

**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 were conducted under the Proposed Action Memorandum (PAM) for the Solar Evaporation Ponds (DOE 2002d), and involved pushing in the berms and adding fill to create a gentle grade to the south. The AOC will be seeded in the near future.

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



46

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.

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

The presence of metals and americium-241 in AOC soils will be analyzed in the Site Wide Comprehensive Risk Assessment, which is part of the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study/Feasibility Study that will be conducted for the Site. The need for and extent of any, more general, long-term stewardship activities will also be analyzed in the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study-Feasibility Study and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, in any post-closure Colorado Hazardous Waste Act permit that may be required, and in any post-RFCA agreement.

No specific long-term stewardship activities are recommended for the IHSS 000-1 AOC beyond the generally applicable Site requirements that may be imposed on this area in the future, which are dependent upon the final remedy selected. Institutional controls that will be used as appropriate for this area include prohibitions on construction of buildings in the IA, restrictions on excavation or other soil disturbance, or prohibitions on groundwater pumping in the area of the IHSS Group 000-1 AOC.

No specific engineered controls are anticipated as a result of the conditions remaining in the IHSS Group 000-1 AOC. Groundwater treatment, via the Solar Pond Plume Treatment System, will continue.

No specific environmental monitoring is anticipated as a result of the conditions remaining in the IHSS Group 000-1 AOC.

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

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**

##### **6.1 Current Site Conditions**

As discussed in Section 3.0, accelerated actions at the IHSS Group 000-1 AOC 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). The Site has been regraded with soil from berms and from east of the site. 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. Therefore, potential sources of contamination that had existed in the AOC have been removed or isolated. Residual metal concentrations, including arsenic and beryllium that are common background constituents, are above background levels. Americium-241 is above background in several places. Refer to Sections 4.0 and 8.0.

## **6.2 Near Term Management Recommendations**

The accelerated action for the IHSS Group 000-1 AOC met the objectives of the action. The concentration levels of soil contamination remaining in the AOC do not trigger any further accelerated action. Potential contaminant sources and pathways have been removed, mitigated or found not to have existed. Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process. Fencing and signs restricting access will be posted to minimize disturbance to newly-revegetated areas. Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls. No other near-term management techniques are required because of environmental conditions.

## **6.3 Long Term Stewardship Recommendation**

The presence of metals and americium-241 in AOC soils will be analyzed in the Site Wide Comprehensive Risk Assessment, which is part of the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study/Feasibility Study that will be conducted for the Site. The need for and extent of any, more general, long-term stewardship activities will also be analyzed in the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study-Feasibility Study and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, in any post-closure Colorado Hazardous Waste Act permit that may be required, and in any post-RFCA agreement.

No specific long-term stewardship activities are recommended for the IHSS 000-1 AOC beyond the generally applicable Site requirements that may be imposed on this area in the future, which are dependent upon the final remedy selected. Institutional controls that will be used as appropriate for this area include prohibitions on construction of buildings in the IA, restrictions on excavation or other soil disturbance, or prohibitions on groundwater pumping in the area of the IHSS Group 000-1 AOC.

No specific engineered controls are anticipated as a result of the conditions remaining in the IHSS Group 000-1 AOC. Groundwater treatment, via the Solar Pond Plume Treatment System, will continue.

No specific environmental monitoring is anticipated as a result of the conditions remaining in the IHSS Group 000-1 AOC.

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

4

*Draft Closeout Report for IHSS Group 000-1, Solar Evaporation Ponds Area of Concern*

Matrix Type	Analyte	Maximum	Number Samples	Detection Frequency	Units
Solid	Pa-234	0	5	1	pCi/g
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	4690.4	5	0.2	ug/kg
Solid	1,3,5-Trimethylbenzene	1527.8	5	0.2	ug/kg
Solid	4-Bromofluorobenzene	51944.0	5	1	ug/kg
Solid	4-Isopropyltoluene	932.0	5	0.2	ug/kg
Solid	Acetone	26209.5	5	1	ug/kg
Solid	Ethylbenzene	802.1	5	0.2	ug/kg
Solid	Fluorobenzene	46536.5	5	1	ug/kg
Solid	Naphthalene	2337.5	5	0.2	ug/kg
Solid	Toluene	1553.3	5	0.4	ug/kg
Aqueous	Pu239240	0.829	3	100	pci/l
Aqueous	Am241	0.978	4	100	pci/l
Aqueous	Mercury	1.3	12	75	ug/l
Aqueous	Cobalt	100	12	100	mg/l
Aqueous	Calcium	1000000	12	100	mg/l
Aqueous	Beryllium	11	12	50	mg/l
Aqueous	4-Methyl-2-Pentanone	11.09	4	25	ug/l
Aqueous	Zinc	11000	12	100	ug/l
Aqueous	Titanium	1200	10	80	ug/l
Aqueous	Tin	130	12	50	mg/l
Aqueous	Strontium	13000	12	100	ug/l
Aqueous	Silver	14	12	42	mg/l
Aqueous	Cadmium	170	12	83	mg/l
Aqueous	Aluminum	170000	12	100	mg/l
Aqueous	Copper	1800	12	92	mg/l
Aqueous	Selenium	21	12	50	mg/l
Aqueous	Acetone	2178.2	4	50	ug/l
Aqueous	Iron	260000	12	100	mg/l
Aqueous	Sodium	2600000	12	100	mg/l
Aqueous	Barium	2800	12	92	mg/l
Aqueous	Lithium	2800	12	100	mg/l
Aqueous	2-Butanone	327.6	4	25	ug/l
Aqueous	Molybdenum	360	12	92	mg/l
Aqueous	Vanadium	360	12	92	mg/l
Aqueous	Antimony	37	12	58	mg/l
Aqueous	Manganese	4100	12	100	ug/l
Aqueous	Uranium	4200	10	80	ug/l
Aqueous	Chromium	450	12	100	mg/l
Aqueous	Magnesium	450000	12	100	mg/l
Aqueous	U235	46.1	4	75	pci/l
Aqueous	Nickel	490	12	100	mg/l
Aqueous	1,4-Dichlorobenzene-D4	50	4	100	ug/l
Aqueous	Chlorobenzene-D5	50	4	100	ug/l
Aqueous	Fluorobenzene	50	4	100	ug/l
Aqueous	Toluene-D8	53.33	4	100	ug/l

*Preliminary Review Draft for Interagency Discussion/Not Issued for Public Comment*

5

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Matrix Type	Analyte	Maximum	Number Samples	Detection Frequency	Units
Aqueous	4-Bromofluorobenzene	54.44	4	100	ug l
Aqueous	1,2-Dichloroethane-D4	59.41	4	100	ug l
Aqueous	2-Hexanone	6.82	4	25	ug l
Aqueous	Boron	6400	10	100	ug l
Aqueous	U238	681	4	100	pci l
Aqueous	Benzene	7.49	4	25	ug l
Aqueous	Silica As Sio2, Dissolved	75000	10	100	ug l
Aqueous	Arsenic	77	12	83	mg l
Aqueous	Lead	890	12	83	mg l
Aqueous	Thallium	9.2	12	33	mg l
Aqueous	Potassium	940000	12	100	mg l
Aqueous	U233234	993	4	100	pci l

6/6