LMS/MNT/S14438

# Monticello, Utah, National Priorities List Sites Federal Facility Agreement (FFA) Quarterly Report: April 1–June 30, 2016

**July 2016**

U.S. DEPARTMENT OF ENERGY | Legacy Management

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# Abbreviations

| | |
|---|---|
| AOA | Area of Attainment |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| DOE | U.S. Department of Energy |
| EPA | U.S. Environmental Protection Agency |
| FFA | Federal Facility Agreement |
| gpm | gallons per minute |
| ICs | institutional controls |
| LCRS | Leachate Collection and Removal System |
| LDS | Leak Detection System |
| LM | Office of Legacy Management |
| LTS&M | long-term surveillance and maintenance |
| µg/L | micrograms per liter |
| MMTS | Monticello Mill Tailings Site |
| MVP | Monticello Vicinity Properties |
| NPL | National Priorities List |
| OU | Operable Unit |
| PRB | permeable reactive barrier |
| TSF | Temporary Storage Facility |
| UDEQ | Utah Department of Environmental Quality |
| UDOH | Utah Department of Health |
| UDOT | Utah Department of Transportation |
| ZVI | zero-valent iron |

# 1.0 Introduction

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) submits this quarterly report to inform the U.S. Environmental Protection Agency (EPA) and Utah Department of Environmental Quality (UDEQ) of the status of the Monticello Vicinity Properties (MVP) and the Monticello Mill Tailings Site (MMTS) (the LM Monticello, Utah, Disposal and Processing Sites) for the period of April through June 2016. The MVP and MMTS are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Quarterly reports are submitted to EPA and UDEQ in January (for October through December), April (January through March), July (April through June), and October (July through September).

LM assesses MVP and MMTS conditions and remedy protectiveness through (1) inspections (monthly, quarterly, and annually) of site infrastructure and operations as specified under the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites*, (2) semiannual monitoring of groundwater and surface water under the *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface and Ground Water, Monticello, Utah*, May 2004, and (3) CERCLA five-year reviews.

The primary long-term surveillance and maintenance (LTS&M) functions at the MVP and MMTS are to (1) provide radiological control at properties where residual soil contamination from mill tailings remains in place (supplemental standards properties), (2) operate and maintain the mill tailings repository, (3) ensure that institutional controls (ICs) restricting the use of land and water remain effective, (4) monitor water-quality restoration progress, and (5) operate the Operable Unit (OU) III pump-and-treat groundwater contingency remedy optimization system that was implemented under the *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah*, May 2014. This system focuses on groundwater remediation within a well-defined region of the alluvial aquifer that is referred to as the Area of Attainment (AOA).

Project milestones and guiding documents are further described in the *Monticello Site Management Plan* (updated annually). Annual groundwater reports present comprehensive data evaluation for the groundwater and surface water OU III remedy.

## 1.1 Quarterly Site Status

- The groundwater remedy optimization system operated as planned during the quarter.
- Water-quality monitoring was performed at the AOA monitoring wells to coincide with cumulative volumes of approximately 8 and 9 million gallons of groundwater extracted by the groundwater remedy optimization system since system startup in January 2015.
- Routine surveillance noted no anomalous conditions for the MVP remedy.
- Routine surveillance noted no violations of MMTS ICs regarding land- and groundwater-use restrictions.
- Routine surveillance noted no anomalous conditions for the surface features of the disposal cell and Pond 4.

- The Pond 4 Leachate Collection and Removal System (LCRS) exceeded the water collection action level. LM has previously notified EPA and UDEQ of this Pond 4 action level exceedance.
- Routine surveillance noted no operating deficiencies for the temporary storage facility (TSF).

# 2.0 Monticello Vicinity Properties

LTS&M for the MVP consists of providing radiological control at excavations in Monticello roadway and utility corridors, in Utah Department of Transportation (UDOT) rights-of-way, and at property MS-00176-VL (privately owned supplemental standards property). Surveillance results for this quarter are:

- No anomalous conditions for the MVP remedy were noted.
- LM representatives continued to coordinate with City of Monticello (City) officials in daily planning meetings regarding construction and excavation activities by the City, UDOT, and utility companies in roadway and utility corridors. LM has followed and will continue to follow normal LTS&M protocol to provide radiological control in the affected roadways.
- There were no planned or unplanned excavations in City street or utility corridors where radiologically contaminated material was encountered that required LM management.
- Neither excessive erosion nor unauthorized excavations were observed at the Highway 191 embankment at Montezuma Creek (supplemental standards property).
- Surveillance of property MS-00176-VL identified no excessive erosion of supplemental standards material or violation of the land-use restriction.

