

1.0 Introduction

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is responsible for implementing the final response action selected in the *Final Corrective Action Decision/Record of Decision for Rocky Flats Plant (USDOE) Peripheral Operable Unit and Central Operable Unit* (CAD/ROD) (DOE 2006a) issued September 29, 2006, for the Rocky Flats Site (Site). Prior to the CAD/ROD, cleanup and closure activities were completed in accordance with the requirements of the *Rocky Flats Cleanup Agreement* (RFCA) (CDPHE et al. 1996). Under the CAD/ROD, two Operable Units (OUs) were established within the boundaries of the Rocky Flats property: the Peripheral OU (POU) and the Central OU (COU). The COU consolidates all areas of the Site that require additional remedial or corrective actions while also considering practicalities of future land management. The POU includes the remaining, generally unimpacted portions of the Site and surrounds the COU. The response action in the Final CAD/ROD is no action for the POU and institutional and physical controls with continued monitoring for the COU. The Off-Site Areas at Rocky Flats, known as OU 3, were addressed under a separate no-action CAD/ROD dated June 3, 1997.

The CAD/RODs for OU 3 and the POU determined that conditions in those OUs were suitable for unrestricted use. As a result, the U.S. Environmental Protection Agency (EPA) published a Notice of Intent for Partial Deletion (NOID) of the Rocky Flats Site (Plant) from the National Priorities List (NPL) on March 13, 2007 (*72 Federal Register* [FR] 11313, March 13, 2007) to delete the POU and OU 3 from the NPL. The NOID was based on the results of the remedial investigations leading to the CAD/ROD no-action remedies being selected for these OUs. The NOID states that because no hazardous substances occur in the OUs above levels that allow for unlimited use and unrestricted exposure, no 5-year review was required for these OUs. EPA subsequently published a Notice of Partial Deletion from the NPL for the POU and OU 3 on May 25, 2007 (*72 FR* 29276, May 25, 2007).

On July 12, 2007, most of the property outside the COU was transferred to the U.S. Department of the Interior for establishment of a national wildlife refuge managed by the U.S. Fish and Wildlife Service (USFWS). EPA certified that cleanup and closure of Rocky Flats was complete and that the COU remedy was operating properly and successfully, in accordance with requirements for DOE to transfer land to USFWS for establishing the refuge. DOE retained the COU and is responsible for implementing the CAD/ROD final response action and for ensuring that it remains protective of human health and the environment. The monitoring, surveillance, and maintenance activities for which quarterly, annual, and 5-year review reports are issued are included in the *Rocky Flats Legacy Management Agreement* (RFLMA) (DOE 2007a).

RFLMA, signed March 14, 2007, superseded RFCA. RFLMA is a Federal Facility Agreement and Consent Order under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and the Colorado Hazardous Waste Act, between DOE, EPA Region 8, and the Colorado Department of Public Health and Environment (CDPHE). The purpose of RFLMA is to establish the regulatory framework for Attachment 2, “Legacy Management Requirements.”

RFLMA Attachment 2, Section 7.0, requires DOE to provide reports pertaining to the surveillance and maintenance of the remedy prescribed in the CAD/ROD on a calendar quarter and annual basis. The fourth quarterly report information is to be included in the annual report.

RFLMA Attachment 2, Section 7.2, specifies that the annual reports may include a summary for the previous quarter and that the following will be included in annual reports:

- A discussion of surface-water monitoring data;
- A discussion of groundwater monitoring data;
- A discussion of groundwater treatment system monitoring data;
- A discussion of ecological sampling data;
- Adverse biological conditions;
- A summary of actions taken in response to reportable conditions;
- A summary of maintenance and repairs;
- Inspection reports;
- Verification of the Environmental Covenant and evaluation of the effectiveness of institutional controls (ICs);
- The Original Landfill (OLF) Monitoring Report (see Table 3 and Section 6.1 of the *Final Landfill Monitoring and Maintenance Plan, Rocky Flats Environmental Technology Site, Original Landfill* [OLF M&M Plan] [DOE 2009a]);
- The Present Landfill (PLF) Monitoring Report (see Table 3 and Section 6.1 of the *Present Landfill Monitoring and Maintenance Plan and Post-Closure Plan, U.S. Department of Energy Rocky Flats Site* (PLF M&M Plan) [DOE 2008a]);
- Assessments of analytical data, including laboratory audits; and
- Other conditions or actions taken that are pertinent to the continued effectiveness of the remedy.

This calendar year (CY) 2009 annual report contains the summary for the fourth quarter of CY 2009.

The *Rocky Flats Site Operations Guide* (RFSOG) (DOE 2010a) was prepared by LM as a document to guide work at the Site. The RFSOG provides details on the surveillance and maintenance needed to satisfy the requirements of the CAD/ROD as well as best management practices (BMPs) at the Site. As a “desktop procedure,” the RFSOG explains how DOE will fulfill its long-term surveillance and maintenance obligations at the Site.

While the specific BMPs are not subject to regulation under RFLMA, this annual report includes a discussion of activities related to implementing BMPs to document the information for future reference and for a perspective of the work conducted over the year.

