

**Phase I RFI/RI Work Plan for
Operable Unit 9
Original Process Waste Lines**

Volume II - Appendices



Manual No. 21100-WP-OU 09.01

ADMIN RECORD

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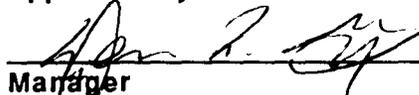
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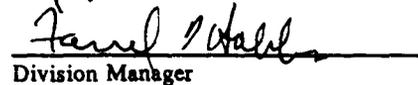
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1.0 INTRODUCTION

This document presents the Work Plan for the Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation for Operable Unit No. 9 (OU9) at the U.S. Department of Energy (DOE) Rocky Flats Plant (RFP) in Jefferson County, Colorado.

This investigation is part of a comprehensive, phased program of site characterization, remedial investigations, feasibility studies, and remedial/corrective actions currently in progress at RFP. These investigations are pursuant to an IAG between the DOE, the EPA, and the State of Colorado Department of Health (CDH) dated January 22, 1991 (DOE, 1991a). The IAG program developed by DOE, EPA, and CDH addresses RCRA and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) issues. Although the IAG requires general compliance with both RCRA and CERCLA, RCRA regulations apply to remedial investigations at OU9. In accordance with the IAG, the CERCLA terms "Remedial Investigation" (RI) and "Feasibility Study" (FS) as used in this document are considered equivalent to the RCRA terms "RCRA Facility Investigation" (RFI) and "Corrective Measures Study" (CMS), respectively. Also in accordance with the IAG, the term "Individual Hazardous Substance Site" (IHSS) is equivalent to the term "Solid Waste Management Unit" (SWMU).

As required by the IAG, this Phase I Work Plan addresses characterization of source materials and soils at OU9. The term "soils" in this context is interpreted to mean vadose zone (unsaturated)

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2.0 SITE CHARACTERIZATION

OU9 targets IHSS 121, the Original Process Waste Lines (OPWL). The OPWL is a network of pipelines and tanks which extends throughout much of the RFP main production complex (Figure 2-1). As currently defined, the unit consists of 35,000 feet of underground pipelines and 39 tank locations containing a total of 65 tanks. The area under investigation in the OU9 Phase I RFI/RI includes areas in close proximity to the OPWL pipelines and tanks, and areas from which OPWL pipelines and tanks have been removed.

2.1 REGULATORY HISTORY

The OPWL was first identified as a RCRA regulated unit in mid-1986. Shortly thereafter, an interim status Closure Plan for the OPWL ("Closure Plan") was prepared (DOE, 1986b) pursuant to Part 265 of the Colorado Hazardous Waste Regulations (6 Colorado Code of Regulations [CCR]) and Title 40, Part 265 of the Code of Federal Regulations (40 CFR), and in accordance with the Compliance Agreement for RFP finalized by representatives of DOE and EPA on July 31, 1986. The Closure Plan was revised in late 1988 (DOE, 1988).

In late 1986, Phase I of the DOE CEARP program (Section 1.3.2) was performed at RFP. The CEARP investigations were initiated to characterize RFP release sites, including the OPWL.

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3.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

This section provides a preliminary identification of potential chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs) for surface water and ground water at OU9. The summary of potential sitewide ARARs presented is based on current federal and state health and environmental statutes and regulations. The ARARs presented are not specific to OU9 because insufficient validated data exist to justify inclusion or exclusion of specific constituents. The preliminary identification and examination of potential ARARs will provide for the use of appropriate analytical detection limits during the RFI/RI. As data become available during the Phase I RFI/RI, specific ARARs will be proposed for OU9. Location-specific ARARs will be addressed in the RFI/RI report. The CMS/FS report will further address chemical-specific ARARs as well as action- and location-specific ARARs in the development and evaluation of remedial alternatives.

3.1 THE ARAR BASIS

Section 121 (d) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), requires that Superfund-financed, enforcement, and federal facility remedial actions comply with federal ARARs or more stringent promulgated state requirements. CDH Water Quality Control Commission (WQCC) ground water standards (5 CCR 1002-8, Section 3.12.0) became effective on April 30, 1991, and are therefore considered in the process for developing potential sitewide ARARs for RFP.

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4.0 DATA NEEDS AND DATA QUALITY OBJECTIVES

The primary objective of an RFI/RI is collection of data necessary to determine the nature, distribution, and migration pathways of contaminants and to quantify any risks to human health and the environment. These assessments determine the need for remediation and are used to evaluate remedial alternatives, if necessary. The five general goals of an RFI/RI (EPA, 1988a) are as follows:

- Characterize site physical features
- Define contaminant sources
- Determine the nature and extent of contamination
- Describe contaminant fate and transport
- Provide a baseline risk assessment.

