

**Monticello, Utah, National
Priorities List Sites
Federal Facility Agreement
(FFA) Quarterly Report:
October 1–December 31, 2014**

January 2015



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

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Abbreviations

AOA	Area of Attainment
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
mg/L	milligrams per liter
MMTS	Monticello Mill Tailings Site
MVP	Monticello Vicinity Properties
NPL	National Priorities List
OU	Operable Unit
TSF	Temporary Storage Facility
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation

1.0 Introduction

This quarterly report appraises the U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ) of the status of the Monticello Vicinity Properties (MVP) and the Monticello Mill Tailings Site (MMTS) for the period of October through December 2014. Quarterly reports are submitted to EPA and UDEQ in January (for the October through December quarter), April (for the January through March quarter), July (for the April through June quarter), and October (for the July through September quarter).

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) assesses the status of the MVP and MMTS remedies through (1) routine inspections (monthly, quarterly, and annually) of site infrastructure and operations that are conducted in accordance with the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites*, (2) routine (semiannual) monitoring of groundwater and surface water quality and hydrologic conditions that is conducted in accordance with the *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface and Ground Water, Monticello, Utah, June 2004*, and (3) monthly water quality monitoring of the Operable Unit (OU) III ex situ groundwater treatment system.

The schedule and reporting requirements are determined in consultation with EPA and UDEQ and are also documented in the *Monticello Site Management Plan* (updated annually). Comprehensive data evaluation for the OU III remedy is presented in annual groundwater reports. MVP and MMTS conditions are also documented in annual site inspection reports, and remedy protectiveness is evaluated in five-year reviews as mandated under the Comprehensive Environmental Response, Compensation, and Liability Act.

1.1 Quarterly Site Status

- Routine surveillance noted no anomalous conditions for the MVP remedy.
- Routine surveillance noted no anomalous conditions for the MMTS remedy.
- Routine surveillance noted no anomalous operating conditions for the repository and Pond 4 Leachate Collection and Removal Systems (LCRS) and Leak Detection Systems (LDS).
- Routine surveillance noted no anomalous conditions for the surface features of the disposal cell and Pond 4.
- Construction of the OU III contingency remedy optimization project was substantially completed in December 2014. Operability testing of the system was also completed in December 2014. The system functioned as intended during the test. Construction and future operation of the OU III contingency remedy optimization system is described in Section 3.3.3.
- The ex situ groundwater treatment system operated at a reduced rate during the quarter because of limited aquifer yield.

- Operation of the ex situ groundwater treatment system was suspended indefinitely on December 29, 2014, as a precursor to start-up of the contingency remedy optimization system in January 2015.
- The 2014 annual site inspection was conducted in September 2014, and in general, the site was found to be well maintained and in good condition. The annual inspection report was submitted to EPA and UDEQ in December 2014.

2.0 Monticello Vicinity Properties

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

- LM representatives continued to coordinate with City of Monticello officials regarding planned and ongoing construction and excavation activities by the City, UDOT, and utility companies at roadway and utility corridors through daily planning meetings.
- There were no planned or unplanned excavations in City of Monticello street or utility corridors where radiological contaminated material was encountered.
- 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 for the MMTS consists of (1) operating the onsite disposal cell, (2) maintaining groundwater and land-use institutional controls (ICs) on the former mill site and peripheral properties, and (3) operating and monitoring the groundwater ex situ treatment system (until its recent suspension of operation).

3.1 Operable Unit I

OU I consists of the property of the former Monticello mill (mill site) and the waste disposal facility (repository). Solid wastes were removed from the 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 of Monticello 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 reporting period are:

- No anomalous conditions were observed at the repository with respect to the surveillance items included in the LTS&M repository area surveillance checklists (attached for this quarter in Appendix A).
- Water accumulation in Pond 4 remains minimal: a maximum of approximately 14 inches of water is currently present only in the northeast corner of the pond.
- Leachate production from the repository was normal. Leachate production is about 1,000 gallons per week combined for LCRS sumps LCRS 1 and LCRS 2. See Appendix B for a graphical depiction of leachate production history.
- The Pond 4 LCRS received no leakage during the quarter. This is the normal condition. Pond 4 LCRS performance history is summarized as a graph in Appendix B.
- The lower sumps (LDS) for the repository and Pond 4 received no water during the quarter. This is the normal condition. Graphs showing the performance history for the repository LDS and the Pond 4 LDS are included in Appendix B.
- Construction activities for the groundwater remedy optimization project require minor modification of the Pond 4 fence enclosure and signage. Repairs are scheduled for completion in January 2015.