# 3.0 Monticello Mill Tailings Site

LTS&M activities for the MMTS consist of (1) maintaining the onsite repository and operating the associated LCRS and Leak Detection System (LDS) for the disposal cell and Pond 4, (2) surveillance of properties affected by groundwater- and land-use ICs on the former mill site and peripheral properties, and (3) operation and maintenance of the OU III groundwater remediation system.

## 3.1 Operable Unit I

OU I consists of the property of the former Monticello mill (mill site) and the repository. Radioactively contaminated materials were removed from the MVP, mill site, and peripheral properties (OU II) and encapsulated at the repository as a remedial action that was completed in 1999. LM owns and manages the repository; the City owns the former mill site and manages it as a public park.

### 3.1.1 Repository

Monthly, quarterly, and annual inspections of the repository ensure that remedy controls remain intact and that the waste remains isolated from the environment. Inspection observations and maintenance activities for the quarter are:

- No anomalous surface feature conditions were observed for the disposal cell and Pond 4. Surveillance checklists for this quarter are attached as Appendix A.
- The disposal cell LCRS and LDS operated as intended.
  - Leachate production from the disposal cell was about 700 to 800 gallons per week combined for LCRS sumps LCRS 1 and LCRS 2. This collection rate is typical over the past several years. There is no action level for the disposal cell LCRS. See Appendix B for a graphical depiction of leachate production history.
  - The disposal cell LDS continues to receive no water; therefore, the disposal cell LDS action level was not exceeded. See Appendix B for a graphical depiction of leachate production history.
- Operation of the groundwater remedy optimization system has resulted in increased water collection in the Pond 4 LCRS and LDS. The Pond 4 LCRS and LDS monitoring and pumping systems are functioning as intended to circulate water back to the pond.
  - Water collection at the Pond 4 LCRS slightly exceeded the action level during the quarter (see Appendix B). LM has previously notified EPA and UDEQ of this Pond 4 action level exceedance.
  - As in recent reporting periods, the Pond 4 LDS received a small quantity of water during the quarter. Although the quantity of water collected in the Pond 4 LDS is well below the action level (see Appendix B), LM is required to notify EPA and UDEQ of any water collection in the Pond 4 LDS. Water quality in Pond 4 and the LDS is known from OU III and groundwater remedy optimization system monitoring data.

### 3.1.2 Temporary Storage Facility

Routine surveillance of the TSF ensures that maintenance and radiological controls that govern access to and placement, storage, and transfer of contaminated material in the TSF are current and effective. Surveillance results for this quarter are:

- No anomalous conditions were observed for the TSF (see the surveillance checklist attached for this quarter in Appendix A).

All waste stored in the TSF (approximately 22 cubic yards of contaminated material) was removed and shipped to the LM Grand Junction, Colorado, Disposal Site in April 2016. This waste shipment was combined with approximately 8 cubic yards of spent zero-valent iron (ZVI) waste that was removed from the ex situ treatment system cells in April. (See discussion in Section 3.3.3.)

Since the April 2016 waste shipment, no new waste was placed into the TSF during the quarter. LM is required to initiate the transfer of TSF materials for permanent disposal at the Grand Junction disposal site when the contents reach 75 cubic yards.

### 3.1.3 Former Mill Site

LM conducts surveillance of the former mill site (properties MP-00181-VL and MS-00893-VL) to ensure compliance with ICs that were implemented to preserve the OU I remedy for soil and groundwater. The ICs applicable to the former mill site are no installation of domestic-use wells in the alluvial aquifer, no construction of habitable structures, no camping, and preserving the properties as a public park for day-use recreation.

Surveillance results for this quarter are:

- No nonconformance with water- and land-use restrictions was observed.

As follow-up to LM's submittal of uranium analytical results from Seep 6 soil sampling (conducted in September 2015), LM received a draft Health Consultation Letter from the Utah Department of Health (UDOH), dated February 23, 2016, regarding the potential for uranium accumulation in soil from contaminated groundwater at Seep 6. LM responded to the Health Consultation Letter in an April 5, 2016, letter that provided further technical basis for determining that future Seep 6 soil sampling is unnecessary. Resolution of this issue is pending.

## 3.2 Operable Unit II

OU II consists of private and City-owned properties peripheral to the former mill site. LM conducts surveillance of OU II properties to verify compliance with ICs that were implemented to preserve the OU II remedy for soil and groundwater.

