

**Environmental Restoration
RFCA Standard Operating Protocol
for Routine Soil Remediation
FY04 Notification #04-17
IHSS Group 700-6**

July 2004

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Approval received from the Colorado Department of Public Health and Environment

July 27, 2004.

Approval letter is contained in the Administrative Record.

July 2004

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ACRONYMS

AL	action level
bgs	below ground surface
BMP	best management practices
CDPHE	Colorado Department of Public Health and Environment
COC	contaminant of concern
cy	cubic yard
D&D	Decontamination and Decommissioning
DL	Detection Limit
DOE	U.S. Department of Energy
EDDIE	Environmental Data Dynamic Information Exchange
EPA	Environmental Protection Agency
ER	Environmental Restoration
ft	foot
FY	Fiscal Year
IA	Industrial Area
IHSS	Individual Hazardous Substance Site
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
MDL	Method Detection Limit
NPWL	New Process Waste Lines
OPWL	Original Process Waste Lines
PAC	potential area of concern
PDF	portable document file
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RISS	Remediation, Industrial D&D, and Site Services
RL	reporting limit
RSOP	RFCA Standard Operating Protocol
SSRS	Subsurface Soil Risk Screen
SVOC	semivolatile organic compounds
VOC	volatile organic compounds
WRW	wildlife refuge worker

1.0 INTRODUCTION

This document provides notice of the intent to conduct accelerated actions on a site located within Individual Hazardous Substance Site (IHSS) Group 700-6 in the Rocky Flats Environmental Technology Site (RFETS) Industrial Area (IA) as shown on Figure 1. The purpose of this Notification is to invoke the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2003a).

Soil with contaminant concentrations greater than the RFCA wildlife refuge worker (WRW) action levels (ALs) or as indicated by the Subsurface Soil Risk Screen (SSRS) and associated debris will be removed in accordance with RFCA (DOE et al. 2003) and the ER RSOP (DOE 2003a). Activities specified in the ER RSOP are not reiterated here, however, deviations from the ER RSOP are included where appropriate.

2.0 IHSS GROUP 700-6

IHSS Group 700-6 consists of IHSS 700-137, Buildings 712/713 Cooling Tower Blowdown and IHSS 700-139.1(S), the Caustic/Acid Spills Hydroxide Tank Area. Several WRW AL exceedances in soil exist at both sites, but accelerated action is only proposed for locations in IHSS 700-137. Figure 1 shows the WRW AL soil exceedances in IHSS 700-6. Table 1 presents the contaminants of concern (COCs) and the estimated volume in cubic yards (cy) of soil expected to be removed from IHSS 700-137.

Table 1
IHSS Group 700-6 Proposed Accelerated Action Site

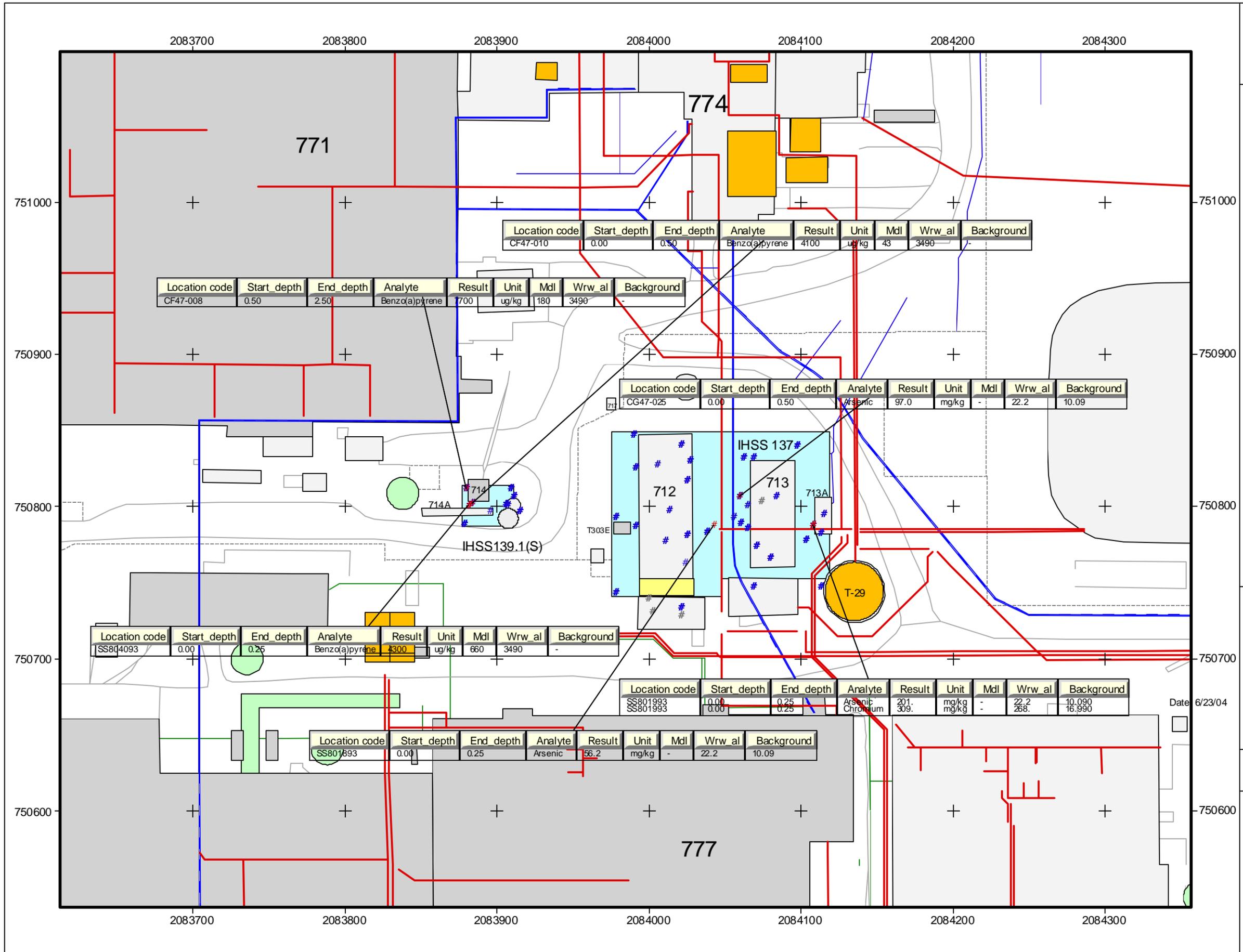
IHSS	Site Name	COCs	Contaminated Media	Soil Removal Volume (Estimated)
700-137	Building 712/713 Cooling Tower Blowdown	Radionuclides, Metals, Lithium, SVOCs, VOCs	Soil	10 cy

