.2	ug/kg
Solid	Toluene	1553.33320340714	5	0.4	ug/kg

RAO 1: Provide a remedy consistent with the RFETS goal of protection of human health and the environment. The removal of slabs, the valve pit, valve components, line sections, sumps, and hot spots, and the disruption of remaining lines contributed to the protection of human health and the environment because potential sources of contamination were removed or isolated.

RAO 2: Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls. The removal of slabs, the valve pit, valve components, line sections, sumps, and hot spots, and the disruption of remaining lines minimize the need for long-term maintenance and institutional or engineering controls because potential sources of contamination were removed or isolated.

RAO 3. Minimize the spread of contamination during implementation of accelerated actions. Best management practices were used to prevent the spread of contamination during the accelerated action (e.g., erosion and duct controls). Air monitoring data during the accelerated action did not indicate any exceedances.

13.0 DATA QUALITY ASSESSMENT

The DQA is based on various criteria derived from EPA Guidance, particularly the DQO process and DOE quality requirements. References are listed in Sections 13.8. The DQA was performed independent of data reduction and evaluation presented throughout this report. Quality control evaluations performed on the accelerated action data set are documented within the MS ACCESS database "PlanvsActuals2.mdb". The data set includes only results acquired by Kaiser-Hill (K-H) during calendar year 2002, and does not include "legacy" (pre-accelerated action) data from the same area.

13.1 DQO Decisions

Consistent with original DQO decision rules of the project, a sum-of-ratios (SOR) calculation was performed on each accelerated action sample result. Several samples exceeded an SOR of 1 in the subsurface and surface soils, relative to Tier II ALs. The results elevated above Tier II are due to beryllium and arsenic. Those surface soil locations where an SOR exceeded 1 relative to Tier I (radiological) ALs were remediated, and no longer represent in-situ soils – all within Pond C. No further soil remediation is necessary based on these final results.

Use of the applicable sample power calculation -- EPA QA/G-4, lognormal methods, or nonparametric, such as the Sign Test in MARSSIM (EPA et al., 1997) -- would yield better than a 90% confidence that enough samples were acquired to conclude that each analyte is below its respective RFCA Tier I AL.

13.2 Verification and Validation (V&V) of Results

Verification ensures that data produced and used by the project are documented and traceable per quality requirements. Validation consists of a technical review of analytical results such that any limitations relative to project decisions are stated. V&V criteria include:

- Chain-of-Custody;
- Preservation and Hold-times;
- Precision and Accuracy
- Instrument Calibrations;
- Preparation Blanks;
- Interference Check Samples (metals);
- Matrix Spikes/Matrix Spike Duplicates;
- Lab Control Samples;
- Field Duplicate Measurements;
- Chemical Yield (radiochemistry);
- Required Detection 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 (precision, accuracy, representativeness, completeness, comparability and sensitivity) 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. Validation results are summarized in the "Completeness" subsection.

Field sampling was conducted according to the approved IASAP, including related SOPs and addenda. Raw hardcopy data (e.g., individual analytical data packages) are currently filed by RIN and are maintained by K-H Analytical Services Division; older hardcopies representing "legacy" data may reside in the Federal Center. Digital data are stored on the Remedial Action Decision Management System server (RFETS intranet) and the RFETS Soil and Water Database.

13.3 Precision and Accuracy

Precision and accuracy of laboratory results are adequate based on validation frequencies and results, which are tabulated in the "Completeness" section.

Precision results from the latest field sampling event are adequate based on repeatability of all eight (8) real/duplicate sample pairs, where the results were as follows:

- 6 real/duplicate pairs - all concentrations were below applicable RFCA Tier II ALs; and,
- 2 real/duplicate pairs – SORs exceeded 1 relative to RFCA Tier II ALs for all samples in both pairs.

Frequency of duplicate collection was >5%, consistent with DQOs of the project.

Field blanks collected during the project indicate no false positives in the data set due to cross-contamination.

13.4 Representativeness

Samples acquired for the project are representative of the SEP AOC based on the types, number, and location of samples acquired relative to the site-specific history (DOE, 2001). Other criteria that corroborate representativeness include:

1. Implementation of industry-standard chain-of-custody protocols;
2. Compliance with sample preservation and hold times; and
3. Compliance with documented and Site-approved sampling plans and procedures, including SW-846 analytical methods.

Maps and tables of sample locations are displayed in previous sections of this report.

13.5 Completeness

Sampling completeness was evaluated through an inventory of the number and types of samples acquired for the SEP AOC. Specifically, were enough samples collected, and valid results produced, to make project decisions?

Of 56 total surface soil samples (<0.5' in depth), the following numbers were evaluated relative to the analytical suites:

Metals: 47

Radionuclides: 46

Nitrate/Nitrite: 5

Of 65 total subsurface samples (>0.5' in depth), the following numbers were evaluated relative to the variety of analytical suites:

Metals: 63

Radionuclides: 64

Nitrate: 28

Satisfactory V&V are indicated by a 10% (or greater) validation frequency of all results by method, and <10% rejection of those records validated. Table 15 indicates that validation and rejection frequencies were acceptable for all listed analytical suites, with the exception of metals by x-ray fluorescence (XRF) and alpha spectroscopy. However, as XRF samples are only used for characterization, and not confirmation of final remedial actions, validation of XRF results is not critical for "close-out" decisions. V&V of alpha spectroscopy results is in progress (i.e., three Am results have not yet been validated). Any rejected records were disqualified from use.

13.6 Comparability

All results presented are comparable with nation-wide CERCLA data and DOE complex-wide environmental data. This comparability is based on:

1. Use of standardized engineering units in the reporting of measurement results;
2. Consistent sensitivities of measurements (generally ≤ ½ corresponding action levels); and
3. Use of Site-approved procedures, work plans, and quality controls (e.g., Contractual Statements of Work for lab analyses; DOE, 2002a).

13.7 Sensitivity

Reporting limits, in units of ug/kg (ppb) for organics, mg/kg (parts per million) for metals, and pCi/g for radionuclides, were compared with RFCA Tier I and Tier II ALs on a record-by-record basis. Adequate sensitivities of analytical methods were attained for all "non-detect" results. "Adequate" sensitivity is defined as an RL less than the analyte's associated AL, ideally <1/2 the AL.

13.8 Summary

Data quality is acceptable for project decisions based on the V&V criteria cited and with the qualifications given.

Table 15
Solar Evaporation Ponds 2002 Sampling Event, Summary of Validated Records, Soil Samples, in the RFETS Soil-Water Database

		Metals – ICP			Nitrate	Nitrite	Radionuclides
VALIDATION QUALIFIER CODE	Total Of CAS No.	EME-A-003	MET-A-019	MET-A-023	MIS-A-025	MIS-A-026	Gamma Spec
Null	166	135		30	1		165
1	228	161	62		4	1	
J	43			43			
J1	323	275	15		28	5	
V	104			104			165
V1	1087	1044	43				
UJ	8			8			
UJ1	79	78	1				
R1	7	6			1		
Total	2375	1699	121	185	34	6	330
% Validated	81%	83%	49%	84%	85%	83%	50%
% Rejected	0.4%	0.4%	0.0%	0.0%	3.4%	0.0%	0.0%

Key:
V, V1 = valid without qualification
J, J1 = estimated (semi-quantitative) value
B = contaminant also found in associated lab blank
A = acceptable w/ qualification
UJ, UJ1 = nondetect; detection limit is estimated
Null, 1, N, Y, Z = not validated
R, R1 = Rejected, do not use

13.9 DQA References

DOE, 2000. *Rocky Flats Cleanup Agreement* (RFCA), Attachment 5, 3/21/2000.

DOE Order 414.1A, *Quality Assurance.*

DOE, 2000. *National Basic Ordering Agreement* (BOA).

DOE, June 2001. *Industrial Area Sampling and Analysis Plan* (IASAP).

EPA 402-R-97-016, 1997. *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM), NUREG-1575.

EPA 540/R-94/013 (1996b), *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*

EPA 540/R-94/012 (1996a), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*

EPA QA/G-4, 1994. *Guidance for the Data Quality Objective Process.*

EPA QA/G-8, Draft, 2001. *Guidance on Environmental Data Verification and Data Validation.*

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

Lockheed-Martin, 1997. *Evaluation of Radiochemical Data Usability*, ES/ER/MS-5.

13.10 K-H V&V Guidelines

General Guidelines for Data Verification and Validation, DA-GR01-v1, December 3, 1997

V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v1, 2/13/98

V&V Guidelines for Volatile Organics, DA-SS01-v1, 12/3/97

V&V Guidelines for Semivolatile Organics, DA-SS02-v1, 12/3/97

V&V Guidelines for Inorganic Metals, DA-SS05-v1, 12/97

14.0 REFERENCES

CDPHE, 2002, Environmental Restoration RFCA Standard Operating Protocol FY02 Notification #02-08 Approval Letter, July.

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

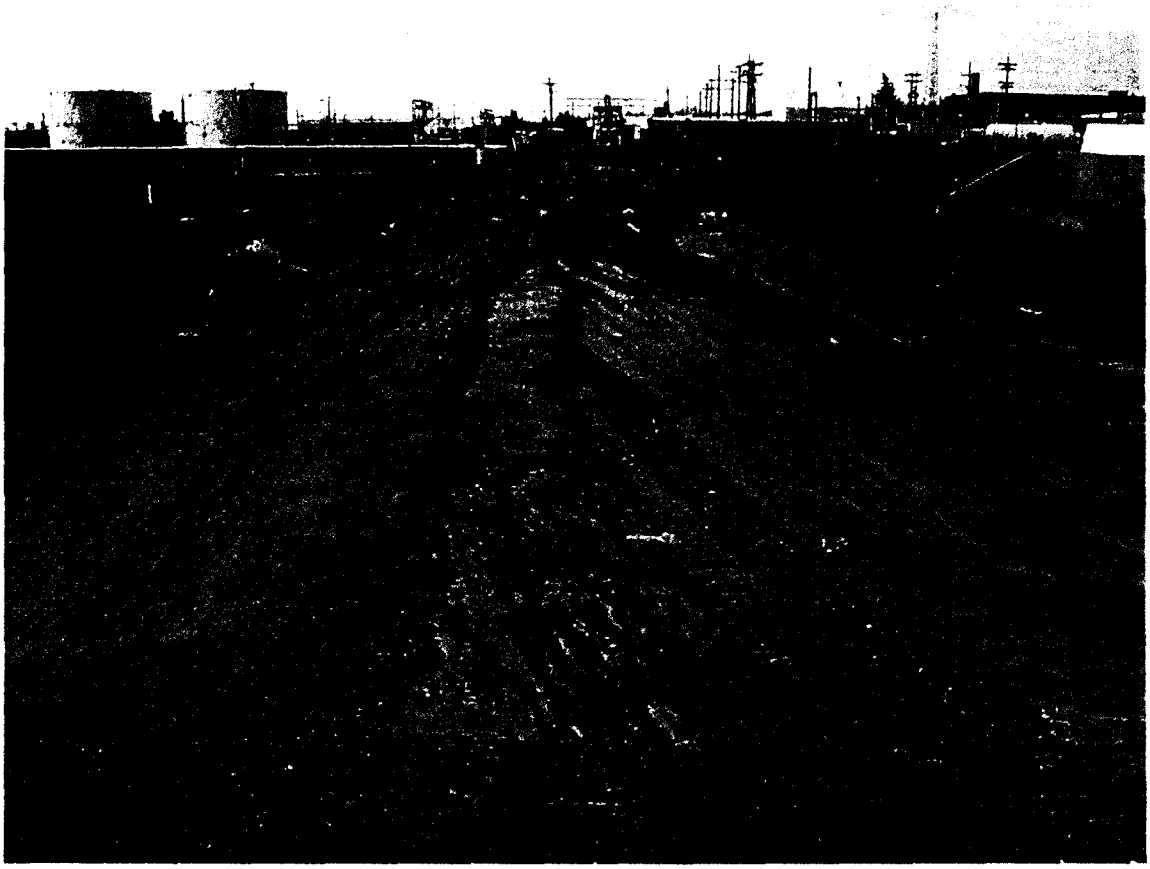
DOE 2002a, Industrial Area Sampling and Analysis Plan Addendum #IA-02-07, Rocky Flats Environmental Technology Site, Golden, CO, August.