1.1 Purpose and Scope

The purpose of this report is to inform the regulatory agencies and stakeholders of the surveillance, monitoring, and maintenance activities being conducted at the Site. LM provides periodic communications such as this report and communicates through other means such as Web-based tools and public meetings.

This annual report focuses on routine surveillance, maintenance, and monitoring activities that were conducted during CY 2009 and, as stated previously, also includes information for the fourth quarter of CY 2009. Topics covered include Site operations and maintenance (Section 2.0) and environmental monitoring, including water, air, and ecological monitoring (Section 3.0). Data management, data validation, and an assessment of data quality are also included in Section 3.0. References cited in this report are included in Section 4.0.

Supporting information is provided in a series of appendixes. Appendix A provides the hydrologic data; Appendix B provides the water quality data. The fourth quarter of CY 2009 landfill inspection forms for the PLF and OLF are included in Appendix C. RFLMA and RFSOG data evaluation flowcharts that were used are provided in Appendix D. Appendix E contains the *Technical Memorandum Regarding Instrumentation and Monitoring at the Rocky Flats OLF*, and the *Rocky Flats SPPTS Geotechnical Investigation Report* is included as Appendix F. Appendix G contains the RFLMA contact records issued during CY 2009.

1.2 Background

Surveillance, maintenance, and monitoring activities are conducted according to RFLMA. RFLMA incorporates the following plans:

- The OLF O&M Plan (DOE 2009a); and
- The PLF M&M (DOE 2008a).

RFLMA Attachment 2 stipulates that DOE employ administrative procedures to control activities in accordance with the ICs and to meet quality assurance and quality control program requirements. Other Site procedures are established to guide work and implement BMPs. These procedures are referenced in the RFSOG and include:

- *The Operations and Maintenance Plan for Rocky Flats Surface Water Control Project* (DOE 2010b);
- *The Operations and Maintenance Manual for the Rocky Flats Groundwater Plume Treatment Systems* (DOE 2010c);
- *The Rocky Flats, Colorado, Site Revegetation Plan* (DOE 2009b);
- *The Erosion Control Plan for the Rocky Flats Property Central Operable Unit* (DOE 2007b);
- *The Rocky Flats, Colorado, Site Vegetation Management Plan* (DOE 2009c);
- *The Ecological Monitoring Methods Handbook for the Rocky Flats, Colorado, Site* (DOE 2008b); and
- *The Legacy Management CERCLA Sites Quality Assurance Project Plan* (LMS/PLN/S04353).

1.3 RFLMA Contact Records

This section provides a summary of the status of activities addressed by RFLMA contact records issued during 2009. RFLMA references the use of contact records to document CDPHE oral approvals of field modifications to implement approved response actions (see RFLMA

paragraph 34). RFLMA Attachment 2 also references the use of contact records to document the outcome of consultation related to addressing any reportable conditions (see RFLMA Attachment 2, Section 6.0). Finally, the Rocky Flats Site Legacy Management Public Involvement Plan (PIP), in RFLMA Appendix 2, also provides that a contact record of consultative process discussions between the RFLMA parties will be made available to the Rocky Flats Stewardship Council and other interested stakeholders as early in the process as is practicable following signature approval by the parties. The PIP process to make contact records available is implemented by posting contact records on the Rocky Flats public website and by promptly notifying stakeholders (by e-mail) that the contact record is posted.

The RFLMA parties agreed, as documented in RFLMA Contact Record 2007-08, that the status of actions or activities in RFLMA contact records will be documented by DOE from time to time and will be included in RFLMA quarterly and/or annual surveillance and maintenance reports for tracking purposes. The RFLMA parties also agreed that to facilitate the status reporting, contact records should include a short discussion of the anticipated actions or activities to close out the RFLMA contact record. Thus, RFLMA Contact Record 2007-08 and subsequent contact records will include the closeout discussion.

Under certain situations, activities previously approved in a Contact Record that has been closed out will need to be performed. A simple notification and approval process has been developed for these situations, which is documented in RFLMA Contact Record 2009-05. CDPHE may receive notification of and approve the activities over the phone or in person, with e-mail follow-ups. The notification and approval of such work shall be reported in the next RFLMA annual report, in relation to the Contact Record that originally covered the work. This protocol is consistent with RFLMA paragraph 34.

Table 1–1 lists the RFLMA contact records issued in 2009 and their status at the end of 2009. The table also lists contact records that were issued in 2007 and 2008, which were discussed in the 2008 Annual Report that were not closed by the end of 2009. The table also lists e-mail approval of activities previously covered by closed out contact records. Appendix G contains copies of the 2009 contact records.

1.4 RFLMA Modification Requests

A modification to RFLMA Attachment 2, to incorporate several changes since the March 2008 page change modification of RFLMA Attachment 2, was submitted to CDPHE for approval on September 21, 2009. These page changes incorporate the following:

- Changed monitoring locations approved in RFLMA Regulatory Contact Records 2007-07, 2008-04, and 2008-09;
- Changed OLF monitoring and inspection criteria based on the OLF M&M Plan (DOE 2009a) modification and the performance of inspections since closure;
- Noted the completion of additional ecological sampling required by RFLMA; and
- Changed surface water standards consistent with revisions promulgated by the Colorado Water Quality Control Commission (WQCC) through 2009.