3.1.2 Temporary Storage Facility

Routine surveillance of the Temporary Storage Facility (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. No anomalous conditions were observed for the TSF (see the surveillance checklist attached for this quarter in Appendix A).

No waste was placed in the TSF during the quarter. The inventory of contaminated material in the TSF remains at approximately 25 cubic yards. Approximately 4 cubic yards of the contaminated material derives from street and utility excavations from previous quarters. Radiologically contaminated material from supplemental standards properties has not been placed in the TSF since 2011. Approximately 21 cubic yards of the material in the TSF derives from maintenance and repairs to Pond 4 in August 2013.

LM initiates the transfer of TSF materials for permanent disposal at the LM Grand Junction, Colorado, Disposal Site when the contents reach 75 cubic yards. The most recent transfer of TSF materials to the Grand Junction disposal site occurred in June 2010.

3.1.3 Former Mill Site

Surveillance of the former mill site (properties MP-00181-VL and MS-00893-VL) is conducted 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.

Observations for this quarter are:

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

3.2 Operable Unit II

OU II consists of private and City-owned properties peripheral to the former mill site. Surveillance of OU II properties is conducted to ensure compliance with ICs that were implemented to preserve the OU II remedy for soil and groundwater.

Observations 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) were applied to several OU II properties under the 2004 covenant by which DOE transferred selected properties to the City of Monticello. No instance 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) required nonroutine surveillance of supplemental standards cleanup properties. Climatological data are included in Appendix C.

3.3 Operable Unit III

OU III consists of groundwater and surface water that were contaminated as a result of operation of the former Monticello mill. The contaminated groundwater lies within the shallow alluvial aquifer beneath the valley of Montezuma Creek; contaminated surface water is present within Montezuma Creek.

3.3.1 Groundwater Restricted Area

Surveillance of properties where groundwater contamination is present is conducted semiannually in spring and fall 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 State of Utah Division of Water Rights. Surveillance observations are:

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

3.3.2 Ex Situ Groundwater Treatment System

In accordance with the OU III contingency remedy implemented under the January 2009 Explanation of Significant Difference, contaminated alluvial groundwater is extracted from a single groundwater well and is treated using zero-valent iron in two ex situ treatment vessels. This treatment system, located on private property, is approximately 600 feet east of the former mill site in the area where the alluvial groundwater is most contaminated.

Treated groundwater is discharged to Montezuma Creek. The maximum rate of discharge to Montezuma Creek allowed by the State of Utah is 10 gallons per minute (gpm). The effluent is required to comply with State of Utah discharge limits for pH and total iron. Although an infiltration trench is available to receive treated water for local discharge to the aquifer, its use was discontinued in 2009 because of limited capacity to receive and transmit water.

Performance of the ex situ treatment system, cumulatively and from fiscal October (beginning October 1 through December 29, 2014, when operation of the treatment system was suspended indefinitely), is summarized as follows:

- Operation was continuous through the quarter through December 29, 2014. Operation was suspended at that time to allow a brief period of aquifer stabilization prior to the start-up of the contingency remedy optimization system, anticipated for early January 2015. The remedy optimization system replaces the ex situ treatment as the active groundwater remediation component for OU III.
- Groundwater extraction for the review period ranged between 7.0 and 7.5 gpm. Limited aquifer yield, rather than flow resistance through the reactive media, necessitated operating the system at about 7.0 to 7.5 gpm instead of at the maximum operating capacity of 10 gpm.
- Effluent discharge to Montezuma Creek did not exceed the allowed rate of 10 gpm.
- Effluent iron concentrations and pH met discharge allowances (Table 1).
- Approximately 897,300 gallons of groundwater were treated during the quarter. Table 2 shows monthly and cumulative treated volumes.
- Approximately 2.7 pounds of uranium was removed from the aquifer during this quarter. Table 2 shows monthly and cumulative mass removed. Uranium removal for the quarter remained effective (approximately 95% removal efficiency).
- The reactive media was last exchanged in September 2013.

In concurrence with EPA and UDEQ, DOE discontinued the operation of the ex situ treatment system as a remedy component, effective December 29, 2014. The ex situ treatment system has cumulatively treated approximately 33 million gallons of contaminated groundwater having an average concentration of uranium of approximately 400 micrograms per liter. Approximately 77 pounds of uranium was removed from the aquifer by the ex situ treatment system. Future discussion among DOE, EPA, and UDEQ will determine a decommissioning/closure strategy for the ex situ treatment system.