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

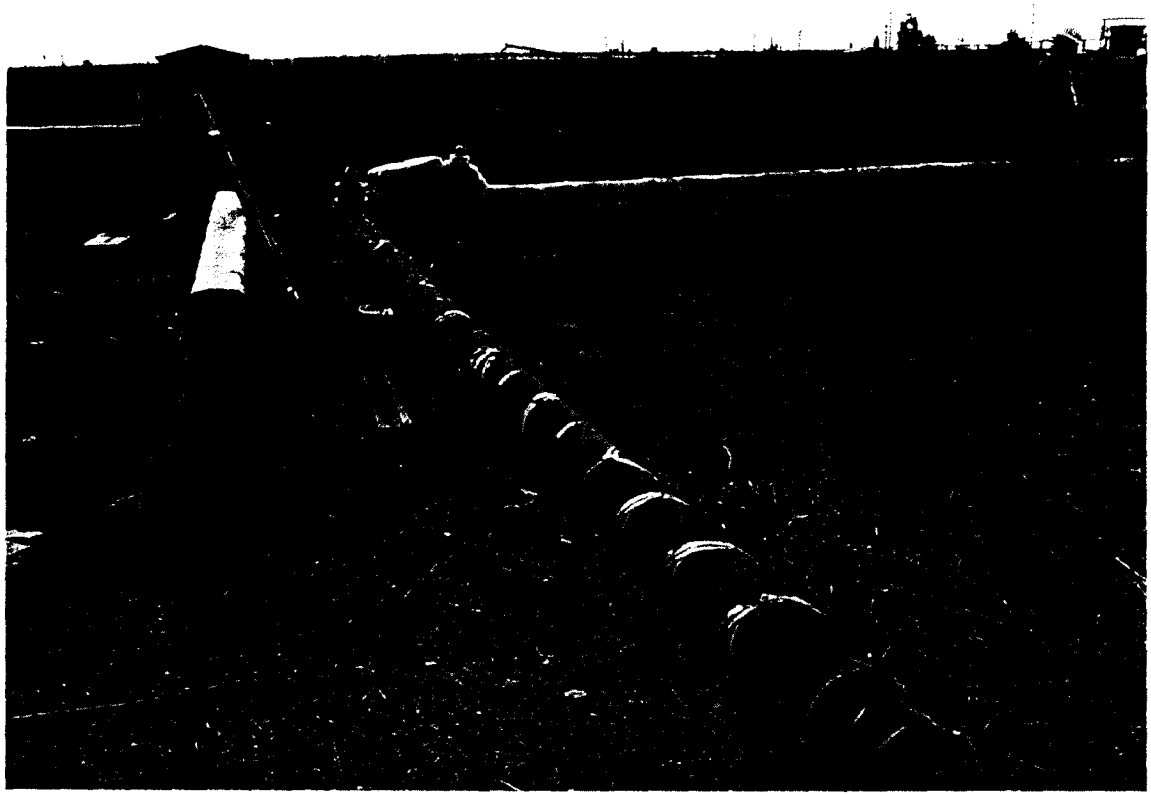
DOE 2002c, Environmental Restoration RFCA Standard Operating Protocol Notification #02-08, Rocky Flats Environmental Technology Site, Golden, CO, August.

DOE 2002d, RCRA Closure of the RFETS Solar Evaporation Ponds, Proposed Action Memorandum, Rocky Flats Environmental Technology Site, Golden, CO, September.

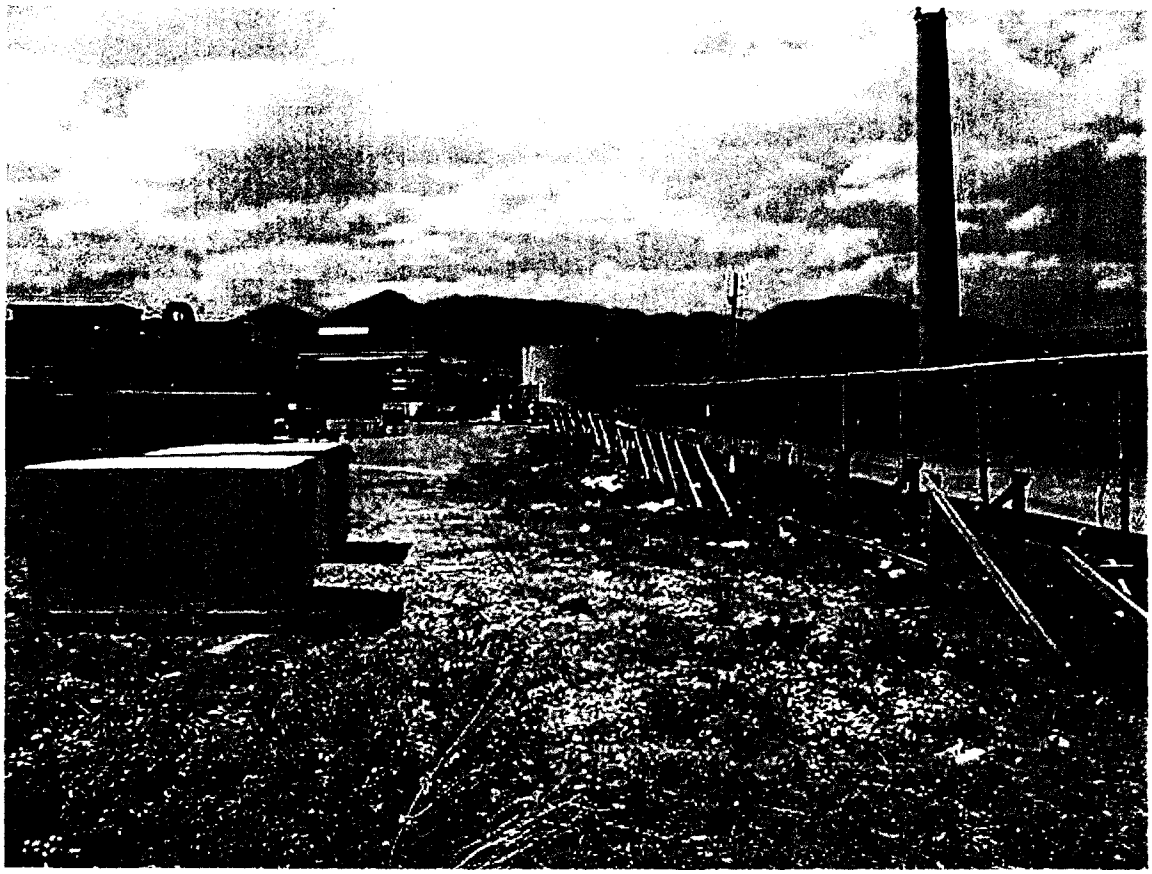
Appendix A
Project Photographs



788 Roadbase Removal

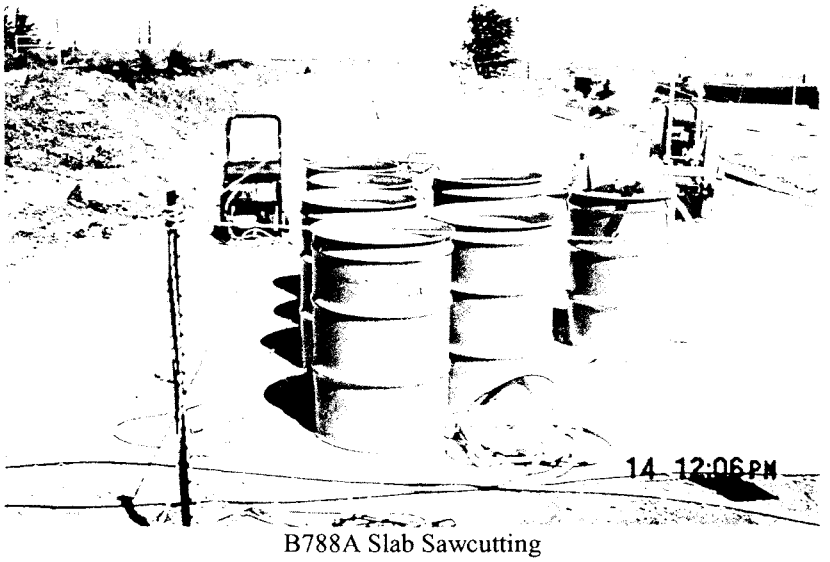


910 – 374 NPWL Removal



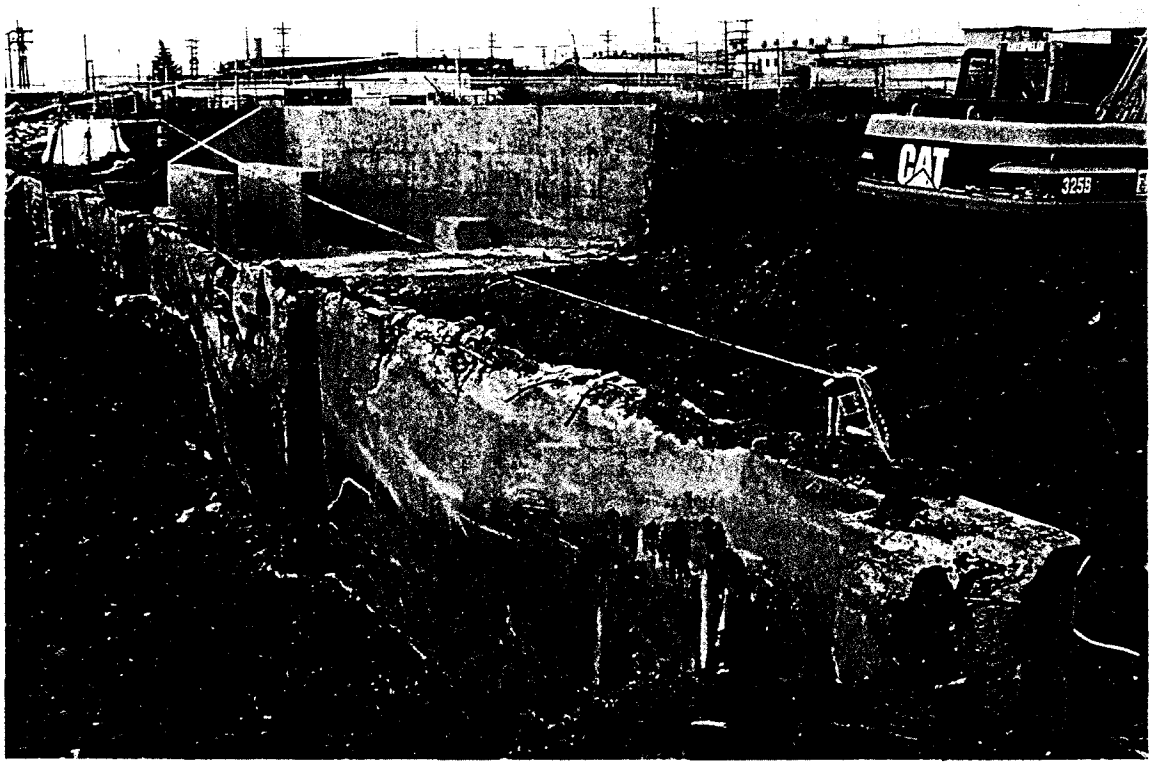
910 –374 NPWL North of B779 Prior to Removal