2.1 Project Conditions

Historical data and the accelerated action characterization sampling planned at IHSS Group 700-6 are presented in the Industrial Area Sampling and Analysis Plan Addendum #IA-03-18 IHSS Groups 700-6 (DOE 2003b). An environmental history of the site is presented in Appendix C of the Industrial Area Sampling and Analysis Plan (DOE 2001).

Historical and accelerated action characterization data indicate that contaminant concentrations in soil greater than WRW ALs in IHSS Group 700-6 soil are limited to three analytes (arsenic, benzo(a)pyrene, and chromium) and small areas of soil at six sampling locations (Figure 1). Table 2 presents the pertinent data for each area.

**Figure 1
IHSS 700-6 Soil Sample Results
Contaminant Concentrations
Greater Than WRW ALs**



KEY

- # Detection Greater Than WRW AL
- # Detection Greater Than Background and Less Than WRW AL
- # All Analytes Less Than Background or RL
- Concrete Pad
- Bldg 712 Sump
- OPWL
- NPWL
- Bldg
- Demolished
- Standing
- IHSS
- PAC
- Paved Road
- Fence Line
- Tanks
- Sewer Line

Scale = 1 : 800
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

Prepared for:

Date: 7/22/04

Table 2
IHSS 700-6 WRW AL Exceedences in Soil

IHSS	Sampling Location	Interval (ft bgs)	Analyte	WRW AL	Sample Result
700-137	CG47-025	0 to 0.5	Arsenic (mg/kg)	22.2	97
	SS801893	0 to 0.25	Arsenic (mg/kg)	22.2	56.2
	SS801993	0 to 0.25	Arsenic (mg/kg)	22.2	201
			Chromium (mg/kg)	268	309
700-139.1	CF47-008	0.5 to 2.5	Benzo(a)Pyrene (µg/kg)	3490	7700
	CG47-010	0 to 0.5	Benzo(a)Pyrene (µg/kg)	3490	4100
	SS804093	0 to 0.25	Benzo(a)Pyrene (µg/kg)	3490	4300

Arsenic concentrations in soil exceed the WRW AL at three sampling locations in IHSS 700-137: CG47-025, SS801893, and SS801993. Chromium concentrations in soil at sampling location SS801993 also exceed the WRW AL. Benzo(a)pyrene concentrations in soil exceed the WRW AL at three sampling locations in IHSS 700-139.1: CF47-008, CG47-010, and SS804093. Contaminant concentrations above WRW ALs are limited to surface soil (0.5 feet [ft] below ground surface [bgs] or less) at all locations except for sampling location CF47-008, where benzo(a)pyrene concentrations in subsurface soil (0.5 to 2.5 ft bgs) exceed the WRW AL.