Table 1. Ex Situ Treatment System Compliance Summary

Treatment System Effluent to Montezuma Creek	October 2014	November 2014	December 2014
pH ^a	7.29	7.22	7.30
Iron (total, mg/L) ^b	16.9	23.0	25.3

^a pH discharge allowance range = 6.5–9.0 standard units

^b Iron discharge limit = 45.4 milligrams per liter (mg/L) at outfall to Montezuma Creek

Table 2. Ex Situ Treatment System Performance Summary

Treatment Parameter	October 2014	November 2014	December 2014 ^a
Gallons treated (approximate)	191,600	279,520	426,174
Average treatment rate, gpm	7.4	7.2	7.0
Uranium influent, micrograms per liter	406	386	366
Uranium effluent, micrograms per liter	13.5	19.0	21.0
Uranium mass removed, pounds	0.63	0.85	1.22
Cumulative uranium mass removed, pounds	75.1	76.0	77.2
Cumulative volume treated (million gallons)	32,022,412	32,301,932	32,728,106

^a Through December 29, 2014. System operation was suspended indefinitely on December 29, 2014, at 2:00 pm.

3.3.3 OU III Contingency Remedy Optimization System

The contingency groundwater remedy that was implemented by the ex situ treatment system has been optimized by expanding pump-and-treat remediation in the Area of Attainment (AOA), where hydrogeologic boundaries and elevated concentrations of uranium in groundwater are both well defined. The optimized system will use a network of eight vertical extraction wells strategically placed in the AOA to extract contaminated groundwater. The water will be transmitted in a buried pipeline to an existing pond (Pond 4) located on DOE property about 1 mile south of the AOA for evaporative treatment. Sixteen new monitoring wells have been installed and will be used to monitor groundwater levels and quality in the AOA. The contingency remedy optimization is consistent in concept with the requirements of the Record of Decision and the Explanation of Significant Difference.

Major project activity components occurring this quarter were:

- The groundwater contingency remedy optimization system was substantially completed in December 2014.
- Operability testing of the system was completed in December 2014.
- The construction subcontractor demobilized from the site in December 2014.

Operation of the system will be phased in and refined beginning in January 2015. System monitoring and reporting will occur as described in DOE's *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello mill Tailings Site Operable Unit III, Monticello, Utah, May 2014*.

4.0 Schedule of Activities and Deliverables

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

Table 3. Recent and Near-Term Activities and Deliverables

Activity/Deliverable	Schedule
Recent	
Monthly ex situ groundwater treatment system monitoring.	Completed for October, November, and December 2014 (results summarized in Tables 1 and 2). Future ex situ treatment system monitoring is no longer required because system operation has been indefinitely suspended.
Operation of ex situ groundwater treatment system indefinitely suspended. Future OU III groundwater treatment will occur via new groundwater contingency remedy optimization system.	December 29, 2014.
Monthly MMTS OU III technical meeting with DOE, EPA, and UDEQ.	Last meeting held December 18, 2014. (EPA did not attend this meeting.)
OU III Groundwater Contingency Remedy Optimization System.	See Section 3.3.3 of this report for recent activities.
DOE submittal of 2014 Annual Site Inspection Report.	Submitted to EPA and UDEQ December 17, 2014.
Near-Term	
Monthly MMTS OU III technical meeting with DOE, EPA, and UDEQ.	Next meeting tentatively scheduled for January 23, 2015.
EPA and UDEQ site visit of OU III groundwater contingency remedy optimization system.	Tentatively scheduled for March/April 2015 time frame.
Semiannual groundwater and surface water monitoring.	Scheduled for week of April 20, 2015.
DOE submittal of FFA quarterly report: January–March 2015.	Submit to EPA and UDEQ in April 2015.

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Appendix A

Monthly and Quarterly Surveillance Checklists

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U.S. Department of Energy Office of Legacy Management

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		Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Roads ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Site monuments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Drainage ditches ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Manholes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Evidence of erosion of:			
Top of disposal cell ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Disposal cell sideslopes ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Evidence of:			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Intrusion by livestock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Burrowing animal damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Additional Quarterly Surveillance Requirements

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

Condition of:			
Settlement plate structures	<input type="checkbox"/>	<input type="checkbox"/>	_____
Manholes ^b	<input type="checkbox"/>	<input type="checkbox"/>	_____
Sediment ponds	<input type="checkbox"/>	<input type="checkbox"/>	_____
Evidence of:			
Structural instability	<input type="checkbox"/>	<input type="checkbox"/>	_____

Additional comments:

The south east fence is open due to construction.