910 – 374 NPWL Removed North of B799



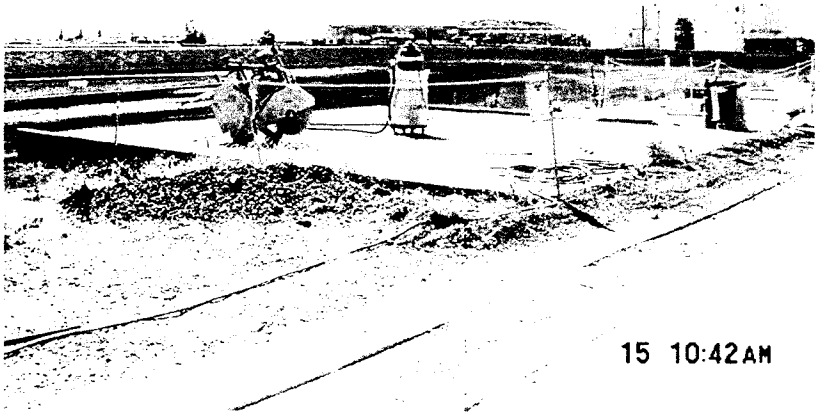
B788A Slab Sawcutting

B788A Slab Removal



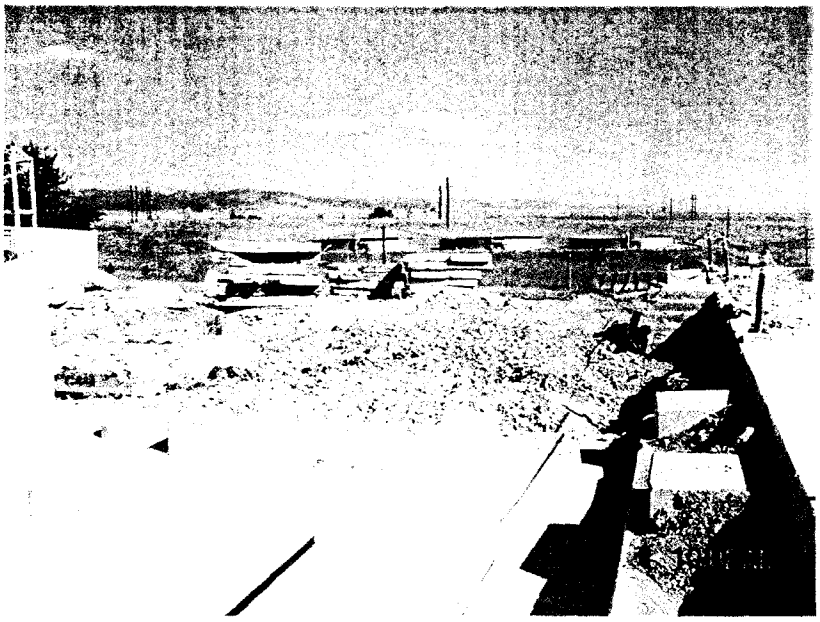
B788A Footing Excavated

308A Clarifier Pad



308A Clarifier Pad Sawcutting

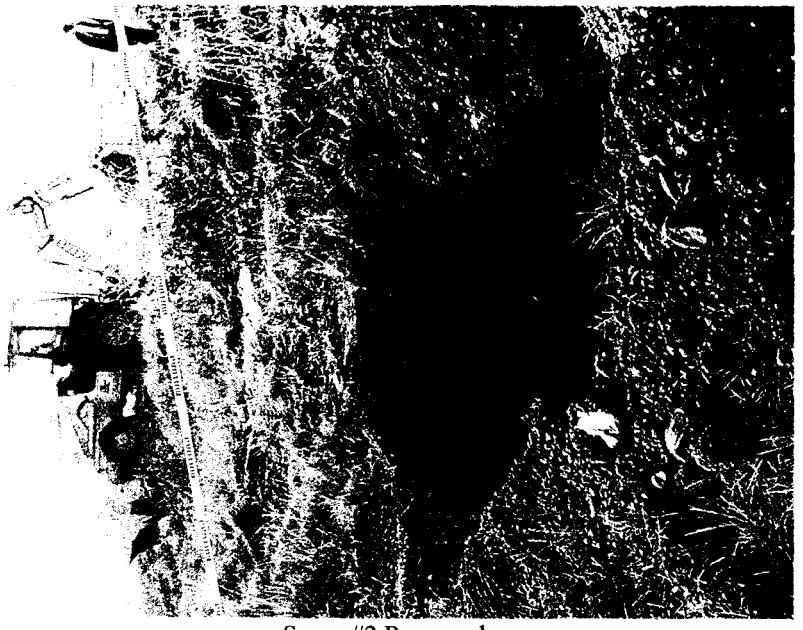
Mixer Support Slab and B788A Slab



Silo and Mixer Slab Removal

Valve Pit #1 Removal

Sump #1 Removed



Sump #2 Removed

Pond 207B Leak Detection Drainline Excavated

Pond 207C Leak Detection Drainline Excavated

MST Return Line Disrupted and Foamed

Appendix B
Correspondence

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
ER REGULATORY CONTACT RECORD

Date/Time: September 30, 2002/ Bldg. 116 CR #93 10:00 a.m. Meeting

Site Contact(s): Tom Lindsay

Phone: x5705

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

Purpose of Contact: Consultative Process to Discuss Surface Soil Removals for Risk Reduction at Solar Ponds Project

---

Discussion : : On Monday, September 30, 2002, KH/ER met with the regulators and discussed the surface soil removal locations for Risk Reduction at the Solar Ponds. The following six locations were identified: SS403093, SS402893, 43793, SS440593, SS400693, and SS402793. These locations were selected based on the fact they either exceeded the Am-241 or Pu-239 PRG 10^{-5} Action Level for the Wildlife Refuge Worker (WRW) or they increased non-carcinogenic risks due to non-radiological constituents such as Cadmium.

The removals will be based on a 1 square meter area, 15.24 centimeters deep (or 6 six inches). A micro-Rad meter will be used to survey each area ahead of time and confirm the extent of activity does not exceed 1 meter square, otherwise, the area will be adjusted accordingly. After the removal, one discrete confirmation sample (not composite) will be taken for rads and metals in the center of the area. Five of the six locations are found in the berm areas and one north of 207A and 207B North ponds.

In discussion, it was noted the current Risk Assessment includes these locations and the risk assessment would be reduced even further by removing them. The PAM/NFA will not be revised to account for the surface soil removals. This work is being performed under the current ER-RSOP Notification #02-08.

After the meeting this morning a conference call was held between Marla Broussard – KH and Jean MacKenzie – EPA to brief the EPA on the discussion of the meeting.

Attendees: Carl Spreng - CDPHE, Russ Mccalister - DOE, Marla Broussard - KH, Susan Serreze - KH, Laura Brooks - KH, Carla Rellergert - KH, Tom Lindsay - KH

Contact Record Prepared By: Tom Lindsay, Bldg. T-124A, 5705

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

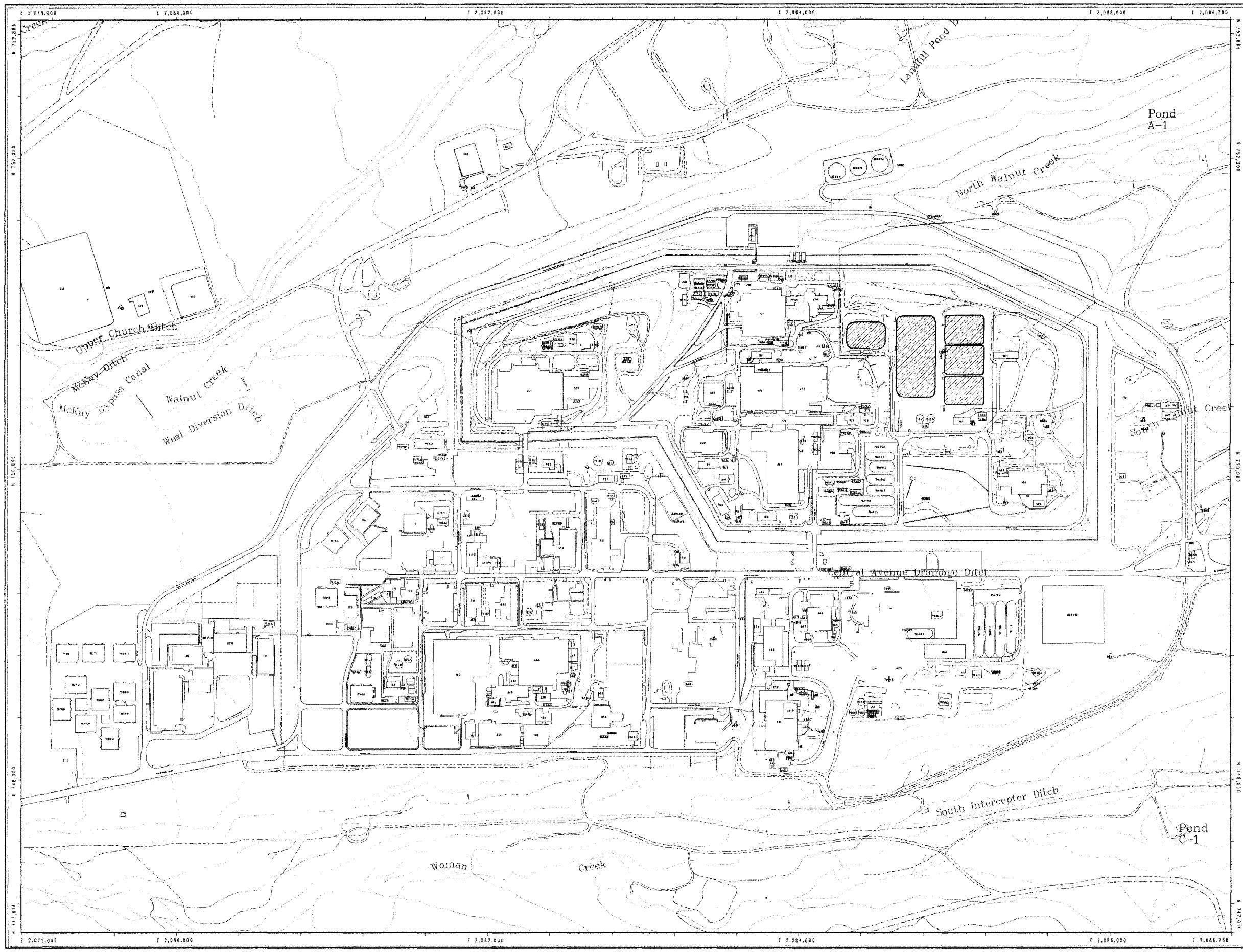
Additional Distribution (choose names as applicable):

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

Appendix C
Compact Disk, Data Set for IHSS Group 000-1 AOC

98/98

Figure 1
IHSS Group 000-1 Location Map



EXPLANATION

- Solar Evaporation Pond Area of Concern

Standard Map Features

- Buildings and other structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Topographic Contour (20-Foot)
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES:
Buildings, fences, hydrography, roads and other structures from 1994 aerial flyover data captured by LGBG HSL, Las Vegas. Digitized from the orthophotographs, 1/95
Topographic contours were derived from digital elevation model (DEM) data by Matthew Kautzman (MK) using ESRI Arc TIN and LATTICE to process the DLM data to create 5-foot contours. The DLM data was captured by the Remote Sensing Lab, Las Vegas, NV, 1994 Aerial Flyover at 10 meter resolution. DEM post-processing performed by MK, Winter 1997.

