ROCKY FLATS SITE REGULATORY CONTACT RECORD 2018-01

Purpose: Original Landfill (OLF) Geotechnical Investigation Work in accordance with attached Soil Disturbance Review Plan

Contact Record Approval Date: February 7, 2018

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Date of Consultation Meeting: December 7, 2017; January 25, 2018

Consultation Meeting Participants: Scott Surovchak, Carl Spreng, Lindsay Masters, Linda Kaiser, Jeremy Wehner, John Boylan, George Squibb, Patty Gallo

Related Contact Records: CR 2010-01, CR 2013-02, CR 2013-03, CR 2014-09, CR 2015-03, CR 2015-06, CR 2016-03, CR 2016-04, CR 2017-01, CR 2017-04

Introduction: Following an intense precipitation event and flooding in 2013, DOE determined that a *Rocky Flats Legacy Management Agreement* (RFLMA) reportable condition existed at the Original Landfill (OLF) at the Rocky Flats Site, Colorado (Contact Record [CR] 2013-02). At that time, the RFLMA parties reviewed the existing conditions, which included localized surface cracking and differential settlement in the northeastern portion of the landfill, and previous post-closure observations of cracking and slumping on the landfill, including cracking on the West Perimeter Channel that occurred in 2010. Another major precipitation event involving several weeks of rainfall occurred in the spring of 2015. In fact, May 2015 has been noted as the wettest May in Colorado's recorded history. This event resulted in surficial cracks, subsidence, slumping, and ponding on the OLF hillside. Contact Record 2015-03 approved immediate actions to drain and divert surface water and groundwater from the landfill. These actions were successful in improving drainage of water on the surface of the OLF. In September 2015, CR 2015-06 approved additional actions to contour the East Perimeter Channel (EPC) and the eastern edge and western side of the OLF and lay back a large scarp at the top of the EPC as a short-term action.

In response to the 2013 and 2015 precipitation events and related slope instability (see "Related Contact Records" above), several studies and interim measures were completed. The interim measures were mainly repairs to, and maintenance of, storm water features that divert surface water and groundwater from the landfill. These measures include surface grading and compaction to minimize infiltration in the slump areas. The storm water features are generally

located outside of the waste footprint. However, small areas within the waste footprint adjacent to these features have been impacted as a result of postclosure precipitation events and have been subject to repairs.

Discussion: A geotechnical investigation will be conducted to support the long-term slope stability project for the OLF hillside. Geotechnical investigation activities will include drilling vertical borings and excavating test pits on the eastern and western portion of the OLF. Figure 1 shows the areas where geotechnical investigation activities are anticipated to occur. The geotechnical subcontractor will have the discretion to alter the location and number of borings and test pits based on field conditions and data needs. Test pit excavation may present the opportunity to improve drainage around seeps, which could involve the installation of drainage materials (e.g., drain lines, gravel). The majority of the borings and test pits will be outside the waste footprint and therefore will not intercept the soil cover or underlying waste. However, some of the borings and test pits might be drilled or excavated within the waste footprint. Similar activities involving drilling and digging within the OLF waste footprint have been approved in the past. The most recent was a 2010 data collection effort to evaluate postclosure residual contamination levels at the landfill (CR 2010-01).

The geotechnical borings in this 2018 investigation will be used to further delineate the depth to weathered and unweathered bedrock and to collect geotechnical data on subsurface stratigraphy and material properties. Given the slope of the landfill, the construction of earthen pads to stabilize the drill rig may be necessary. Following drilling activities, the pads will be removed and the areas returned to pre-activity grade. Areas disturbed by the geotechnical investigation will be revegetated in accordance with the site *Revegetation Plan* (LMS/RFS/S04513-0.1).

Borings may be up to 14 inches in diameter and may be drilled to a depth of 75 feet or more below the ground surface. Upon completion, the borings will be converted to piezometers to monitor groundwater levels. A 30 to 36-inch diameter, 4-inch thick concrete pad may be installed around each piezometer. Although many of the piezometers are expected to be destroyed during the construction of long-term measures at the OLF in 2018/2019, some piezometers may remain active beyond this period. The long-term measures for OLF stabilization will be addressed in a different contact record.