Signature: *[Handwritten Signature]* Monticello LM Representative Date: 10-29-14

^aInspections required following a significant storm event
^bOpen to inspect quarterly

U.S. Department of Energy Office of Legacy Management

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		Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roads ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Site monuments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Drainage ditches ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Manholes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of erosion of:			
Top of disposal cell ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Disposal cell sideslopes ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by livestock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Burrowing animal damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Same as before.</u>
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional Quarterly Surveillance Requirements

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

Condition of:			
Settlement plate structures	<input type="checkbox"/>	<input type="checkbox"/>	
Manholes ^b	<input type="checkbox"/>	<input type="checkbox"/>	
Sediment ponds	<input type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
Structural instability	<input type="checkbox"/>	<input type="checkbox"/>	

Additional comments:

Snow now covers the site.

Signature: [Signature] Monticello LM Representative Date: 12-30-14

^aInspections required following a significant storm event
^bOpen to inspect quarterly

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Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ± 10 inches at N.E. corner

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Fence repair required after construction.</u>
Roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Need to install Rad. signs on Rad. reperi.</u>
Visible piping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Taken down due to construction.</u>
Visible liner and anchors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>anchors no longer exist.</u>
Rescue equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of erosion of:			
Top of Pond 4 berm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pond 4 sideslopes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Need erosion mats at backfilled areas.</u>
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Seepage from Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Overtopping of Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by wildlife	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional comments:

Ongoing construction activities for the Groundwater Remediation Optimization Project results in items discussed above and they will be corrected upon conclusion of activities.

Monticello LM Representative: *Richard Smith* Date: 10-28-14

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Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ~ 12" NE CORNER

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>GATE NEEDS RE-INSTALLED POST CONCT.</u>
Roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>SIGN NEED REINSTALLED ON RAD ROPE</u>
Visible piping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Visible liner and anchors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rescue equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of erosion of:			
Top of Pond 4 berm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pond 4 sideslopes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Seepage from Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Overtopping of Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by wildlife	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional comments:			

Monticello LM Representative: David Dille Date: 11/24/14

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Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ~ 14"

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>RAD signs on Rad rope need to be re-installed after construction.</i>
Visible piping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Visible liner and anchors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rescue equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of erosion of:			
Top of Pond 4 berm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pond 4 sideslopes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Seepage from Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Overtopping of Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by wildlife	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional comments:

Water from the Ground water Transfer Building to Pond 4 occurred this month.

Monticello LM Representative: *Frank Smith* Date: *12-30-14*

**Monticello Long-Term Surveillance and Maintenance
Temporary Storage Facility Record Book
Inspection Report**

Acceptable?

Yes / No

- YES Was the gate locked upon arrival?
- YES Are signs posted in accordance with Section 3.4.4?
- YES Are all postings legible?
- YES Are enclosures on the concrete bin and stored drum containers tight?
- YES Are containers in good physical condition (no rust, no holes, no bulges, etc.)?
- YES 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.
- YES Is the surface area of the TSF in good physical condition (no erosion, no flood damage, no excessive vegetation growth, etc.)?
- YES Has radiological monitoring been conducted in accordance with Section 3.4.5?
- YES Is the security fence in good condition?