N

Scale = 1 : 7580
1 inch represents approximately 632 feet

250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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

GIS Dept. 303-966-7707

Prepared by:
DynCorp
THE ART OF TECHNOLOGY

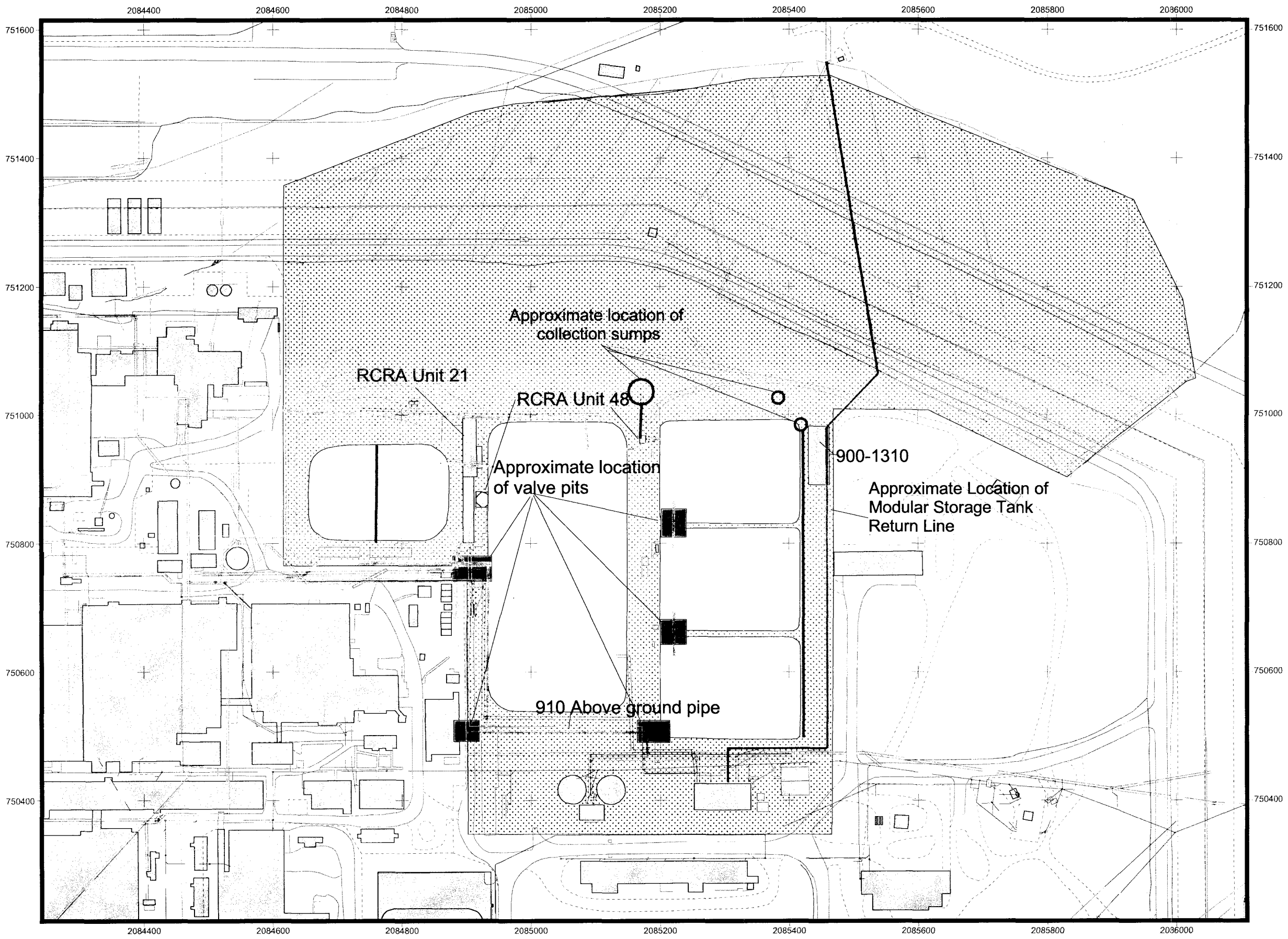
Prepared for:
KAISER-HILL COMPANY

October 14, 2002

NT_Svr w:/projects/fy2003/03-0029/ou4_sep_000-1.aml

9

Figure 2
Solar Evaporation Ponds Area of Concern



KEY

- OU4 AOC
- SEP
- IHSS
- PAC
- Building or other structure
- OPWL
- NPWL
- Storm drain
- Leak Detection Drain
- MST Return Line
- Stream, ditch, or other drainage
- Paved area
- Fence
- Dirt Road

N

Scale = 1:1,700

40 0 40 80 120 160 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

KAISER•HILL COMPANY

sepaocnotification.apr June 2002

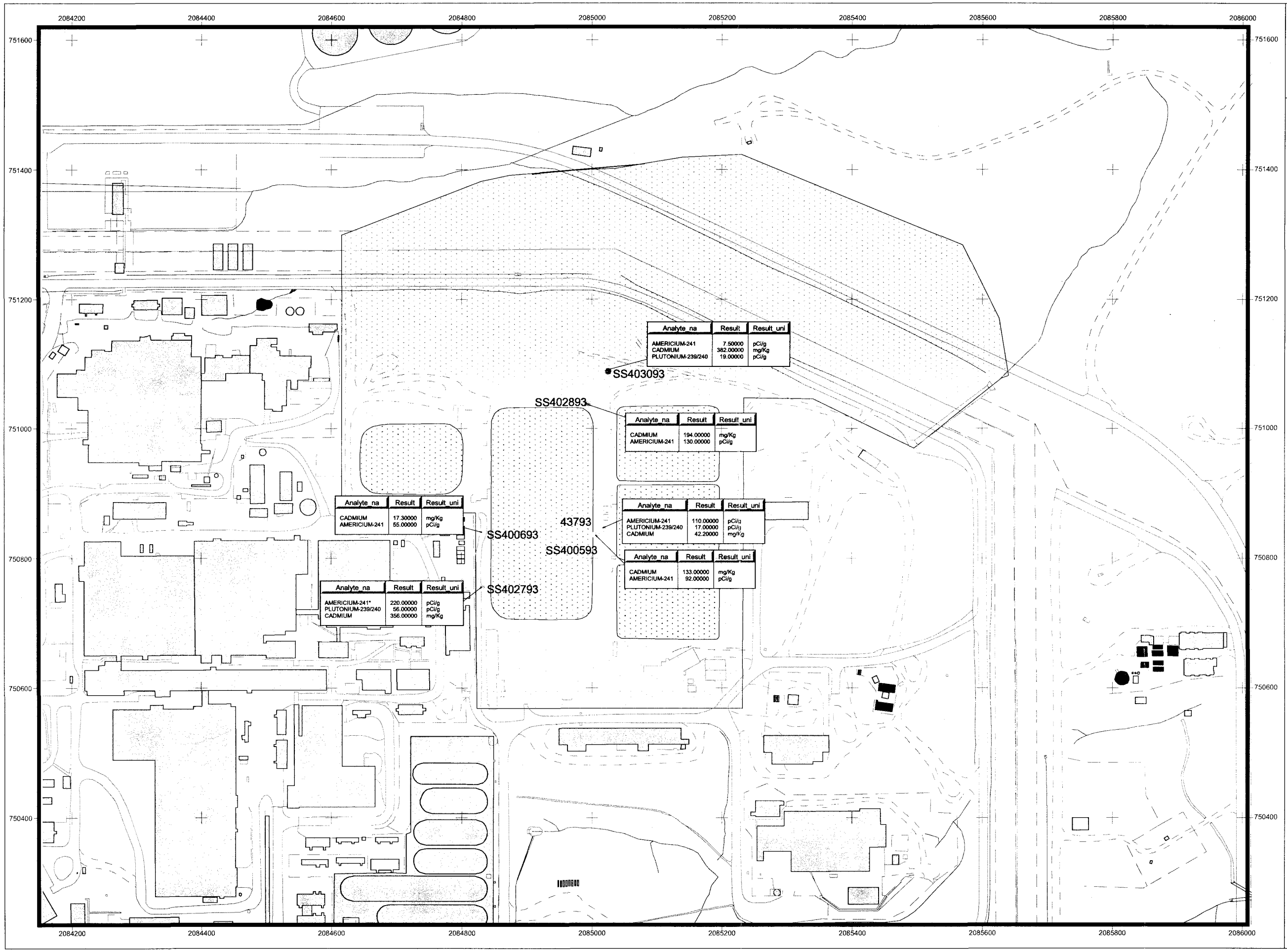


Figure 3
Solar Evaporation Ponds Area of Concern Hot Spots

KEY

- SEP
- AOC
- Building
- IHSS
- Streams
- Fence
- Paved Road
- Dirt Road
- Hot Spot

* Rejected data due to MDA exceeded the RDL and % recovery was outside acceptability range.

N

50 0 50 100 Feet

Scale = 1:1,750

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

RADMS

Prepared for:

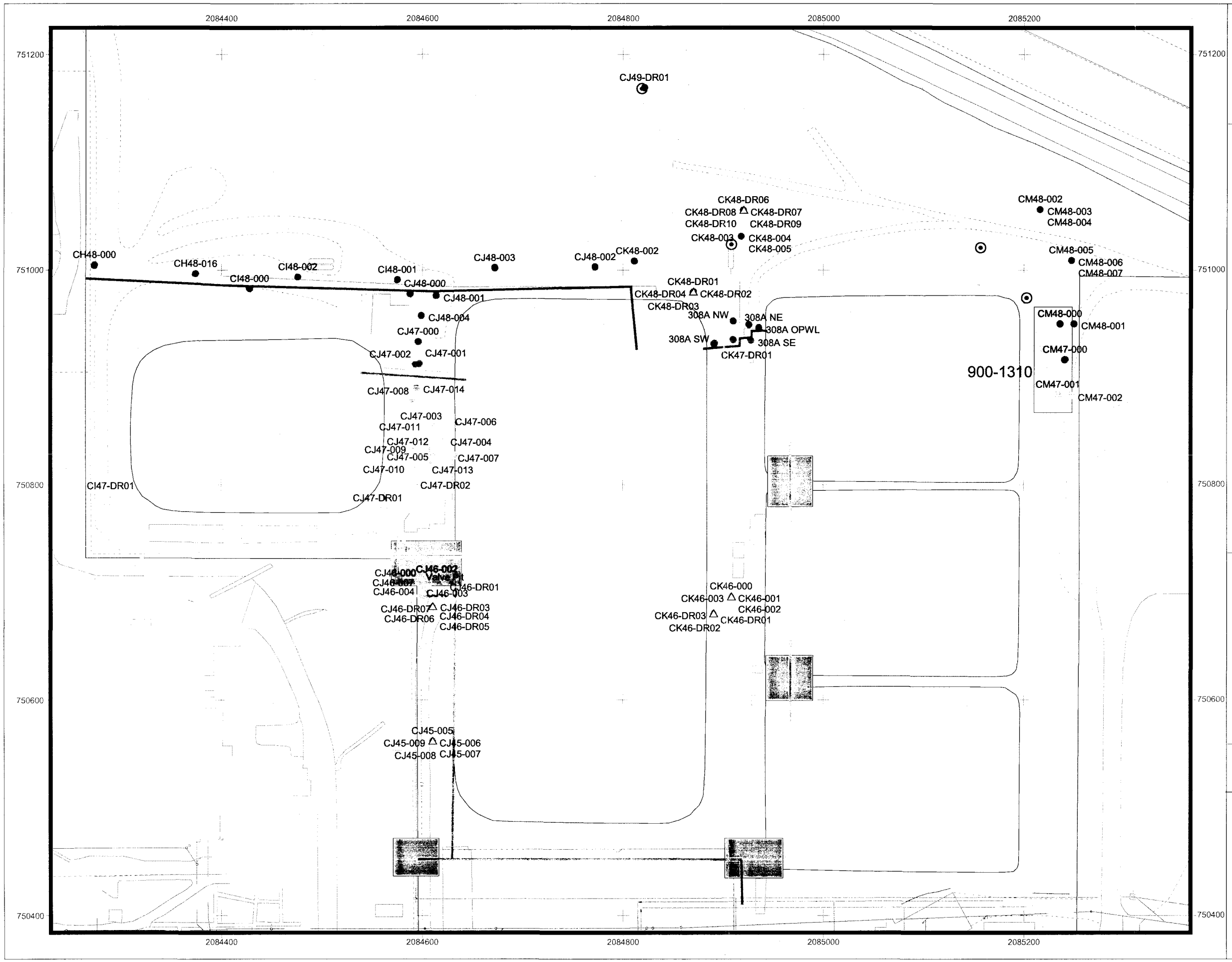
KAISER•HILL COMPANY

sep082302.apr

September 2002

14

Figure 4
Accelerated Action Sampling Locations at SEP AOC



KEY

- In Process Samples
- Characterization Samples
- Collection Sumps
- Process Lines
- Valve Pits
- Pipes
- Solar Ponds
- Streams
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

