

**Monticello, Utah, National
Priorities List Sites
Federal Facility Agreement (FFA)
Quarterly Report:
July 1–September 30, 2013**

October 2013



**U.S. DEPARTMENT OF
ENERGY**

Legacy
Management

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Federal Facility Agreement (FFA) Quarterly Report:
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Abbreviations

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
LMS	Legacy Management Support
LTS&M Plan	<i>Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites</i>
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 near-term status, schedule, and reporting requirements for the Monticello Vicinity Properties (MVP) and the Monticello Mill Tailings Site (MMTS) for the period of July through September 2013. Quarterly reports are submitted to EPA and UDEQ in January (October through December), April (January through March), July (April through June), and October (July through September).

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) assesses the status of the MVP and MMTS remedies through routine inspections that are conducted in accordance with the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (LTSM Plan) and through routine monitoring of the groundwater remedy that is conducted in accordance with *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface and Ground Water, Monticello, Utah, June 2004*. The schedule and reporting requirements are determined in consultation with EPA and UDEQ and are also documented in *Monticello Site Management Plan* (updated annually).

2.0 Monticello Vicinity Properties

Long-term surveillance and maintenance for the MVP consists of providing radiological control at excavations conducted 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 findings for this quarter are:

- LM representatives continued to coordinate with City of Monticello, UDOT, and utility company officials regarding planned and ongoing construction and excavation activities at roadway and utility corridors.
- No radiological contaminated material was encountered in municipal and UDOT excavations during the period.
- Neither excessive erosion or unauthorized excavations were observed at the Highway 191 embankment at Montezuma Creek (supplemental standards property).
- Surveillance of supplemental standards property MS-00176-VL identified no excessive erosion or violation of the land-use restriction.

3.0 Monticello Mill Tailings Site

Long-term surveillance and maintenance for the MMTS consists of (1) operating the onsite disposal cell, (2) maintaining groundwater and land-use institutional controls on the former mill site and peripheral properties, and (3) operating and monitoring the groundwater and surface water remedy.

3.1 Operable Unit I

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 and manages the former mill site as a public park.

3.1.1 Repository

Monthly and quarterly inspections of the repository ensure that remedy controls remain intact and that the waste remains isolated from the environment. Inspection findings and maintenance activities for the reporting period are:

- No anomalous conditions were observed at the repository. The Repository Area Surveillance Checklists for this quarter are included in Appendix A.
- Water accumulation in Pond 4 remains minimal: a maximum of approximately 1 foot of water is currently present in the northeast and southwest quadrants of Pond 4.
- Repairs to seams and punctures in the side slopes of the upper liner of Pond 4 were completed by a qualified contractor.
- Accumulated debris was removed from the interior of Pond 4.
- Obsolete liner ballast material was removed from the sides and base of Pond 4.
- Oversized rock and cobble material was removed from the berm surrounding Pond 4.
- Material removed from within Pond 4 was placed in the onsite temporary storage facility (TSF).
- Leachate production from the repository to Pond 4 was normal. Leachate production has decreased from approximately 30,000 gallons per week following final waste encapsulation in 1999 to current values of about 1,000 gallons per week or less for each of the two Leachate Collection and Removal System (LCRS) sumps, LCRS 1 and LCRS 2 (see Appendix C for graphical depiction of leachate production history).
- The Pond 4 LCRS received no leachate during the quarter. This is the normal condition. The performance history for the Pond 4 LCRS is summarized as a graph in Appendix C.
- The lower sumps (leak detection system [LDS]) for the repository and Pond 4 received no leachate 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 C.
- All disposal cell and Pond 4 leachate management equipment (pumps, pump controls, monitoring devices, and data transmission devices) are functional. Maintenance of sump-pump controls was accomplished by a qualified electrician in September.

No anomalous conditions were observed for the TSF. The inventory of contaminated material in the TSF is approximately 25 cubic yards. Approximately 4 cubic yards of the contaminated material derives from city-street and utility excavations. 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 were derived from maintenance and repairs to Pond 4 in August 2013.

3.1.2 Former Mill Site

Surveillance of the former mill site is conducted to ensure compliance with institutional controls (ICs) that were implemented to preserve the OU I remedy for soil and groundwater. The ICs restrict groundwater use (no installation of domestic-use wells in the alluvial aquifer) and restrict land use (construction of habitable structures is prohibited, no camping is allowed, and the land must be preserved as a public park). Findings 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. Findings for this quarter are:

- Montezuma Creek Restrictive Easement Area (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) or groundwater-use restrictions (no installation of domestic-use wells in the alluvial aquifer) was observed.
- 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 (in excess of 2.8 inches of rain in a 24-hour period) required nonroutine surveillance of supplemental standards cleanup properties. Climatological data are included in Appendix B.

3.3 Operable Unit III

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

3.3.1 Groundwater Restricted Area

Surveillance of properties where residual groundwater contamination is present is conducted to ensure compliance with groundwater-use restrictions that prevent exposure to contaminated groundwater. The affected properties constitute the Monticello Groundwater Restricted Area, as defined by the State of Utah Division of Water Rights. Surveillance findings for this quarter are:

- No evidence was observed of nonconformance with groundwater-use restrictions (no installation of domestic-use wells in the alluvial aquifer).