Comments: _____

David Delle
Signature of Monticello LM Representative

11/25/14
Date of Inspection

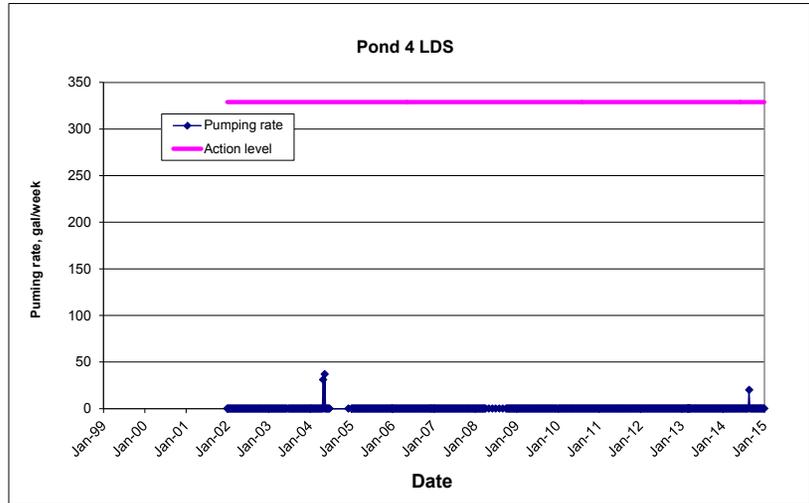
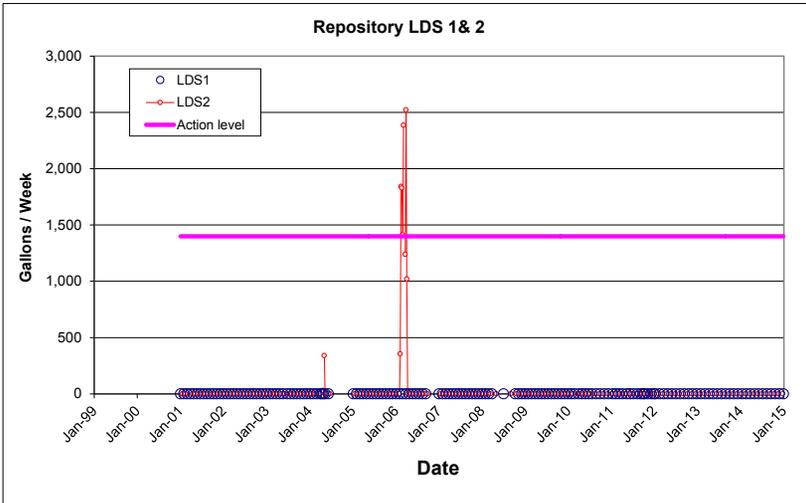
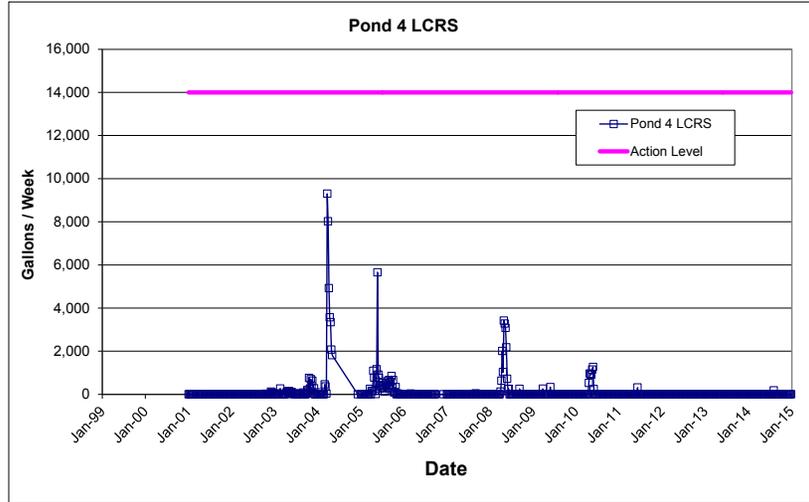
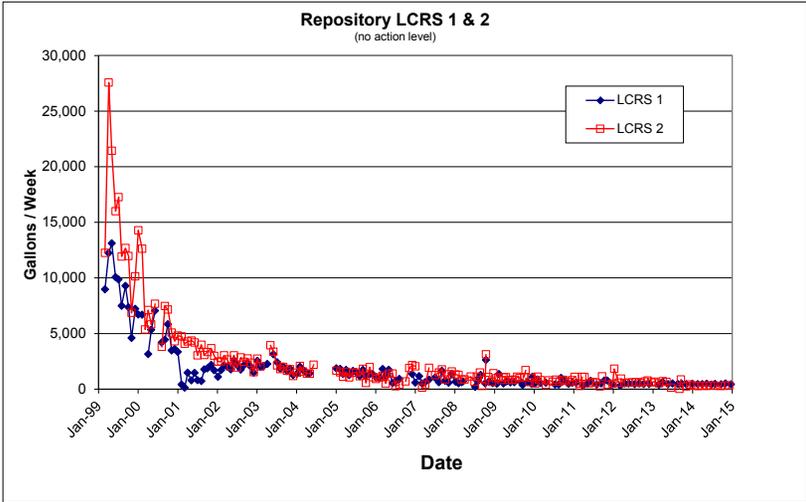
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Appendix B

Graphs Showing Performance History for Repository and Pond 4 Leachate Collection and Removal Systems and Leak Detection Systems

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Graphs Showing Performance History for Repository and Pond 4 Leachate Collection and Removal System (LCRS) and Leak Detection System (LDS)



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Appendix C

Climatological Summaries

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MONTHLY CLIMATOLOGICAL SUMMARY for OCT. 2014