N

Scale = 1:500

60 0 60 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

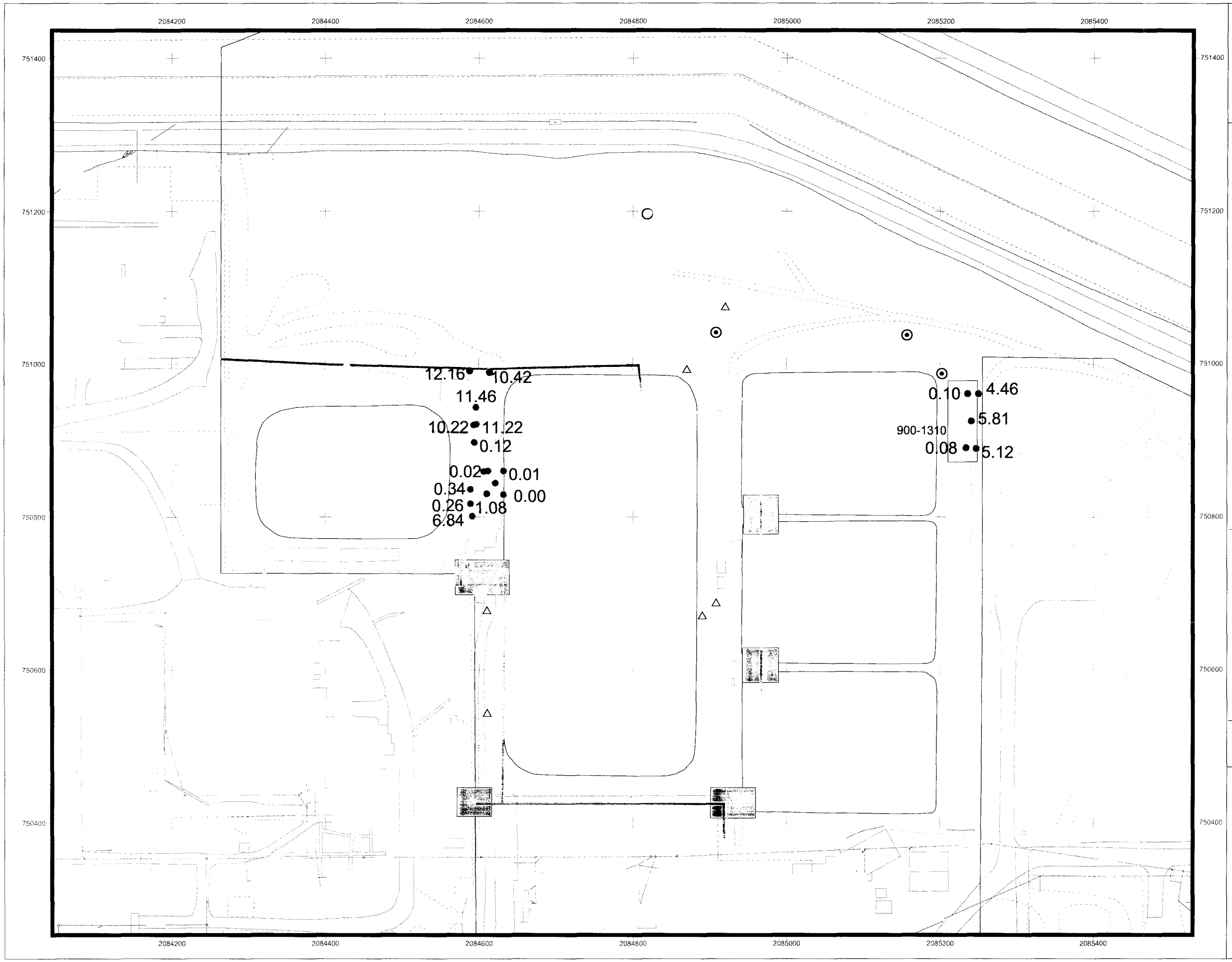
U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared By:

KAISER•HILL COMPANY

projects/2003/000-1/closeout/sep-closeout.apr

Figure 6
Tier II Sum of Ratios for Non-Radionuclides in Surface Soil, Based on Accelerated Action Characterization



Key

- Charcterization Samples
- No Data or < Background
- In Process Samples
- Collection Sumps
- Process Lines
- Valve Pits
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

N

Scale = 1:1500

50 0 50 100 150 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

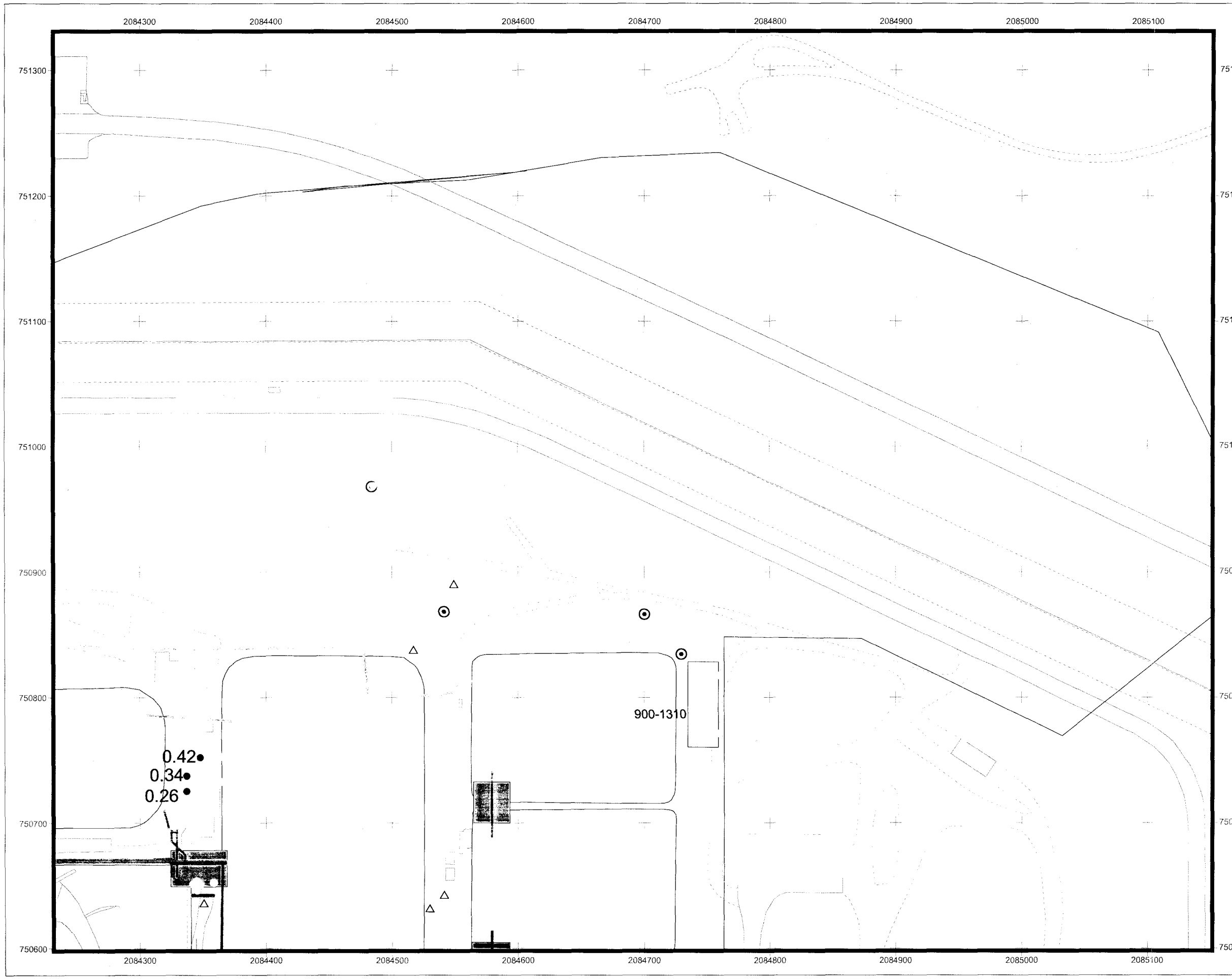
U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared By:

KAISER•HILL COMPANY

projects/2003/000-1/closeout/sep-closeout.apr

Figure 7
Tier II Sum of Ratios for Radionuclides in Surface Soil, Based on Accelerated Action Characterization



KEY

- Charcterization Samples
- No Data or < Background
- In Process Samples
- Collection Sumps
- Process Lines
- Valve Pits
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

N

Scale = 1:1500

30 0 30 60 90 120 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared By:

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projects/2003/000-1/closeout/sep-closeout.apr

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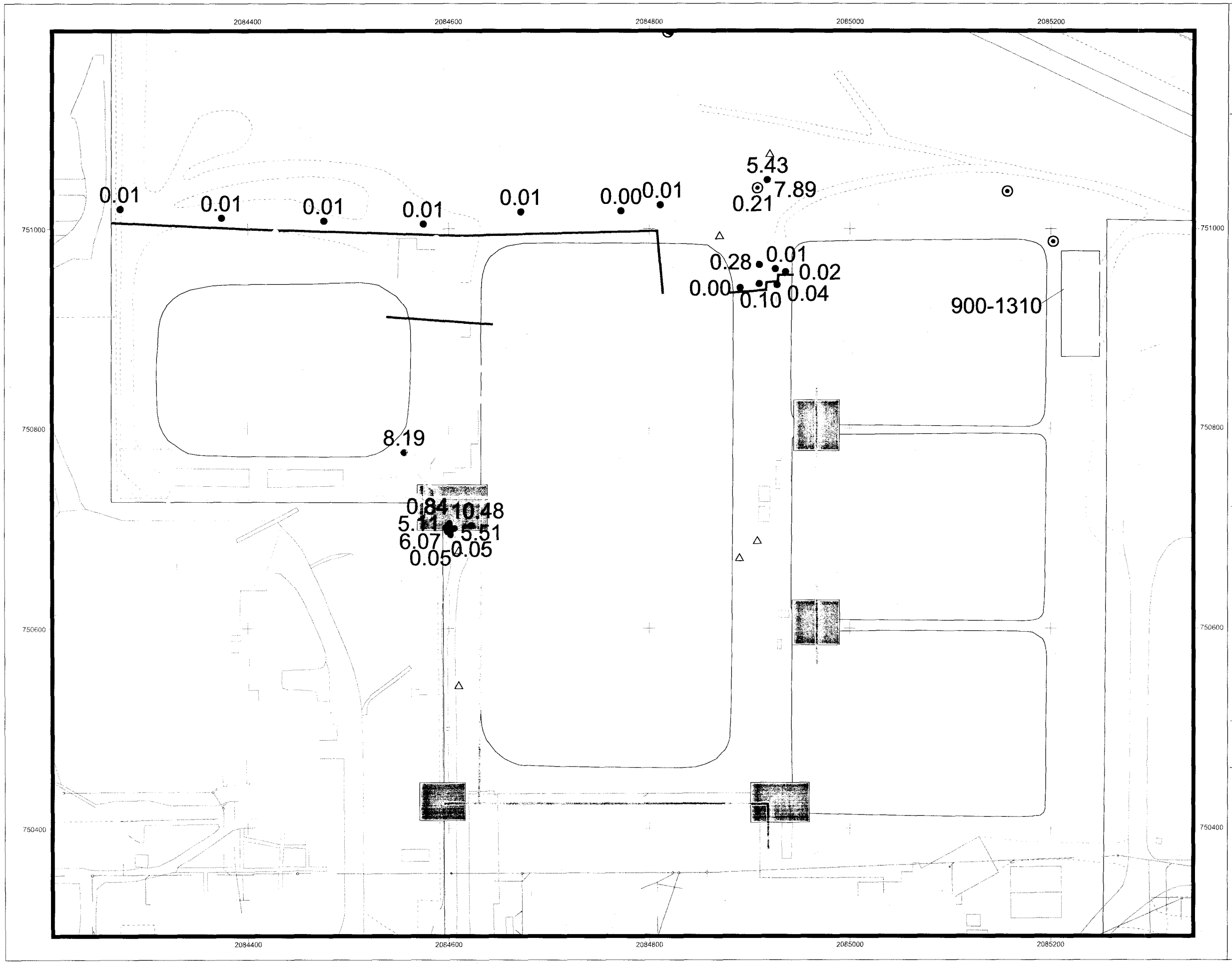