Some of the intrusive work will be conducted within the Preble's Mouse Protection Areas or Critical Habitat (Unit 6), but all intrusive work will be contained within the original OLF construction boundary. Work within the original construction boundary is currently authorized by the U.S. Fish and Wildlife Service (USFWS) so long as a notification has been submitted to them. This notification will be sent to the USFWS prior to commencement of intrusive work. If the work extends beyond the original OLF construction boundary, there will be additional consultation with USFWS.

Institutional Controls (ICs) Evaluation: The geotechnical investigation work will involve activities restricted by RFLMA ICs 2, 3, and 6, which are shown in Table 1.

Boreholes will be drilled to a depth greater than 3 feet, which is prohibited by IC 2 without regulatory review and approval of a Soil Disturbance Review Plan (SDRP). The SDRP for this geotechnical investigation is provided as Attachment 1 of this Contact Record.

The drilling of boreholes and excavation of test pits will disturb surface soil, which is prohibited by IC 3 except when performed in accordance with a soil erosion control plan. The *Erosion Control Plan for Rocky Flats Property Central Operable Unit* (DOE-LM/1497-2007), approved by CDPHE and EPA, provides erosion control best management practices that meet the IC 3 requirements.

The geotechnical investigation may involve drilling at locations on the landfill cover (i.e., within the waste footprint) and may involve driving vehicles (e.g., drill rig, support vehicles) on to the cover. These activities are prohibited by IC 6 except for authorized response actions. The maintenance actions covered by the *Original Landfill Monitoring and Maintenance Plan* and the regulatory review and approval of this Contact Record constitutes authorization for these actions.

Table 1. Institutional Controls

IC 2	Excavation, drilling, and other intrusive activities below a depth of three feet are prohibited, without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2.
	Objective: Prevent unacceptable exposure to residual subsurface contamination. Rationale: Contaminated structures, such as building basements, exist in certain areas of the Central OU, and the Comprehensive Risk Assessment did not evaluate the risks posed by exposure to this residual contamination. Thus, this restriction eliminates the possibility of unacceptable exposures. Additionally, it prevents damage to subsurface engineered components of the remedy.
IC 3	No grading, excavation, digging, tilling, or other disturbance of any kind of surface soils is permitted, except in accordance with an erosion control plan (including Surface Water Protection Plans submitted to EPA under the Clean Water Act) approved by CDPHE or EPA. Soil disturbance that will not restore the soil surface to preexisting grade or higher may not be performed without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2.
	Objective: Prevent migration of residual surface soil contamination to surface water. Rationale: Certain surface soil contaminants, notably plutonium-239/240, were identified in the fate and transport evaluation in the Remedial Investigation as having complete pathways to surface water if disturbed. This restriction minimizes the possibility of such disturbance and resultant impacts to surface water. Restoring the soil surface to preexisting grade maintains the current depth to subsurface contamination or contaminated structures.
IC 6	Digging, drilling, tilling, grading, excavation, construction of any sort (including construction of any structures, paths, trails or roads), and vehicular traffic are prohibited on the covers of the Present Landfill and the Original Landfill, except for authorized response actions.
	Objective: Ensure the continued proper functioning of the landfill covers. Rationale: This restriction helps ensure the integrity of the landfill covers.

Resolution: A geotechnical investigation will be conducted to support the long-term slope stability project for the OLF. The slope stability project will implement actions to maintain the OLF remedy as required by the *Original Landfill Monitoring and Maintenance Plan*. CDPHE, after reviewing the proposed geotechnical investigation activities and after consultation with EPA, has approved the activities proposed in this Contact Record. CDPHE has determined that

the proposed activities: (1) will not compromise or impair the function of the OLF remedy and (2) will not result in an unacceptable release or exposure to residual subsurface contamination. CDPHE also has determined that the proposed project meets the rationale and objectives of ICs 2, 3 and 6.

The geotechnical investigation work will be authorized upon CDPHE approval, but DOE will not conduct the approved soil disturbance work until 10 calendar days after this Contact Record is posted on the Rocky Flats Site website and stakeholders are notified of the posting in accordance with the RFLMA Public Involvement Plan.