Surveillance results for this quarter are:

- Montezuma Creek Restrictive Easement Area (supplemental standards properties, both City-owned and privately owned). No evidence of nonconformance with land-use restrictions (no soil removal or construction of habitable structures in supplemental standards areas) was observed.
- Groundwater-use restrictions (no installation of domestic-use wells in the alluvial aquifer). These were applied to several OU II properties under the 2004 covenant by which DOE transferred selected properties to the City. No evidence of nonconformance with this restriction was observed during the quarter.
- Property MS-00211-VL (City-owned). No evidence of nonconformance with the land-use restriction on building construction was observed.
- Pinyon-juniper supplemental standards properties (City-owned). No evidence of nonconformance with land- and groundwater-use restrictions was observed.
- No storm events exceeding 2.8 inches of rain in a 24-hour period occurred to require surveillance of supplemental standards cleanup properties for excessive erosion.

## 3.3 Operable Unit III

OU III consists of groundwater and surface water contamination resulting from operation of the former Monticello mill. Routine monitoring of OU III (water quality and water levels) is performed semiannually in April and October.

The contaminated groundwater is within the alluvial aquifer beneath the valley of Montezuma Creek; some sections of Montezuma Creek are contaminated by the discharge of contaminated groundwater. The alluvial aquifer has no record of past or present use. Montezuma Creek is used for limited irrigation and livestock watering.

The groundwater remedy includes (1) monitored natural attenuation with ICs, and (2) pump-and-treat remediation by evaporation that was implemented as the groundwater remedy optimization system in January 2015. Previous remediation efforts included (1) treatment by a ZVI in situ permeable reactive barrier (PRB), and (2) pump-and-treat remediation using ex situ ZVI treatment.

### 3.3.1 Groundwater Restricted Area/Institutional Controls

During spring and fall, LM conducts surveillance of properties where groundwater contamination is present to ensure compliance with the groundwater-use restriction (no installation of domestic-use wells in the alluvial aquifer). The affected OU III properties constitute the Monticello Groundwater Restricted Area, as defined and administered by the Utah Department of Natural Resources, Division of Water Rights. Surveillance results are:

- No evidence of nonconformance with the groundwater-use restriction since its implementation in May 1999.

### 3.3.2 Permeable Reactive Barrier

The PRB was installed in 1999 as a technology demonstration project. The capacity of the PRB to transmit water has diminished to the extent that it now serves as a groundwater flow barrier and represents the downgradient boundary of the AOA. Because of this, future decommissioning of the PRB is dependent on the progress of the groundwater remedy optimization system (Section 3.3.4). Routine monitoring at the PRB occurs as part of the OU III semiannual monitoring and results are provided in annual groundwater reports.

### 3.3.3 Ex Situ Remediation System

An ex situ pump-and-treat groundwater remediation system was installed in May 2005 as a technology demonstration project. This system is located at the PRB approximately 600 feet east of the former mill site on private property. The system operated using a single extraction well and two aboveground ZVI-based treatment vessels.

Operation of this system was suspended in December 2014. During 9.5 years of operation, the system extracted approximately 33 million gallons of contaminated groundwater and 77 pounds of uranium from the aquifer. The groundwater remedy optimization system (Section 3.3.4) replaced the ex situ treatment system as the active component of the OU III groundwater remedy.

Removal of the spent ZVI occurred in April 2016 concurrent with the transfer of TSF material to the Grand Junction disposal site (see Section 3.1.2). The decommissioning/closure strategy for the ex situ treatment system is not yet determined.

### 3.3.4 OU III Groundwater Contingency Remedy Optimization System

The groundwater remedy optimization system began full operation in February 2015. Eight vertical extraction wells are strategically placed in the AOA to extract contaminated groundwater. The water is transmitted in buried pipelines to an aboveground holding tank in the groundwater transfer building; from there it is pumped through a buried water transmission line for about 1 mile to Pond 4 for evaporation. The associated monitoring system consists of the 16 monitoring wells that were installed in the AOA. These wells are sampled on a frequency of approximately every 1-million gallons of water extracted by the treatment system.

Consumptive use (evaporation of the extracted groundwater in Pond 4) is allowed under a fixed-time water right appropriation (number 09-2347) and a temporary water right appropriation (number 09-2422) that LM obtained from the Utah Department of Natural Resources, Division of Water Rights.