NAME: Monticello Office CITY: STATE:
 ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN		HIGH	TIME	LOW	TIME	HEAT	COOL	AVG		TIME	DOM	
	TEMP	TEMP					DEG	DEG	WIND	SPEED			DTR
							DAYS	DAYS	RAIN	HIGH			
1	46.0	52.4	52.4	3:00p	36.9	11:00p	19.0	0.0	0.08	6.6	31.0	11:30a	N
2	44.8	57.5	57.5	5:30p	36.2	6:30a	20.2	0.0	0.00	7.0	23.0	1:00a	NNW
3	50.7	61.0	61.0	4:00p	38.6	3:00a	14.3	0.0	0.00	8.4	27.0	2:00p	NNW
4	54.8	64.5	64.5	4:30p	44.8	7:00a	10.2	0.0	0.00	9.0	24.0	11:00a	NNW
5	55.3	65.1	65.1	4:00p	45.6	7:30a	9.7	0.0	0.00	8.7	23.0	9:00a	NNW
6	57.1	70.8	70.8	5:00p	46.0	5:30a	8.6	0.7	0.00	6.8	22.0	11:00a	N
7	57.0	68.4	68.4	4:00p	47.6	5:30a	8.5	0.4	0.00	1.7	13.0	1:30p	NE
8	57.9	64.7	64.7	2:30p	48.7	6:30a	7.1	0.0	0.00	2.0	16.0	8:30p	NW
9	50.0	56.3	56.3	12:30a	45.2	12:00m	15.0	0.0	0.06	3.8	17.0	8:00a	NNW
10	52.8	62.5	62.5	4:00p	43.2	8:00a	12.2	0.0	0.00	5.2	21.0	2:00p	N
11	53.7	62.4	62.4	3:00p	43.4	7:00a	11.3	0.0	0.00	4.3	19.0	11:30a	S
12	50.0	57.9	57.9	6:00a	39.0	12:00m	15.0	0.0	0.00	13.5	41.0	12:30p	NNW
13	43.5	53.5	53.5	4:00p	35.9	6:00a	21.5	0.0	0.00	8.3	22.0	1:30p	N
14	50.5	63.8	63.8	4:00p	38.7	7:30a	14.5	0.0	0.00	2.9	14.0	2:30p	NW
15	56.4	66.7	66.7	4:30p	45.7	12:30a	8.6	0.1	0.00	8.2	25.0	12:00p	SW
16	54.9	67.0	67.0	4:30p	40.8	7:00a	10.2	0.1	0.00	6.4	26.0	11:00a	SW
17	54.0	65.3	65.3	1:30p	40.8	8:00a	11.0	0.0	0.00	4.3	18.0	1:30p	WNW
18	54.7	64.4	64.4	2:00p	48.2	11:30p	10.3	0.0	0.00	2.0	14.0	12:00p	S
19	54.1	66.4	66.4	4:00p	44.7	3:00a	11.0	0.1	0.00	2.6	19.0	12:00p	W
20	54.2	64.7	64.7	4:00p	42.9	7:30a	10.8	0.0	0.00	5.1	21.0	1:30p	S
21	52.3	60.9	60.9	4:30p	45.1	8:00a	12.7	0.0	0.00	5.4	21.0	1:00p	S
22	51.3	60.4	60.4	1:00p	43.1	12:00m	13.7	0.0	0.00	3.5	21.0	12:30p	E
23	52.9	65.9	65.9	3:30p	41.1	7:30a	12.2	0.0	0.00	4.4	20.0	1:30p	S
24	56.7	70.5	70.5	3:00p	45.6	6:30a	9.1	0.7	0.00	5.7	22.0	4:00p	SSE
25	56.6	66.7	66.7	3:30p	45.1	7:00a	8.6	0.2	0.00	6.5	24.0	12:00m	SSW
26	55.5	65.2	65.2	4:00p	46.4	6:30a	9.5	0.0	0.00	6.8	32.0	12:30p	S
27	45.3	53.3	53.3	1:00a	36.9	10:30p	19.7	0.0	0.00	9.7	27.0	4:30p	NNW
28	44.7	58.8	58.8	4:00p	32.4	6:30a	20.3	0.0	0.00	3.0	14.0	3:00p	WNW
29	48.3	63.6	63.6	4:00p	36.4	8:00a	16.7	0.0	0.00	2.5	16.0	4:30p	NW
30	51.9	69.9	69.9	5:30p	40.1	3:00a	13.4	0.3	0.00	1.8	11.0	2:00p	W
31	53.4	63.4	63.4	4:30p	44.8	12:30a	11.6	0.0	0.00	7.3	25.0	10:00a	S
	52.3	70.8		6	32.4	28	396.5	2.6	0.14	5.6	41.0	12	NNW

Max >= 90.0: 0
 Max <= 32.0: 0
 Min <= 32.0: 0
 Min <= 0.0: 0

Max Rain: 0.08 ON 10/01/14

Days of Rain: 2 (>.01 in) 0 (>.1 in) 0 (>1 in)

Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for NOV. 2014

NAME: Monticello Office CITY: STATE:
 ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN		TIME	LOW	TIME	HEAT	COOL	RAIN	AVG		TIME	DOM
	TEMP	HIGH				DEG	DEG		WIND	HIGH		
1	53.0	60.2	2:00p	44.3	4:00a	12.0	0.0	0.28	14.1	40.0	10:30a	SSW
2	42.1	50.0	1:30p	29.4	11:30p	22.9	0.0	0.03	8.8	31.0	9:30a	SSW
3	34.3	39.8	3:00p	29.1	7:30a	30.7	0.0	0.05	8.0	22.0	1:30p	NNW
4	37.1	46.5	2:30p	30.7	7:30a	27.9	0.0	0.00	8.0	20.0	5:00a	N
5	43.0	54.3	2:00p	31.9	3:30a	22.0	0.0	0.00	7.6	31.0	9:00a	N
6	44.7	59.1	2:30p	34.4	7:00a	20.3	0.0	0.00	3.5	18.0	11:00a	SSE
7	47.7	60.5	1:00p	34.3	4:00a	17.3	0.0	0.00	6.5	25.0	3:00p	NNW
8	47.8	60.2	2:30p	37.4	11:30p	17.2	0.0	0.00	4.8	19.0	1:30a	NNW
9	45.7	57.2	2:30p	34.6	5:00a	19.3	0.0	0.00	5.3	26.0	10:00p	S
10	44.0	59.7	1:30p	30.2	9:30p	21.0	0.0	0.00	12.1	36.0	2:00p	SSW
11	40.8	53.5	2:30p	25.8	5:30a	24.2	0.0	0.00	10.1	31.0	10:00a	S
12	40.4	47.9	3:30a	29.4	10:00p	24.6	0.0	0.00	7.8	24.0	6:30p	N
13	33.6	44.5	3:30p	22.4	4:30a	31.4	0.0	0.00	6.1	32.0	11:30a	N
14	34.8	42.3	11:30a	29.3	3:30a	30.2	0.0	0.51	3.2	23.0	12:30p	SE
15	35.2	45.7	2:00p	24.1	12:00m	29.8	0.0	0.01	6.4	35.0	10:30p	SW
16	20.1	24.3	3:30p	14.5	7:30a	44.9	0.0	0.00	14.7	36.0	8:00a	NNW
17	25.0	32.4	2:00p	18.1	5:30a	40.0	0.0	0.00	7.0	18.0	2:00p	NNW
18	29.2	43.2	3:30p	17.1	7:30a	35.8	0.0	0.00	1.7	14.0	12:30a	NW
19	29.8	40.5	12:30p	20.6	7:00a	35.2	0.0	0.00	2.5	19.0	12:30p	S
20	33.7	43.8	4:00p	25.4	12:30a	31.3	0.0	0.00	1.0	11.0	11:30a	ESE
21	34.7	47.2	2:30p	26.3	3:30a	30.3	0.0	0.00	1.6	14.0	11:30a	NW
22	38.1	45.2	10:30p	29.2	6:00a	26.9	0.0	0.00	10.5	30.0	12:00p	SSW
23	28.7	36.4	12:30a	20.2	12:00m	36.3	0.0	0.00	18.4	51.0	11:30a	NNW
24	24.8	30.7	4:00p	17.9	2:00a	40.2	0.0	0.00	8.7	33.0	9:00a	SE
25	29.6	39.3	3:00p	16.2	3:00a	35.4	0.0	0.00	4.1	16.0	10:30a	S
26	39.3	49.7	2:00p	29.3	7:30a	25.7	0.0	0.00	5.1	28.0	11:00a	NNW
27	40.9	54.0	3:00p	32.2	3:30a	24.1	0.0	0.00	3.1	17.0	12:00p	WNW
28	44.5	52.6	2:00p	38.7	12:00m	20.5	0.0	0.00	9.9	30.0	12:00p	S
29	41.3	51.9	3:30p	31.7	7:30a	23.7	0.0	0.00	8.6	30.0	11:00a	SE
30	39.9	48.7	3:00p	34.0	12:00m	25.1	0.0	0.00	5.2	25.0	11:00a	SSE

	37.5	60.5	7	14.5	16	826.2	0.0	0.88	7.1	51.0	23	NNW

Max >= 90.0: 0
 Max <= 32.0: 2
 Min <= 32.0: 22
 Min <= 0.0: 0
 Max Rain: 0.51 ON 11/14/14
 Days of Rain: 4 (>.01 in) 2 (>.1 in) 0 (>1 in)
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for DEC. 2014