Figure 8
Tier II Sum of Ratios for Non-Radionuclides in Subsurface Soil, Based on Accelerated Action Characterization

KEY

- Charcterization Samples
- No Data or < Background
- In Process Samples
- Collection Sumps
- Process Lines
- Valve Pits
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

N

Scale = 1:1500

40 0 40 80 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

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projects/2003/000-1/closeout/sep-closeout.apr

37

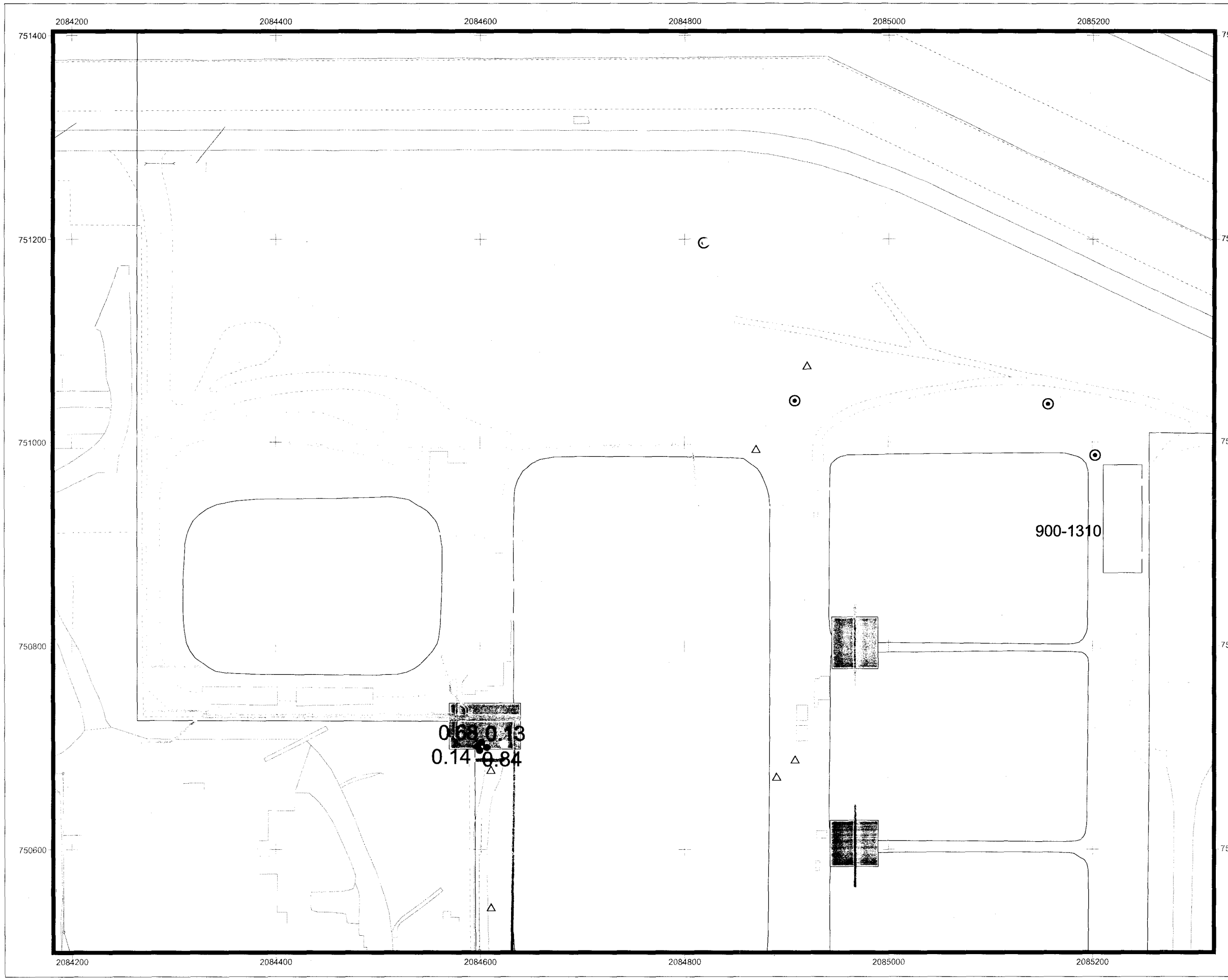


Figure 9
Tier II Sum of Ratios for Radionuclides in Subsurface Soil, Based on Accelerated Action Characterization

Key

- Charcterization Samples
- No Data or < Background
- In Process Samples
- Collection Sumps
- Process Lines
- Valve Pits
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

N

Scale = 1:1500
40 0 40 80 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

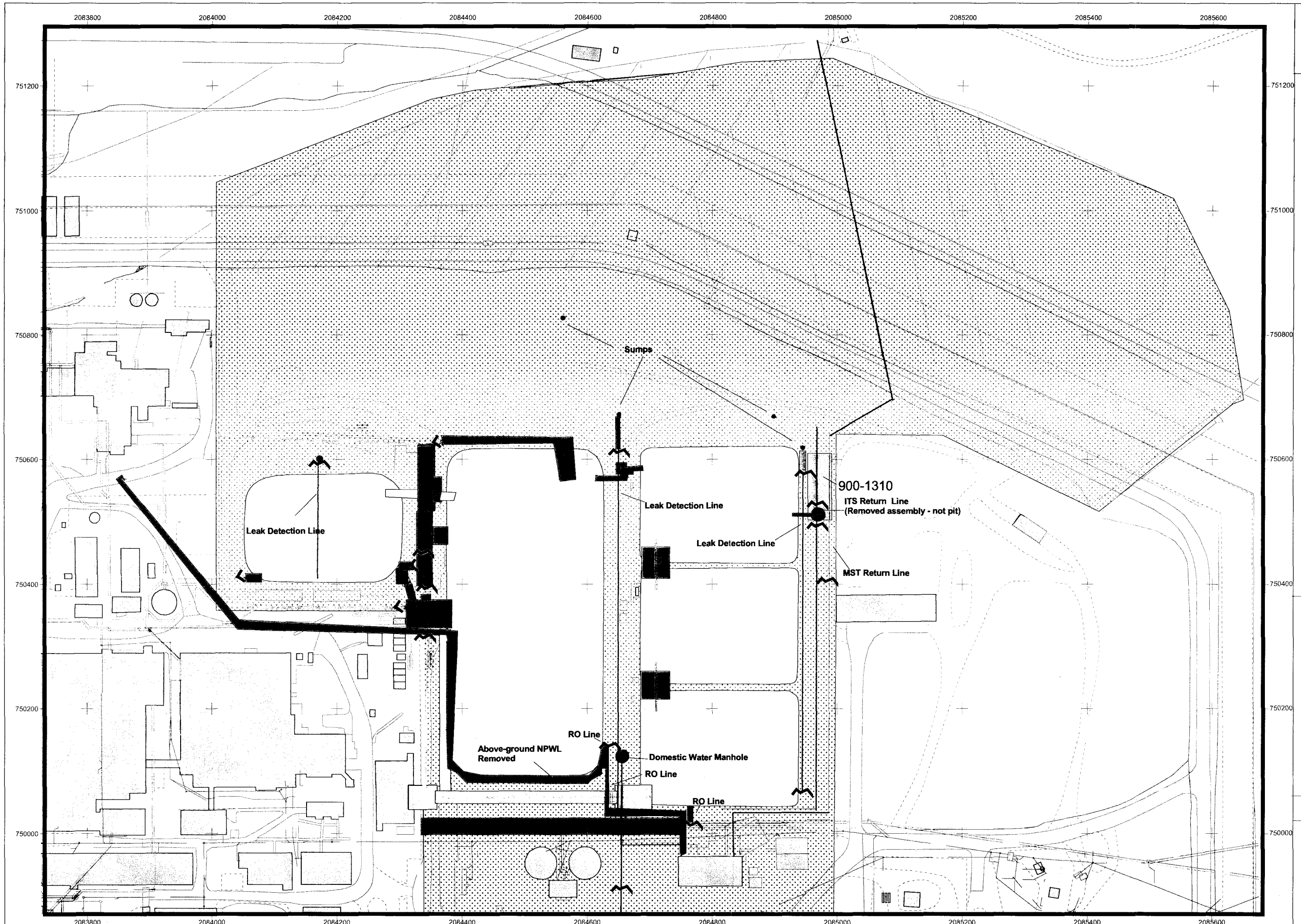
Prepared By:

KAISER•HILL COMPANY

projects/2003/000-1/closeout/sep-closeout.apr

40

Figure 10
SEP AOC
Items Removed , Remaining, and Not Found



KEY

- OU4 AOC
- SEP
- IHSS
- PAC
- Building or other structure
- Removed
- Not Found
- OPWL
- Storm drain
- Leak Detection Drain
- MST and ITS Return Lines
- Stream, ditch, or other drainage
- Paved area
- Fence
- Dirt Road
- Pipeline disrupted

N

Scale = 1:1,800

20 0 20 40 60 80 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

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sepaocremoved.apr November 2002

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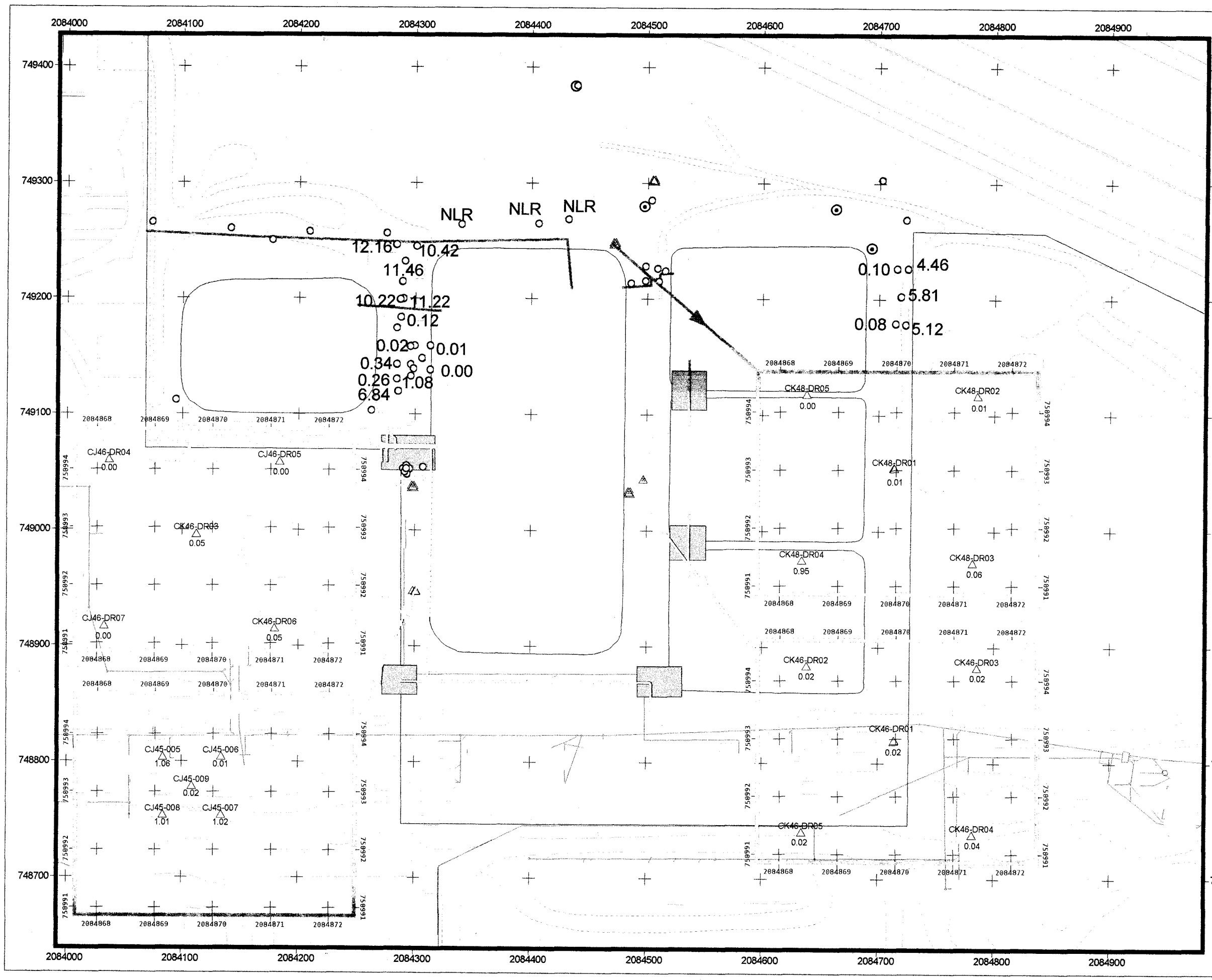