#### *3.3.4.1 Quarterly Performance Summary*

- The groundwater remedy optimization system operated as planned during the quarter.
- Pumping rates were adjusted at several extraction wells in April and May to maximize uranium recovery and preserve operating capacity in Pond 4.
- The effective rate of groundwater extraction varied between approximately 19.5 gallons per minute (gpm) in April and 10 gpm in June (see Table 1).
- During June the natural evaporation rate at Pond 4 equaled or exceeded the inflow rate (approximately 10 to 15 gpm).
- During June the water table in the AOA was depressed by approximately 1 foot despite the reduced pumping rates. This suggests a period of aquifer dewatering in the AOA.
- As of the end of this reporting period the volume of water in Pond 4 is approximately 6.5 million gallons (the operating capacity is 15 million gallons).
- Table 1 shows the groundwater remedy optimization system's treatment volumes and pumping rates by calendar month and cumulatively. Cumulatively the system has removed approximately 9.2 million gallons of contaminated groundwater from the aquifer since system startup in January 2015.
- Water-quality monitoring during the quarter consisted of:
  - Sampling and analysis of groundwater samples collected at AOA monitoring wells on May 4 and 5, and June 6 and 7, 2016, to coincide with the cumulative removal of approximately 8 and 9 million gallons of water, respectively. The groundwater remedy optimization system was shut down for 72 hours preceding each million-gallon interval monitoring event, as is the standard practice.
  - Monthly operational sampling and analysis of the transfer tank effluent to Pond 4. Monthly sampling is conducted to monitor the mass of uranium that is extracted from the aquifer and transferred to Pond 4 for evaporative treatment.

— Monthly operational sampling and analysis of individual extraction wells (from sampling ports in the groundwater transfer building). This monitoring is discretionary to evaluate uranium capture performance of the individual extraction wells.

- Table 2 provides the estimated mass of uranium removed from groundwater in the AOA by the groundwater remedy optimization system. The system has removed approximately 54.5 pounds of uranium from the aquifer.
- The effective rate of uranium removal has not significantly changed despite the reduced rate of groundwater extraction.

*Table 1. Groundwater Remedy Optimization System Treatment Volumes and Rates: Calendar Month and Cumulative*

| Calendar Month | Approximate Volume Pumped[a] (million gallons) | Effective Pumping Rate[b] (gpm) | Approximate Cumulative Volume[c] (million gallons) |
|---|---|---|---|
| April 2016 | 0.84 | 19.5 | 8.2 |
| May 2016 | 0.61 | 13.6 | 8.8 |
| June 2016[d] | 0.44 | 10.1 | 9.2 |

**Notes:**
[a] Total pumped from all eight extraction wells.
[b] Includes system downtime during month.
[c] Cumulative volume based on volume of groundwater extracted by the groundwater remedy optimization system since system startup in January 2015.
[d] Reporting cutoff is June 28, 2016.

*Table 2. Uranium Mass Removal from Groundwater in the AOA*

| Tank Effluent Sample Date | Uranium Concentration (µg/L) | Volume Removed Between Tank Samples (million gallons) | Uranium Removed (pounds)[a] | Cumulative Mass Uranium Removed[b] (pounds) |
|---|---|---|---|---|
| April 7, 2016 | 525 | 0.93 | 5.3 | 46.9 |
| May 5, 2016 | 790 | 0.66 | 3.6 | 50.5 |
| June 1, 2016 | 830 | 0.60 | 4.0 | 54.5 |

**Notes:**
[a] Based on median concentration between sampling dates.
[b] Cumulative mass based on mass of uranium removed by the groundwater remedy optimization system since system startup in January 2015.

Monitoring and reporting guidelines are described in the *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah*, May 2014. Analysis of water quality trending toward meeting remediation goals in the AOA is beyond the scope of the FFA quarterly report but is provided in annual groundwater reports.

# 4.0 Schedule of Activities and Deliverables

Table 3 summarizes the completion of recent and planned near-term activities and deliverables for the Monticello National Priorities List (NPL) sites.

*Table 3. Recent and Near-Term Activities and Deliverables*

| Activity/Deliverable | Schedule |
|---|---|
| **Recent** | |
| FFA quarterly report: January–March 2016. | Submitted April 14, 2016. |
| Semiannual OU III groundwater and surface water monitoring. | Completed week of April 11, 2016. |
| ZVI removed from ex situ groundwater treatment cells and waste removed from TSF and hauled to the LM Grand Junction, Colorado, Site for disposal. | Completed week of April 18, 2016. |
| Semiannual FFA meeting between LM, EPA, and UDEQ. | Teleconference held on April 12, 2016. |
| Water-quality monitoring at AOA monitoring wells to coincide with cumulative volumes of approximately 8 and 9 million gallons of groundwater extracted by the groundwater remedy optimization system since system startup in January 2015. | Completed in April and May 2016. |
| Final Remedial Action Completion Report for OU III Groundwater Contingency Remedy Optimization System submitted to EPA and UDEQ. | May 19, 2016. |
| EPA and UDEQ approval received on Remedial Action Completion Report for OU III Groundwater Contingency Remedy Optimization System. | June 21, 2016. |
| LM response to UDOH on draft Health Consultation Letter for Seep 6. | April 5, 2016. |
| LTS&M Plan revision kick off meeting between LM, EPA, and UDEQ. | Teleconference held on May 11, 2016. |
| **Near-Term** | |
| Water-quality monitoring at AOA monitoring wells when approximately 10 million gallons have been pumped by the groundwater remedy optimization system since system startup in January 2015. | Tentatively scheduled for early August 2016. |
| LM submittal of draft Site Management Plan, Section 5.0 Annual Update to EPA and UDEQ (penalty milestone). | Draft to be received by EPA/UDEQ by August 1, 2016. |
| 2016 Annual Site Inspection. | Scheduled for September 12–14, 2016. |
| Semiannual OU III groundwater and surface water monitoring. | October 2016. |
| LM submittal of FFA quarterly report: July–September 2016. | Submit to EPA and UDEQ in October 2016. |
| LM submittal of OU III Annual Groundwater Report. | Submit to EPA and UDEQ in late October 2016. |