As stipulated in the IAG, RCRA regulated OUs have a two phase investigative approach. Phase I will characterize the contaminant sources and the soils within the OU. Phase II will determine the nature, extent, fate, and transport of any contamination.

Data quality objectives (DQOs) are qualitative and quantitative statements that specify the quality and quantity of data required to support the objectives of the RFI/RI (EPA, 1987a). The DQO process is divided into three stages:

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5.0 RCRA FACILITY INVESTIGATION/REMEDIAL INVESTIGATION TASKS

5.1 TASK 1 - PROJECT PLANNING

Project planning for the implementation of the Phase I RFI/RI for OU9 will include numerous activities in addition to tasks completed as part of this Work Plan. Review of previous site investigations, preliminary site characterization, preliminary identification of potential ARARs and the development of DQOs and a FSP have all been completed as part of this Work Plan and are contained in Sections 2.0, 3.0, 4.0, and 7.0, respectively.

Additional planning will be required to coordinate preparatory activities for OU9, other field investigation programs occurring in the same vicinity, and to accommodate the special security requirements within the Protected Area (PA) and health and safety concerns. The complex nature of the OPWL network and the degree of uncertainty regarding its location in some areas will require preparatory activities to (1) fully and accurately delineate the OPWL network, (2) better understand areas of past releases, and (3) obtain information on construction activities that may have disturbed soils surrounding the OPWL or removed portions of the OPWL.

Prior to RFI/RI field activities, newly generated data and historical data which has become available since preparation of this Work Plan will be compiled and evaluated (Section 7.2.4). There are ongoing site investigation studies which may provide data relevant to the OU9 investigation. The HRR project has assembled a database and file of supporting documents that contain information regarding past releases. This database will be queried, and all releases related to the OPWL will

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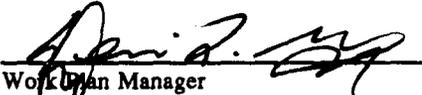
6.0 SCHEDULE

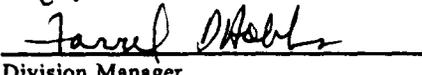
The preliminary schedule for the OU9 Phase I RFI/RI is presented in Figure 6-1. This schedule is based on the OU9 milestone schedule provided in the January 22, 1991, IAG (DOE, 1991a), and is contingent upon an early March 1992 commencement of field activities.

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7.0 FIELD SAMPLING PLAN

The purpose of this section is to provide a Field Sampling Plan (FSP) that will generate sufficient and adequate data to satisfy the Phase I RFI/RI objectives developed in Section 4.0. These site-specific objectives are presented in Section 7.1. Current site conditions and a discussion of the rationale for the sampling and analysis activities needed to obtain the necessary data to meet the Phase I objectives are summarized in Section 7.2.

7.1 OBJECTIVES

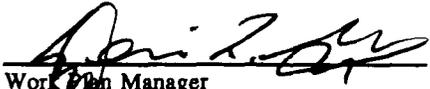
As stipulated in the IAG, the purpose of the Phase I RFI/RI field investigation is to characterize the contaminant sources and the soils within the OU. For the Phase I investigation, characterization of soils (i.e., surficial deposits) will be limited primarily to the vadose zone. Therefore, the scope of this FSP is to characterize any remaining inventory in the OPWL system and characterize the nature and extent of contamination in vadose zone soils. In addition, the field investigation will confirm the location and current status of OPWL components, particularly the underground pipelines.

Tanks and pipelines which are active waste management units are not included in the scope of this Work Plan because their structures and associated soils will be addressed at the time of their closure in accordance with the RCRA Part B Permit Applications for the Rocky Flats Plant (DOE, 1986b; DOE, 1987). Some abandoned pipelines and tanks beneath buildings cannot practically be investigated at this time due to the nature of the RFP and the potential for disruption of operations.