Figure 12
Tier II Sum of Ratios for
Non-Radionuclides In Surface Soil,
Based on Residual Contamination

KEY

- Charcterization Samples
- Characterization Samples < Background
- Confirmation Samples
- Confirmation Samples < Background
- Collection Sumps
- Process Lines
- Valve Pits
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

NLR No Longer Representative

N

Scale = 1:1500

60 0 60 120 Feet

Inset(s)Scale = 1:20

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared By:

KAISER•HILL COMPANY

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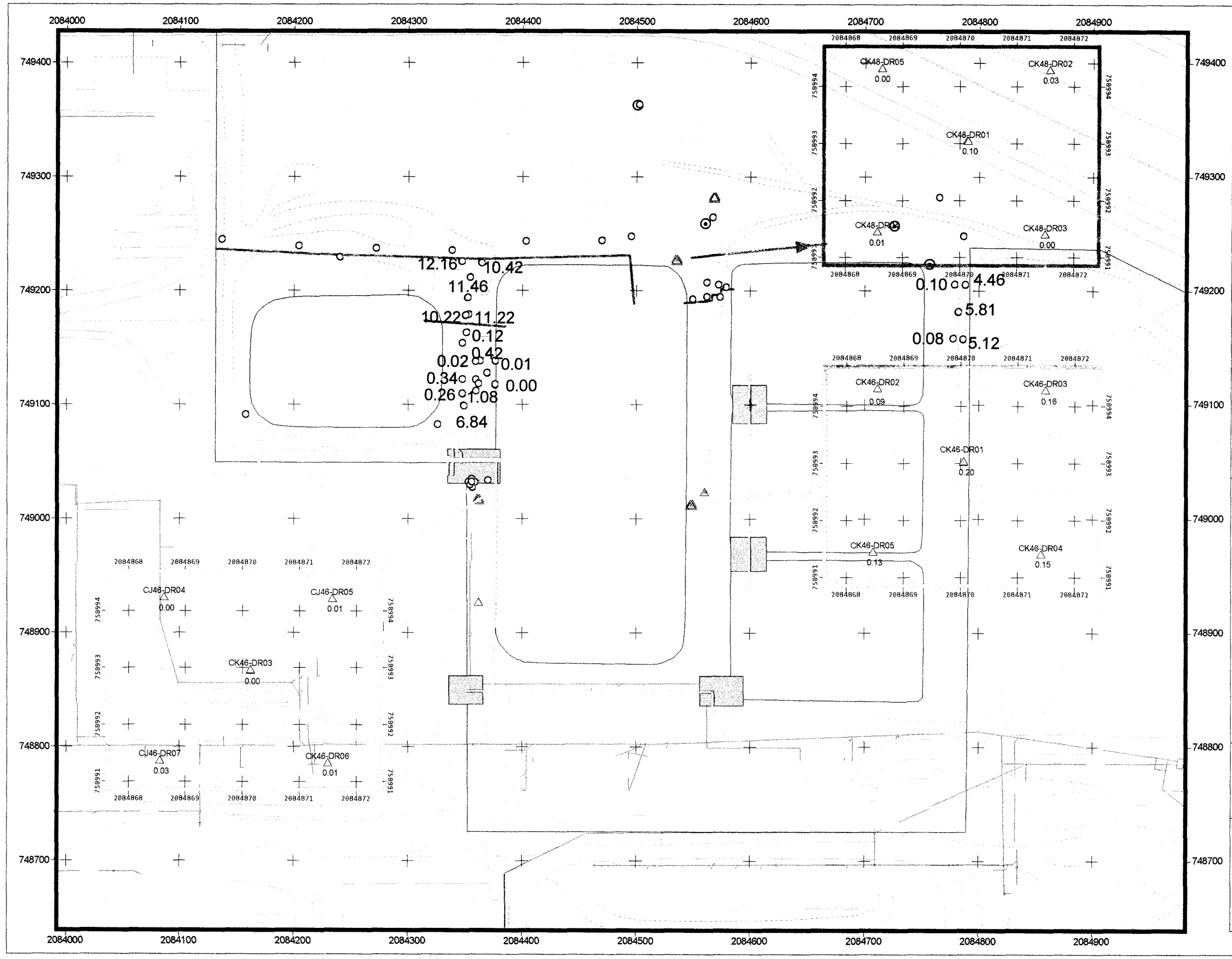
Figure 13
Tier II Sum of Ratios for Radionuclides In Surface Soil, Based on Residual Contamination



Key

- Charcterization Samples
- Characterization Samples < Background
- Confirmation Samples
- Confirmation Samples < Background
- Collection Sumps
- Process Lines
- Valve Pits
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

NLR No Longer Representative

N

Scale = 1:2000

40 0 40 80 120 Feet

Inset(s)Scale = 1:20

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared By:

KAISER•HILL COMPANY

(65)

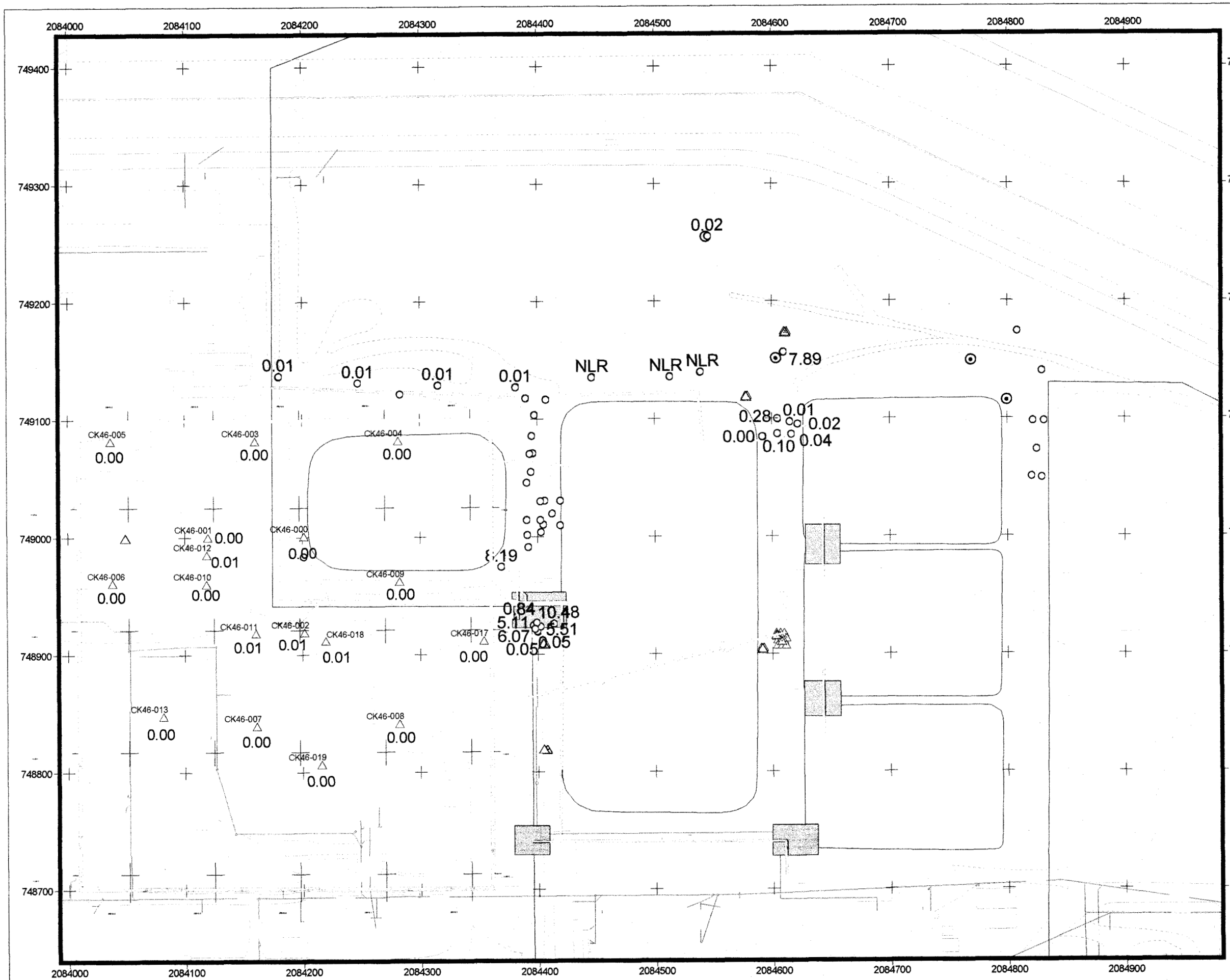


Figure 14
Tier II Sum of Ratios for
Non-Radionuclides In Subsurface Soil,
Based on Residual Contamination

KEY

- Charcterization Samples
- Characterization Samples < Background
- Confirmation Samples
- Confirmation Samples < Background
- Collection Sumps
- Process Lines
- Valve Pits
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

NLR No Longer Representative

N

Scale = 1:1500

60 0 60 120 Feet

Inset Scale = 1:40

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared By:

KAISER•HILL COMPANY

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Figure 15
Tier II Sum of Ratios for Radionuclides In Subsurface Soil, Based on Residual Contamination

Key

- Charcterization Samples
- Characterization Samples < Background
- Confirmation Samples
- Confirmation Samples < Background
- Collection Sumps
- Process Lines
- Valve Pits
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

NLR No Longer Representative

N

Scale = 1:1500

60 0 60 120 Feet

Inset Scale = 1:10

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared By:

KAISER•HILL COMPANY

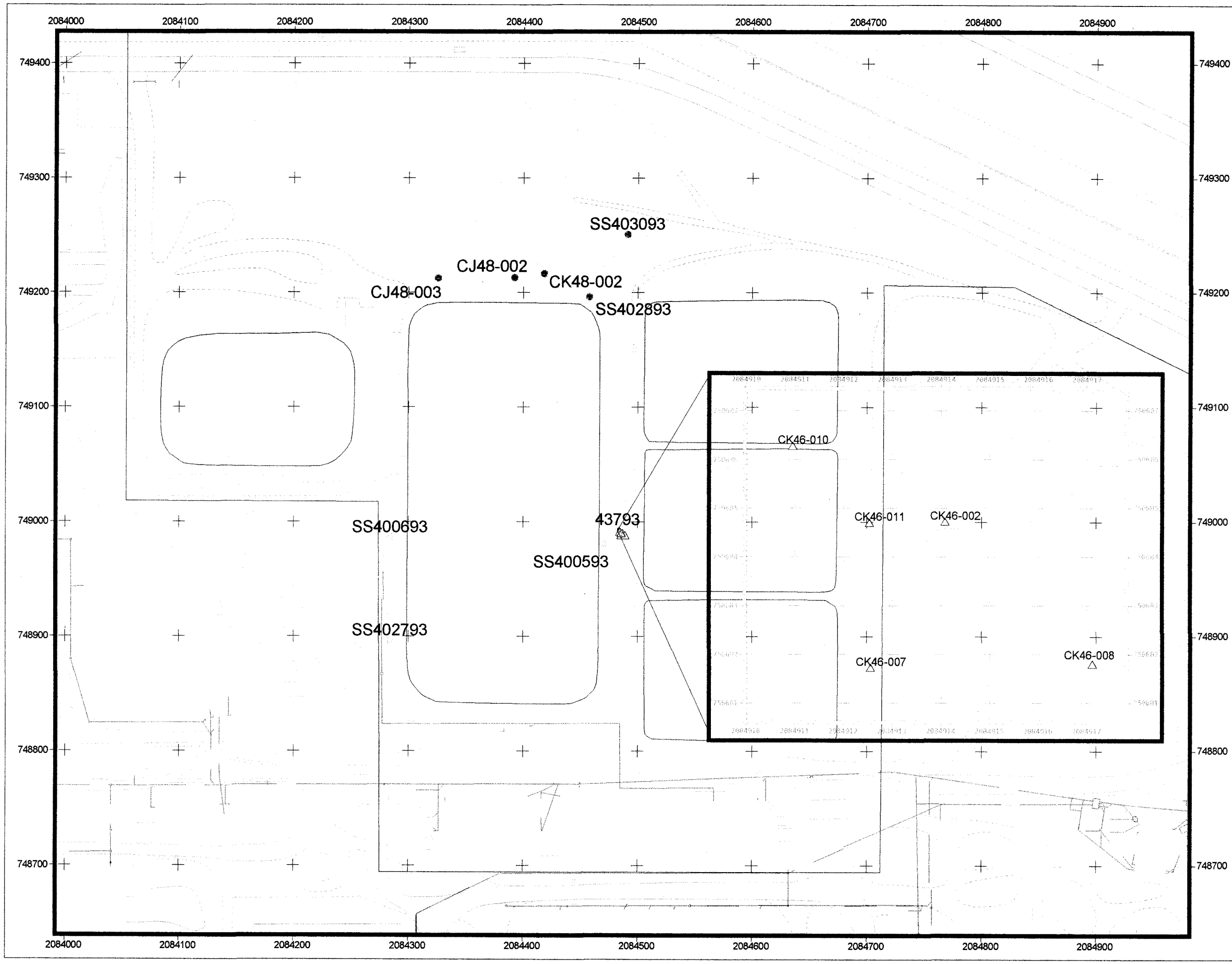

Figure 16

No Longer Representative Sampling Locations

KEY

- △ In Process Sample Locations
- ● Characterization/Legacy Sample Locations
- Solar Ponds
- Paved Area
- Fence
- Dirt Road
- AOC

N

Scale = 1:1500

Inset Scale = 1:25

60 0 60 120 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared By:

KAISER•HILL COMPANY

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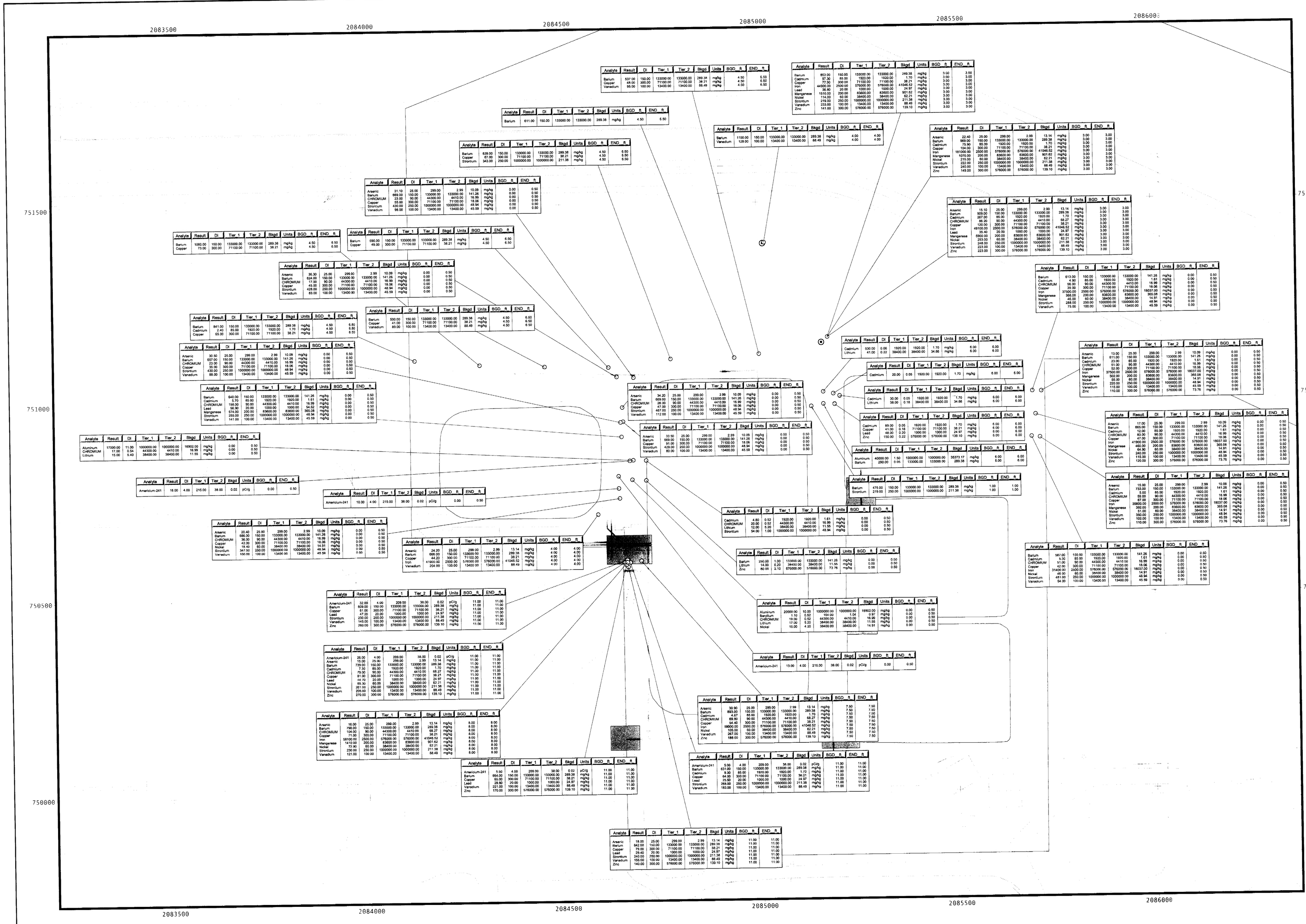
Figure 5
Accelerated Action Sampling Locations at SEP AOC

Key

- Characterization Samples
- Collection Sumps
- Process Lines
- Valve Pits
- Pipes
- Solar Ponds
- Streams
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS



Scale 1: 2500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared for:

KAISER•HILL COMPANY

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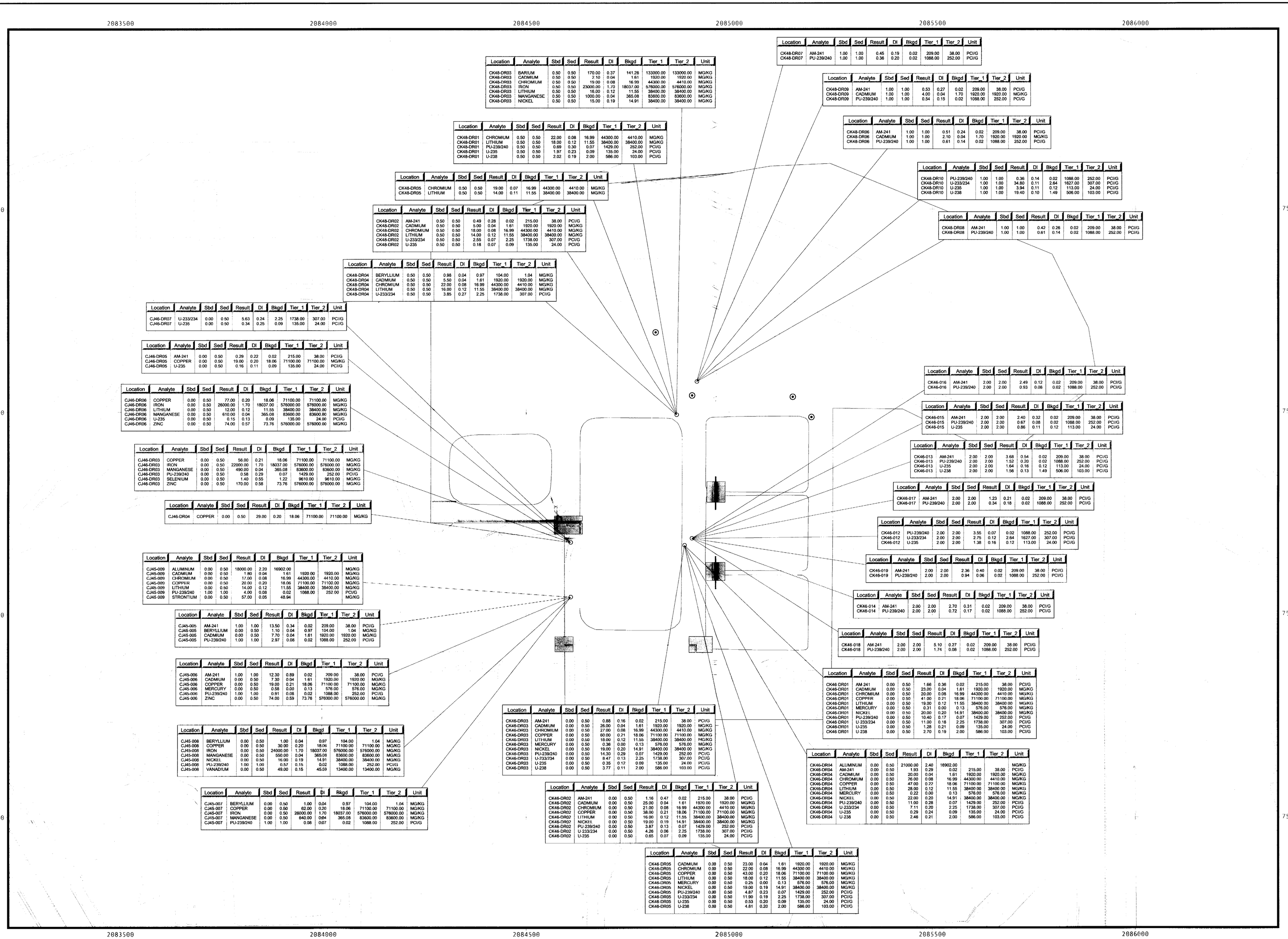
Date: November 2002

Figure 11
Hot Spot Confirmation Sampling Locations and Results



Key

- Characterization Samples
- Collection Sumps
- Process Lines
- Valve Pits
- Pipes
- Solar Ponds
- Streams
- Paved Area
- Fence
- Dirt Road
- Building
- AOC
- IHSS

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