# Appendix A

# Monthly and Quarterly Surveillance Checklists

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# Repository Area Surveillance Checklist

☒ Monthly surveillance ☐ Quarterly surveillance: ☐ February ☐ May ☐ August ☐ November

☐ Storm event triggered surveillance due to N/A inches of rainfall over the past 24 hours.

| Inspection Item | Acceptable Yes | Acceptable No | Comments and Recommendation |
|---|---|---|---|
| **Condition of:** | | | |
| Fences, gates, and locks | ☒ | ☐ | Fences are still viable. Very minor repairs will be made to the fences. |
| Roads[a] | ☒ | ☐ | Roads remain same as last month's inspection. Slightly rutted. |
| Signs | ☒ | ☐ | |
| Site monuments | ☒ | ☐ | |
| Drainage ditches[a] | ☒ | ☐ | Began removal of storm water controls as per upper management direction. Only wattles remain at the entrance to the site. These will be removed in the near future. |
| Manholes | ☒ | ☐ | |
| Vegetation | ☒ | ☐ | |
| **Evidence of erosion of:** | | | |
| Top of disposal cell[a] | ☒ | ☐ | |
| Disposal cell sideslopes[a] | ☒ | ☐ | |
| Ditches | ☒ | ☐ | |
| Surrounding area | ☒ | ☐ | |
| **Evidence of:** | | | |
| Vandalism | ☒ | ☐ | |
| Intrusion by livestock | ☒ | ☐ | |
| Burrowing animal damage | ☒ | ☐ | Vole activity continues on the site. Doesn't appear to have caused any harm. Have not seen any prarie dogs onsite yet this spring. |
| Intrusion by humans | ☒ | ☐ | |
| Accumulation of trash | ☒ | ☐ | |

**Additional Quarterly Surveillance Requirements**
**Note:** *All transects, shown in Figure 3-1, must be walked during this inspection.*

| | | | |
|---|---|---|---|
| **Condition of:** | | | |
| Settlement plate structures | ☐ | ☐ | |
| Manholes[b] | ☐ | ☐ | |
| Sediment ponds | ☐ | ☐ | |
| **Evidence of:** | ☐ | ☐ | |
| Structural instability | ☐ | ☐ | |

**Additional comments:** Removal of the storm water controls began this month. It will continue until the storm water controls are completely removed. This includes the city property and the DOE site. Removal was authorized per the SWPPP.

Signature: Fred Smith Fred Smith Date: 4/27/2016
Monticello LM Representative

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# Repository Area Surveillance Checklist

☐ Monthly surveillance ☒ Quarterly surveillance: ☐ February ☐ May ☐ August ☐ November

☐ Storm event triggered surveillance due to _____ inches of rainfall over the past 24 hours.

| Inspection Item | Acceptable Yes | Acceptable No | Comments and Recommendation |
|---|---|---|---|
| **Condition of:** | | | |
| Fences, gates, and locks | ☒ | ☐ | PER MGMT DIRECTION REPOSITORY GATES OPEN |
| Roads[a] | ☒ | ☐ | |
| Signs | ☒ | ☐ | |
| Site monuments | ☒ | ☐ | |
| Drainage ditches[a] | ☒ | ☐ | |
| Manholes | ☒ | ☐ | ~4" STORMWATER PUMPED FROM VAULT 3 TO POND 4 |
| Vegetation | ☒ | ☐ | COVER VEGETATION IN GOOD SHAPE |
| **Evidence of erosion of:** | | | |
| Top of disposal cell[a] | ☒ | ☐ | |
| Disposal cell sideslopes[a] | ☒ | ☐ | |
| Ditches | ☒ | ☐ | |
| Surrounding area | ☒ | ☐ | |
| **Evidence of:** | | | |
| Vandalism | ☒ | ☐ | |
| Intrusion by livestock | ☒ | ☐ | |
| Burrowing animal damage | ☒ | ☐ | NO RECENT EVIDENCE OF PRAIRIE DOGS |
| Intrusion by humans | ☒ | ☐ | |
| Accumulation of trash | ☒ | ☐ | |