Progress and the completion of the work will be reported by DOE in RFLMA quarterly and annual reports of surveillance and maintenance activities for the period(s) in which these activities occur.

Closeout of Contact Record: This CR will be closed when the implementation of long-term OLF stabilization measures is complete.

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Distribution: Carl Spreng, CDPHE Vera Moritz, EPA Lindsay Masters, CDPHE Scott Surovchak, DOE Linda Kaiser, Navarro Rocky Flats Contact Record File



Attachment 1

RFLMA Soil Disturbance Review Plan for Geotechnical Investigation Work at the OLF

Proposed Project: Soil Disturbance Review Plan (SDRP) for Geotechnical Investigation Work at the Original Landfill (OLF)

This SDRP provides information required by the *Rocky Flats Legacy Management Agreement* (RFLMA), Attachment 2, "Legacy Management Requirements," Section 4.1, "Soil Disturbance Review Plan," regarding the work proposed by the U.S. Department of Energy.

A description of the proposed project, including the purpose, the location, and the lateral and vertical extent of excavation.

The purpose of the 2018 geotechnical investigation is to collect data to support the design of repairs to existing storm water and groundwater management features, and to support the design for the required mechanical stabilization of the landfill toe.

The figure attached to Contact Record 2018-01 shows the areas where geotechnical investigation activities are anticipated to occur. These activities will include drilling boreholes, excavating test pits, and installing piezometers. Boreholes might be installed to a total depth of up to 75 feet or more below the ground surface. Most of the boreholes and test pits will be located outside the waste footprint, but one or more boreholes or test pits might be placed within the waste footprint. The boreholes will be converted to piezometers following sampling to collect water level data.

Information about any remaining subsurface structures in the vicinity of the proposed project (or state that there are none if that is the case).

There are no remaining subsurface structures in the vicinity of the proposed project. An abandoned buried natural gas line operated by Xcel Energy is in the utility easement corridor north of the OLF. The location and alignment of this abandoned line is well known and marked with signs. It is well outside of the area that will be disturbed during the geotechnical investigation project.

Some of the borings will be drilled in the vicinity of a 36-inch diameter culvert that was purportedly removed prior to OLF closure. Removal of this subsurface culvert is discussed in closure documents. During this geotechnical investigation, one of the test pits might be excavated near the former location of this feature in an effort to locate the end of the remaining section of this pipe.

Information about any former Individual Hazardous Substance Sites [IHSSs], Potential Areas of Concern, or other known or potential soil or groundwater contamination in the vicinity of the proposed project (or state that there is no known contamination).

The OLF is former IHSS 115. The OLF is not a hazardous waste unit because wastes were not disposed of in the landfill after the effective dates of the various hazardous waste regulations. However, the OLF's historical use is typical of solid waste dumps of the time, and the wastes disposed of were plant trash and construction debris that, based on sampling, likely contained

some chemicals that subsequently were regulated as Comprehensive Environmental Response, Compensation, and Liability Act hazardous substances. The OLF Interim Measure/Interim Remedial Action (IM/IRA) describes the history of the OLF and the types of wastes disposed in the landfill. Use of the OLF for dumping trash and debris ended in 1968, and an unknown amount of soil was used to cover the waste. The OLF IM/IRA states that soil was used to cover the waste dumped in the OLF area during its use, and that the waste and soil are fairly well commingled.

The OLF was not a radioactive contaminated waste disposal area. However, there is a documented instance of placing a smoldering depleted uranium (DU) slab in the OLF to allow it to "burn out." When the burned slab was recovered, not all of the DU mass was recovered. Surface soil monitoring at the OLF also located several hot spots. Before the soil cover was placed on the OLF, the hot spots were removed (see OLF IM/IRA, Appendix E).

The OLF closure design had a 2-foot-thick soil cover over the location of the disposed waste materials and clean Rocky Flats Alluvium fill surrounding the waste materials for the placement and configuration of storm water and seep water management features. Limits of the waste area are shown in the figure attached to Contact Record 2018-01. Because some of the geotechnical investigation boreholes and test pits will be located within the waste footprint, it is possible that workers will be exposed to contaminated soils, buried wastes, and/or contaminated groundwater. Contamination control and worker protection will be addressed in the project planning documents for the geotechnical investigation.