2.2 RFCA SSRS

An SSRS is performed when non-radionuclides and uranium are present in soil below 6 inches from the ground surface, when americium-241 and plutonium-239/240 are present below 3 ft from the ground surface, and when soil exists beneath below-grade structures. Current site conditions are evaluated to determine whether remediation is required by the SSRS.

The SSRS is presented below.

Screen 1 – Are contaminant of concern (COC) concentrations below Table 3 WRW Soil Action Levels?

No. However, the WRW AL for only one COC, (benzo(a)pyrene), is exceeded, and that exceedance occurs in subsurface soil at only one sampling location, CF47-008 in IHSS 139.1.

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

No. IHSS Group 700-6 sites are not located in an area prone to landslides or high erosion, as identified on Attachment 5, Figure 1 of RFCA (DOE et al. 2003).

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

No. Historic and accelerated action characterization data indicate that radionuclide activities in IHSS Group 700-6 soil do not exceed RFCA criteria as defined in Section 5.3 and Attachment 14 (DOE et al. 2003).

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

No. Because IHSS Group 700-6 sites are not located in an area prone to landslides or high erosion, and the estimated quantity of contaminated subsurface soil is limited, there is little potential IHSS Group 700-6 soil could impact surface water.

2.3 Remediation Plan

- At sampling locations CG47-025 and SS801993, remediation will be conducted by excavating a minimum of 6 inches of soil from a 3 ft by 3 ft area. The surface soil exceedance of chromium at sampling location SS801993 will be coincidentally remediated. Confirmation samples will be collected in the sidewalls and at the bottom of each excavation and analyzed for metals.
- Based on the hotspot methodology, the surface soil exceedance of arsenic at sampling location SS801893 does not require remediation because the result of the Elevated Measurements Comparison (EMC) (DOE, 2001) for arsenic is less than 1 and the analytical results are less than 3 times the AL.
- It is anticipated that after remediation, arsenic concentrations in soil in the IHSS Group 700-6 will be less than the RFCA ALs. However, an SSRS will be conducted again after the accelerated action if confirmation sampling results indicate residual subsurface soil contains contaminant concentrations greater than the RFCA WRW ALs.
- Based on the hot spot methodology (DOE 2001), the surface soil exceedances of benzo(a)pyrene at sampling locations CG47-010 and SS804093 do not require remediation because the result of the EMC for benzo(a)pyrene is less than 1 and the analytical results are less than 3 times the AL. In addition, surface soil at these locations is not likely to be disturbed because they are not located in an area prone to erosion or landslides.
- Based on the SSRS, the subsurface soil exceedance of benzo(a)pyrene at sampling location CF47-008 does not require remediation.

Accelerated action activities, accelerated action characterization data, confirmation sampling results, and a revised SSRS, if necessary, will be documented in the IHSS Group 700-6 Closeout Report.

2.4 Stewardship Evaluation

Because the full extent of remediation is not known at this time, a stewardship evaluation will be conducted during remediation using the consultative process and will be documented in the IHSS Group 700-6 Closeout Report. A new map of residual contamination will be generated after remediation.

The current stewardship actions and recommendations for IHSS Group 700-6 are as follows:

- Use best management practices (BMP) to reduce erosion into surface water drainage.
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including soil excavations controlled through the Site Soil Disturbance Permit process.
- Implement long-term stewardship actions, including the following:
 - Prohibitions on construction of buildings in the IA; and
 - Restrictions on excavations or other soil disturbance.

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions.

2.5 Accelerated Action Remediation Goals

ER RSOP remedial action objectives (RAOs) include the following:

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

2.6 Treatment

Not applicable.

2.7 Project-Specific Monitoring

Air monitoring will be conducted in accordance with project work control requirements.

2.8 Resource Conservation and Recovery Act Units and Intended Waste Disposition

Not applicable.

2.9 Administrative Documents

DOE, 1992, Historical Release Report for the Rocky Flats Plant, Golden, Colorado, June.

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

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

DOE, 2003, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2003, Industrial Area Sampling and Analysis Plan Addendum #IA-03-18 for IHSS Group 700-6, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, CDPHE, and EPA, 2003, RFCA Modifications, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

2.10 Projected Schedule

Remediation of IHSS Group 700-6 is expected to begin in the fourth quarter of fiscal year (FY) 2004.

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #04-17 activities will be discussed at the July 2004 ER/Decontamination and Decommissioning (D&D) Status meetings. A portable document file (PDF) version of this notification has been provided to the local governments. This Notification is available at the Rocky Flats Reading Rooms and on the EDDIE (Environmental Data Dynamic Information Exchange) website at www.rfets.gov.

4.0 REFERENCES

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

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

DOE, 2003a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2003b, Industrial Area Sampling and Analysis Plan Addendum #IA-03-18 for IHSS Group 700-6, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, CDPHE, and EPA, 2003, RFCA Modifications to the Rocky Flats Cleanup Agreement Attachment, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June.