**Additional Quarterly Surveillance Requirements**

**Note:** *All transects, shown in Figure 3-1, must be walked during this inspection.*

| | | | |
|---|---|---|---|
| **Condition of:** | | | |
| Settlement plate structures | ☒ | ☐ | |
| Manholes[b] | ☒ | ☐ | |
| Sediment ponds | ☒ | ☐ | NO STANDING WATER |
| **Evidence of:** | ☒ | ☐ | |
| Structural instability | ☒ | ☐ | |

**Additional comments:**

Signature: David Dille Date: 5/26/16

Monticello LM Representative

[a]Inspections required following a significant storm event

[b]Open to inspect quarterly

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# Repository Area Surveillance Checklist

☒ Monthly surveillance ☒ Quarterly surveillance: ☐ February ☐ May ☐ August ☐ November

☐ Storm event triggered surveillance due to N/A inches of rainfall over the past 24 hours.

| Inspection Item | Acceptable Yes | Acceptable No | Comments and Recommendation |
|---|---|---|---|
| **Condition of:** | | | |
| Fences, gates, and locks | ☒ | ☐ | Per management direction repository gates open. |
| Roads[a] | ☒ | ☐ | |
| Signs | ☒ | ☐ | |
| Site monuments | ☒ | ☐ | |
| Drainage ditches[a] | ☒ | ☐ | |
| Manholes | ☒ | ☐ | |
| Vegetation | ☒ | ☐ | Cover vegetation in good shape. |
| **Evidence of erosion of:** | | | |
| Top of disposal cell[a] | ☒ | ☐ | |
| Disposal cell sideslopes[a] | ☒ | ☐ | |
| Ditches | ☒ | ☐ | |
| Surrounding area | ☒ | ☐ | |
| **Evidence of:** | | | |
| Vandalism | ☒ | ☐ | |
| Intrusion by livestock | ☒ | ☐ | |
| Burrowing animal damage | ☒ | ☐ | |
| Intrusion by humans | ☒ | ☐ | |
| Accumulation of trash | ☒ | ☐ | |

**Additional Quarterly Surveillance Requirements**

**Note:** *All transects, shown in Figure 3-1, must be walked during this inspection.*

| | | | |
|---|---|---|---|
| **Condition of:** | | | |
| Settlement plate structures | ☐ | ☐ | |
| Manholes[b] | ☐ | ☐ | |
| Sediment ponds | ☐ | ☐ | |
| **Evidence of:** | ☐ | ☐ | |
| Structural instability | ☐ | ☐ | |

**Additional comments:**

Signature: Fred Smith Fred Smith Date: 6/28/2016

Monticello LM Representative

[a]Inspections required following a significant storm event

[b]Open to inspect quarterly

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# Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ~8.2 Feet

| Inspection Item | Acceptable Yes | Acceptable No | Comments and Recommendation |
|---|---|---|---|
| **Condition of:** | | | |
| Fences, gates, and locks | ☒ | ☐ | |
| Roads | ☒ | ☐ | |
| Signs | ☒ | ☐ | |
| Visible piping | ☒ | ☐ | |
| Visible liner and anchors | ☒ | ☐ | |
| Rescue equipment | ☒ | ☐ | Boat has been placed at the pond. |
| **Evidence of erosion of:** | | | |
| Top of Pond 4 berm | ☒ | ☐ | |
| Pond 4 sideslopes | ☒ | ☐ | Vole activity seems less this month. |
| Ditches | ☒ | ☐ | |
| Surrounding area | ☒ | ☐ | |
| Seepage from Pond 4 | ☒ | ☐ | |
| Overtopping of Pond 4 | ☒ | ☐ | |
| **Evidence of:** | | | |
| Vandalism | ☒ | ☐ | |
| Intrusion by wildlife | ☒ | ☐ | Voles as explained above. |
| Intrusion by humans | ☒ | ☐ | |
| Accumulation of trash | ☒ | ☐ | |

**Additional comments:**

The Groundwater Remedy Optimization system continues to send water to Pond 4. This is going well.