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9.0 ENVIRONMENTAL EVALUATION

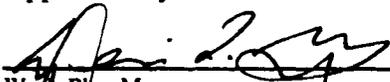
9.1 INTRODUCTION

The objective of this Environmental Evaluation Work Plan (EEWP) is to provide a framework for addressing and quantifying the ecological effects on the biotic environment (plants, animals, microorganisms) from exposure to contaminants resulting from IHSS 121 within OU9. IHSS 121 is the Original Process Waste Lines that extend throughout the main production complex (see Section 2.0 for detailed site characterization). This is an industrial site that has been developed such that no natural habitat or ecosystems presently exist. This industrial complex development has had the largest effects on the OU9 environment and ecosystems, and the residual effects of the OPWL is the focus of the EE. This EEWP is based on an ecosystem approach to ecological risk assessment to ensure that effects of contamination at the community level of biological organization are also considered (EPA, 1989c). The ecosystem approach is comprehensive in that it initially integrates all ecosystem components, then progressively focuses on aspects of the system such as populations, structure, productivity, or diversity that are potentially affected by contamination. This approach allows decisions to be made on choices of sampling and analysis for determining effects. The result is an evaluation of the nature and extent of contamination in biota, its relationship to abiotic sources, and the type and extent of adverse effects at the ecosystem, population, and community levels of biological organization. At OU9 the ecosystems are greatly reduced in size and the biotic components reduced and simplified, and the focus and scope of the EE will reflect these reductions.

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10.0 QUALITY ASSURANCE ADDENDUM

This section consists of the Quality Assurance Addendum (QAA) for Phase I investigations at Operable Unit No. 9 (OU9), which supplements the "Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigation/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies Activities" (QAPjP). This QAA establishes the site-specific Quality Assurance (QA) controls applicable to the investigation activities described in the OU9 Work Plan (OU9 WP).

OU9 is one of 16 OUs identified for investigations under the IAG. OU9 consists of the OPWL, the various components of which are considered IHSS 121. IHSS 121 currently consists of 35,000 feet of underground pipelines and 65 tanks. The area addressed by the OU9 Phase I RFI/RI includes areas in close proximity to the OPWL pipelines and tanks, and areas from which OPWL pipelines and tanks have been removed. The physical setting of OU9 is described in Section 2.0 and illustrated in Figure 2-1.

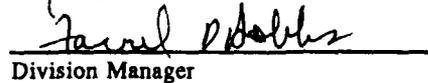
The OU9 Phase I of the RFI/RI process involves characterization of the contaminant sources and the soils within the OU. This includes sampling residue in tanks and pipelines and sampling of soils, which the OU9 WP has interpreted to include vadose zone (unsaturated) surficial deposits. The OU9 WP has been prepared in accordance with the Federal and State of Colorado regulations and guidance documents identified in the Introduction (Section 1.0).

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11.0 ENVIRONMENTAL MANAGEMENT DIVISION OPERATING PROCEDURES

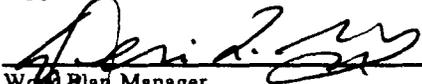
The following EMD program-wide OPs will be utilized during the specific field investigations for OU9:

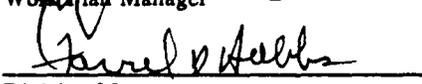
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- FO.2 Field Document Control
- FO.3 General Equipment Decontamination
- FO.4 Heavy Equipment Decontamination
- FO.5 Handling Purge and Development Water
- FO.6 Handling of Personal Protective Equipment
- FO.7 Handling of Decontamination Water and Wash Water
- FO.8 Handling of Drilling Fluids and Cuttings
- FO.9 Handling of Residual Samples
- FO.10 Receiving, Labeling, and Handling Environmental Materials Containers
- FO.11 Field Communications
- FO.12 Decontamination Facility Operations
- FO.13 Containerizing, Preserving, Handling, and Shipping Soil and Water Samples
- FO.14 Field Data Management
- FO.15 Photoionization Detectors (PIDs) and Flame Ionization Detectors (FIDs)
- FO.16 Field Radiological Measurements
- FO.18 Environmental Sample Radioactivity Content Screening
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- GT.5 Plugging and Abandonment of Boreholes
- GT.7 Logging and Sampling of Test Pits and Trenches
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- GT.10 Borehole Clearing
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12.0 REFERENCES

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Title: Appendix A: Original Process Waste Lines Site Utility Locations Maps

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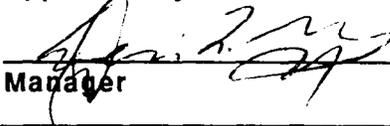
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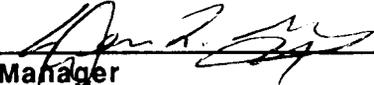
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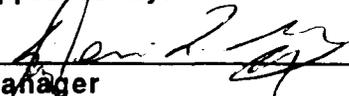
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