Landfill inspection and monitoring tasks follow the format and protocols established in the PLF M&M Plan (DOE 2008a) and the OLF M&M Plan (DOE 2009a). These plans include detailed information on monitoring groundwater, surface water, subsidence and consolidation, slope stability, soil cover, vegetation, storm water management structures, and erosion in surrounding features so that maintenance actions can be implemented in a timely manner.

A modification to the 2006 OLF M&M Plan was also submitted to CDPHE for review and approval on September 21, 2009. The modification revises OLF M&M Plan text to recognize the implementation of the remedy under RFLMA. As discussed in the *Quarterly Report of Site Surveillance and Maintenance Activities, Second Quarter Calendar Year 2009* (DOE 2009d), the modification also recaps and reflects changes resulting from the OLF geotechnical investigation.

After initial regulatory review, several changes and corrections were made to the RFLMA Attachment 2 modification, and it was resubmitted on December 22, 2009, for approval.

Pursuant to RFLMA, Section 10, paragraph 66, public notice is required for any modifications of RFLMA attachments. In accordance with the Rocky Flats community-notification and Web-posting protocol, the RFLMA Attachment 2 modification and the OLF modification submittal were posted to the Rocky Flats website for public notification.

The RFLMA and OLM M&M Plan modifications were approved shortly after the end of 2009, on January 20 and January 25, 2010, respectively, and the final versions are posted on the Rocky Flats website.

Table 1–1. Status of RFLMA Contact Records

Contact Record No.	Purpose	Approval Date	Status as of December 31, 2009
2009-01	Phase II and III Upgrades to Solar Ponds Plume Treatment System	2/17/09	Construction and post-construction revegetation and erosion controls are in place. Optimization of the upgrades and monitoring is ongoing. Will be closed when testing complete and as-built drawings completed.
	E-mail approval—excavation and repair for SPPTS phase II/III upgrade under CR 2009-01	7/9/09	Actions completed—closed
2009-02	Excavation by Xcel Energy for Valve Replacement on 12-inch Golden Pipeline	6/29/09	Actions completed—closed
2009-03	Soil disturbance for road maintenance and improvement work involving the construction of roadside drainage ditches that will not return excavation to preexisting grade.	8/11/09	Actions completed—closed
2009-04	Replace East Trenches Plume Treatment System (ETPTS) media and make minor changes to the piping configuration.	9/15/09	Actions completed—closed
2009-05	Installation of snow fencing north of the Original Landfill (OLF) and approval of work after closeout of Contact Record.	10/16/09	Actions completed—closed
2008-01	Completion of additional ecological sampling in accordance with RFLMA Attachment 2, Table 5	4/28/08	Actions completed—closed
2008-02	Discussion and approval of excavation greater than 3 feet below grade to breach Dams A-1, A-2, B-1, B-2, B-3, and B-4	6/25/08	Actions completed—closed
2008-03	Exploratory excavations to greater than 3 feet below grade generally between the former Interceptor Trench Pump House and Solar Ponds Plume Treatment System	5/20/08	Actions completed—closed
2008-04	Notification of well replacement (well 45605) and well identification change (to 45608)	7/9/08	Actions completed—closed
2008-05	Boron and uranium in groundwater downgradient of the Original Landfill	7/9/08	To be closed out when sufficient RFLMA samples show that the trend calculations are completed and a determination of increasing, indeterminate, or decreasing trends is made.
2008-06	Management of intercepted groundwater during SPPTS repair or maintenance activities	7/9/08	Actions continuing
2008-07	Path forward for OLF Seep 7 drain extension, berm maintenance and repair, perimeter channel slope cut and fill, and modification of the OLF M&M Plan	9/3/08	Actions completed—closed
	E-mail approval—investigation of OLF Seep 7 drain extension flows under CR 2008-07	5/13/09	Actions completed—closed
	E-mail approval—Adjustment of OLF Seep 7 drain extension under CR 2008-07	7/13/09	Actions completed—closed
2008-08	Construction of collection sump for SPPTS	9/9/08	Actions completed—closed
	E-mail approval—excavation to investigate/repair SPPTS ITS sump transfer line under CR 2008-08	4/29/09	Actions completed—closed
	E-mail approval—excavate and repair broken line/valve leak at ITS sump under CR 2008-08	8/5/09	Actions completed—closed
2008-09	Revision of sampling locations to reflect Site reconfiguration (sentinel well TH046992 not needed in light of nearby location of sentinel well 95099 and SPPMM01 replaced by SPOUT)	9/20/08	Actions completed—closed
2007-06	Evaluation of elevated nitrate in groundwater samples from Area of Concern well B206989	10/16/07	Continuing monitoring and evaluation
2007-07	Replacement of monitoring well 45605 (B991 slump)	12/10/07	Actions completed—closed
2007-08	Changes to PLF inspection and monitoring frequencies and modification of the PLF M&M Plan	12/26/07	Actions completed—closed