Monticello LM Representative: Fred Smith Fred Smith Date: 4/27/16

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# Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ~8.5 Feet

| Inspection Item | Acceptable Yes | Acceptable No | Comments and Recommendation |
|---|---|---|---|
| **Condition of:** | | | |
| Fences, gates, and locks | ☒ | ☐ | |
| Roads | ☒ | ☐ | |
| Signs | ☒ | ☐ | Beginning to fade. New ones will be placed soon. |
| Visible piping | ☒ | ☐ | |
| Visible liner and anchors | ☒ | ☐ | |
| Rescue equipment | ☒ | ☐ | Boat remains at the pond. |
| **Evidence of erosion of:** | | | |
| Top of Pond 4 berm | ☒ | ☐ | |
| Pond 4 sideslopes | ☒ | ☐ | Vole activity continues to be less. |
| Ditches | ☒ | ☐ | |
| Surrounding area | ☒ | ☐ | |
| Seepage from Pond 4 | ☒ | ☐ | |
| Overtopping of Pond 4 | ☒ | ☐ | |
| **Evidence of:** | | | |
| Vandalism | ☒ | ☐ | |
| Intrusion by wildlife | ☒ | ☐ | Voles as explained above. |
| Intrusion by humans | ☒ | ☐ | |
| Accumulation of trash | ☒ | ☐ | |

**Additional comments:**

The Groundwater Remedy Optimization system continues to send water to Pond 4. This is going well.

Monticello LM Representative: Fred Smith Fred Smith Date: 5/27/16

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# Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ~8.4 Feet

| Inspection Item | Acceptable | | Comments and Recommendation |
|---|---|---|---|
| | Yes | No | |
| **Condition of:** | | | |
| Fences, gates, and locks | ☒ | ☐ | |
| Roads | ☒ | ☐ | The berm road and access had the weeds mowed. |
| Signs | ☒ | ☐ | Beginning to fade. New ones will be placed soon. |
| Visible piping | ☒ | ☐ | |
| Visible liner and anchors | ☒ | ☐ | |
| Rescue equipment | ☒ | ☐ | Boat remains at the pond. |
| **Evidence of erosion of:** | | | |
| Top of Pond 4 berm | ☒ | ☐ | |
| Pond 4 sideslopes | ☒ | ☐ | |
| Ditches | ☒ | ☐ | |
| Surrounding area | ☒ | ☐ | |
| Seepage from Pond 4 | ☒ | ☐ | |
| Overtopping of Pond 4 | ☒ | ☐ | |
| **Evidence of:** | | | |
| Vandalism | ☒ | ☐ | |
| Intrusion by wildlife | ☒ | ☐ | |
| Intrusion by humans | ☒ | ☐ | |
| Accumulation of trash | ☒ | ☐ | |

**Additional comments:**

The summer heat and wind is performing the evaporation of the water from the pond very nicely.

Monticello LM Representative: Fred Smith Date: 6/28/16

# Monticello Long-Term Surveillance and Maintenance
# Temporary Storage Facility (TSF) Record Book
# Inspection Report

**Acceptable?**

| Yes | No | |
|---|---|---|
| ☒ | ☐ | Was the gate locked upon arrival? |
| ☒ | ☐ | Are signs posted in accordance with Section 3.4.4? |
| ☒ | ☐ | Are all posting legible? |
| ☒ | ☐ | Are enclosures on the concrete bin and stored drum containers tight? |
| ☒ | ☐ | Are containers in good physical condition (no rust, no holes, no bulges, etc.)? |
| ☒ | ☐ | How much radiologically contaminated material is in the concrete bin? Note: the material should be shipped when the volume in storage approaches 75 percent of the storage capacity. |
| ☒ | ☐ | Is the surface area of the TSF in good physical condition (no erosion, no flood damage, no excessive vegetation growth, etc.)? |
| ☒ | ☐ | Has radiological monitoring been conducted in accordance with Section 3.4.5? |
| ☒ | ☐ | Is the security fence in good condition? |

Comments: The radiological materials that were stored in the TSF have been transferred to the Grand Junction Disposal Site. The transfer of these materials was in accordance with environmental compliance, Safety & Health, and the site manager.