NAME: Monticello Office CITY: STATE:
 ELEV: 0 ft LAT: LONG:

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	36.4	47.3	2:30p	25.6	7:30a	28.6	0.0	0.00	6.0	23.0	11:00a	S
2	39.9	47.3	1:00p	31.1	2:30a	25.1	0.0	0.00	6.4	24.0	12:30p	S
3	37.6	40.6	2:00a	33.2	4:30a	27.4	0.0	0.14	8.0	24.0	12:30p	S
4	40.5	42.6	3:00p	38.1	3:30a	24.5	0.0	0.05	3.4	16.0	4:30a	S
5	39.3	43.8	1:00p	34.8	7:30a	25.7	0.0	0.03	0.8	8.0	10:00a	SSW
6	39.6	43.4	2:00p	34.5	12:00m	25.4	0.0	0.00	4.8	21.0	11:00a	SW
7	38.5	48.3	1:00p	31.6	4:30a	26.5	0.0	0.00	1.8	13.0	1:00p	NNE
8	36.8	46.7	2:00p	28.9	12:00m	28.2	0.0	0.00	2.2	14.0	11:00a	NNW
9	37.2	51.2	2:00p	28.5	2:30a	27.8	0.0	0.00	1.5	12.0	12:30p	SSE
10	36.2	48.2	3:00p	28.1	10:30p	28.8	0.0	0.00	2.1	8.0	6:00a	SSE
11	38.8	47.8	1:30p	29.5	6:30a	26.2	0.0	0.00	4.5	17.0	10:30a	S
12	43.3	49.2	2:30p	39.4	4:30a	21.7	0.0	0.00	10.7	25.0	9:30a	SSW
13	34.4	42.2	2:30a	27.8	10:00p	30.6	0.0	0.82	5.6	22.0	10:00a	S
14	27.1	32.0	3:00p	20.0	11:00p	38.0	0.0	0.01	8.5	28.0	5:00a	S
15	25.6	33.9	3:00p	18.1	6:30a	39.4	0.0	0.00	3.2	18.0	10:00a	NW
16	32.7	38.8	1:30p	24.3	1:00a	32.3	0.0	0.00	7.8	21.0	8:30a	SSW
17	30.7	35.5	12:30p	24.4	12:00m	34.3	0.0	0.01	2.5	18.0	12:30a	SE
18	26.3	31.8	11:00a	17.8	9:30p	38.7	0.0	0.10	1.4	9.0	11:00a	NW
19	25.0	34.6	1:00p	18.1	4:00a	40.0	0.0	0.02	1.4	9.0	10:00a	N
20	28.2	33.7	1:30p	22.7	8:00a	36.8	0.0	0.01	1.4	14.0	12:00p	S
21	30.3	43.2	12:00m	24.7	3:30a	34.7	0.0	0.01	4.3	31.0	10:30p	SSE
22	36.2	43.2	12:30a	22.5	11:30p	28.8	0.0	0.05	14.5	43.0	3:00p	NNW
23	23.8	27.7	12:00p	20.2	6:30a	41.2	0.0	0.00	13.0	28.0	2:30a	N
24	25.9	34.6	1:00p	17.2	5:00a	39.1	0.0	0.00	7.9	31.0	6:00p	SSE
25	25.7	32.5	1:00p	17.1	11:30p	39.3	0.0	0.00	11.1	31.0	2:30p	SSW
26	17.7	24.0	12:00p	11.0	8:00a	47.3	0.0	0.00	8.5	24.0	8:00p	NNW
27	14.2	19.6	3:30p	10.1	7:30a	50.8	0.0	0.00	6.0	21.0	4:30a	SE
28	17.1	24.8	12:30p	8.5	8:00a	47.9	0.0	0.00	5.5	24.0	12:30p	SSE
29	16.3	23.6	11:00a	5.1	11:00p	48.7	0.0	0.00	1.1	25.0	12:30a	NW
30	14.6	22.1	11:00a	7.2	6:00a	50.4	0.0	0.01	4.6	22.0	7:00p	N
31	15.8	22.3	12:00m	6.6	7:00a	49.2	0.0	0.00	3.2	12.0	12:30a	N

	30.1	51.2	9	5.1	29	1083.4	0.0	1.26	5.3	43.0	22	S

Max >= 90.0: 0
 Max <= 32.0: 9
 Min <= 32.0: 26
 Min <= 0.0: 0
 Max Rain: 0.82 ON 12/13/14
 Days of Rain: 7 (>.01 in) 2 (>.1 in) 0 (>1 in)
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

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