Fred Smith — Fred Smith
Signature of Monticello LM Representative

5/27/2016
Date of Inspection

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# Appendix B

# Graphs Showing Performance History for Disposal Cell and Pond 4 LCRSs and LDSs

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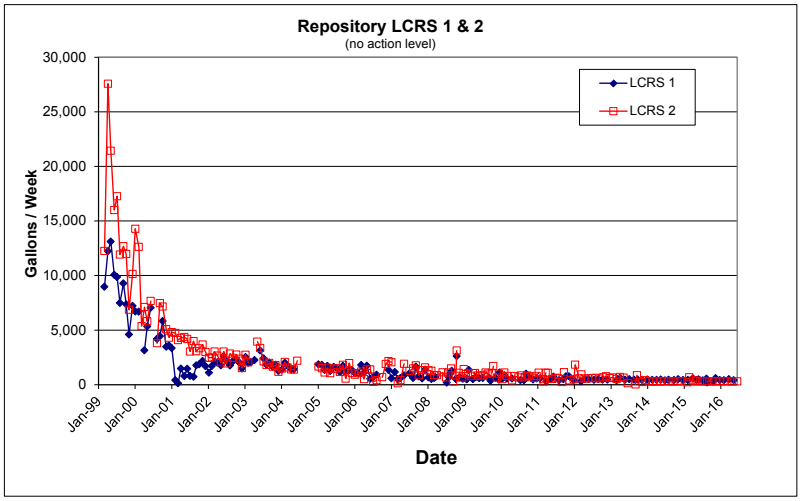
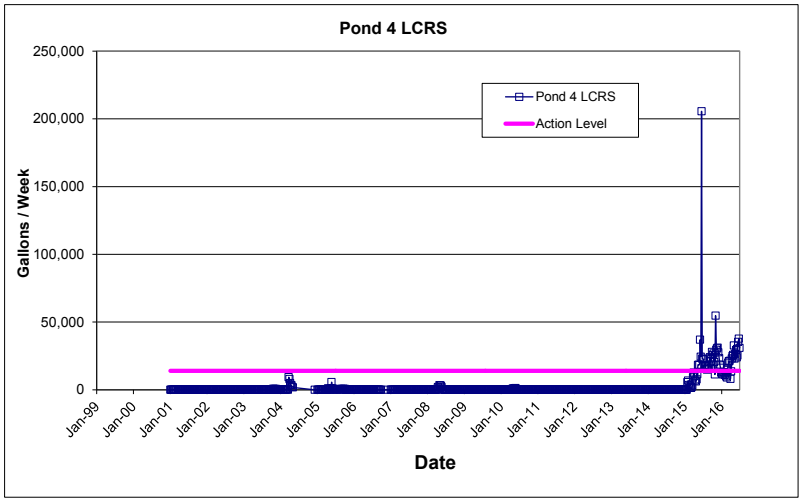
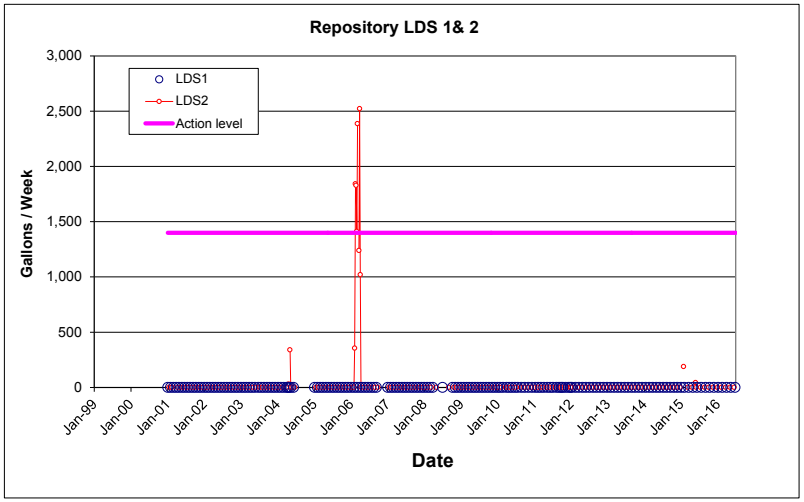
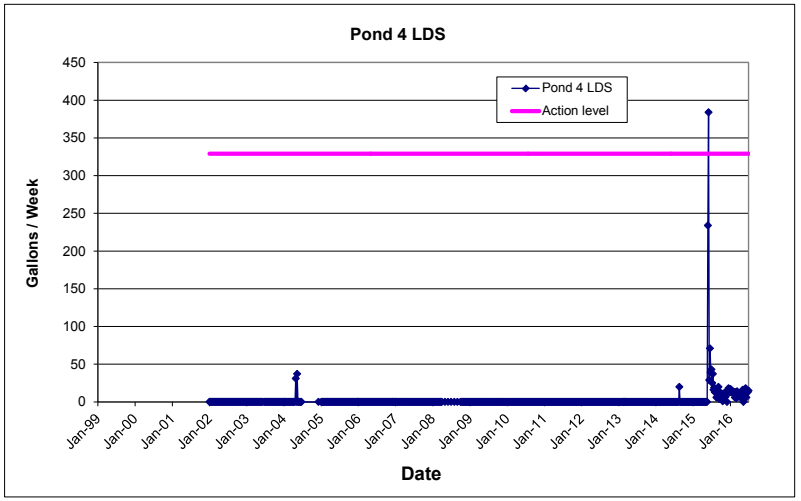
## Graphs Showing Performance History for Disposal Cell and Pond 4 LCRSs and LDSs



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