3.3.2 Groundwater Remediation

In accordance with the OU III contingency remedy implemented under the January 2009 Explanation of Significant Difference, contaminated alluvial groundwater is extracted and treated on private property approximately 600 feet east of the former mill site. The contaminated groundwater is treated using zero-valent iron in two ex situ treatment vessels. The effluent is discharged to Montezuma Creek. There is also an infiltration trench available for the discharge of limited volumes (2–3 gallons per minute [gpm]) of treated water. Performance of the treatment system, cumulatively and from July through September 2013, is summarized as follows:

- Groundwater extraction to the treatment system was reduced from approximately 9.5 gpm to approximately 5.5 gpm in June 2013. This was done because of reduced aquifer/well yield. The extraction well was re-developed (cyclic surging and pumping) in July 2013.
- Metered inflow to the treatment system confirmed that effluent discharge to Montezuma Creek did not exceed the allowed rate of 10 gpm.
- No treated water was transferred to the infiltration trench during this quarter. Outfall metering to the infiltration trench remained nonfunctional.
- The reactive media was exchanged during the week of September 16, 2013. Flow to the treatment system was discontinued during the previous week to dewater the treatment media before media exchange. Flow to the treatment system resumed on September 18, 2013, to approximately 4 gpm and then was increased to 7 gpm on September 19, 2013.
- The reactive media is exchanged when the effluent concentration of uranium exceeds about 150 micrograms/liter (or about one-half of the influent concentration) or if flow through the treatment vessels is reduced to approximately 5 gpm or less. Media exchange occurs about once per year under current operating conditions.
- Monthly monitoring of the treatment effluent verified that iron concentrations and pH for the quarter were within discharge allowances. Monthly effluent monitoring results for the quarter and the discharge allowances are shown in Table 1.
- The treatment system experienced mechanical or electrical component failure on September 23, 2013. Causal analysis and repair/maintenance are in progress.

Table 1. Treatment System Compliance Summary

Treatment System Effluent to Montezuma Creek	July 2013	August 2013	September 2013
pH ^a	7.5	7.1	7.3
Iron (total, milligrams per liter) ^b	18	18	18

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

^b Iron discharge limit = 45.4 milligrams per liter at outfall to Montezuma Creek

- Approximately 545,000 gallons of groundwater were treated during the quarter. The average monthly treatment rates are shown in Table 2.
- Approximately 1.15 pounds of uranium were removed from the aquifer during the quarter as a result of groundwater extraction and treatment. Table 2 shows the monthly mass of uranium removed from groundwater during the quarter.

Table 2. Treatment System Performance Summary

Treatment Parameter	July 2013	August 2013	September 2013
Gallons treated	220,000	219,000	105,000
Average treatment rate, gpm	4.9	4.9	2.4
Uranium influent, micrograms per liter	320	340	310
Uranium effluent, micrograms per liter	83	66	64
Uranium mass removed, pounds	0.43	0.50	0.22
Cumulative uranium mass removed, pounds	63.8	64.3	64.5
Cumulative volume treated (million gallons)	27.7	28.0	28.1

4.0 Schedule

Table 3 summarizes the schedule of recently completed and pending near-term activities and reporting requirements for the Monticello NPL sites.

Table 3. Schedule of Recently Completed and Near-Term Activities and DOE Deliverables

Activity/DOE Deliverable	Schedule
Recently Completed:	
Monthly monitoring of ex situ groundwater treatment system.	Completed for July, August, and September 2013.
Submit annual groundwater report.	Completed September 25, 2013.
MMTS monthly technical meetings for OU III remedy optimization.	Convened July 11, August 22, and September 19, 2013.
Submit Site Management Plan (Section 5, annual update).	Completed July 30, 2013 (August 1, 2013, penalty milestone).
Semi-annual FFA meeting.	Completed September 19, 2013.
Annual Site Inspection.	Completed in September 2013.
Near-Term:	
Semiannual OU III water quality and hydrologic monitoring.	Scheduled for week of October 14, 2013.
FFA quarterly report: October–December 2013.	DOE to submit by January 10, 2014.
Monthly technical meeting.	Scheduled for November 7, 2013; subsequent dates to be determined.
Annual Site Inspection report.	December 31, 2013 (draft-final to EPA and UDEQ).
Monthly monitoring of ex situ groundwater treatment system.	Next monitoring scheduled for week of October 14, 2013.
Remedial design/remedial action (RD/RA) work plan for OU III groundwater remedy optimization.	Draft to EPA and UDEQ January through March 2014.
OU III contingency remedy optimization construction start.	No later than 1 year after the RD/RA work plan becomes final (this assumes that private property access agreement is established when the RD/RA work plan becomes final).

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Appendix A

Monthly and Quarterly Surveillance Checklists

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Repository Area Surveillance Checklist

Monthly Surveillance _____ Quarterly Surveillance (Feb., May, Aug., Nov.)

_____ Storm Event Triggered Surveillance due to _____ inches of rainfall over the past 24 hours.

Inspection Item	Acceptable (Yes/No)	Comments and Recommendations
Condition of:		
Fences and gates	yes	
Roads ^a	yes	
Signs	yes	
Site monuments	yes	
Drainage ditches ^a	yes	
Manholes	yes	Some signs are fading.
Vegetation	yes	
Evidence of erosion of:		
Top of disposal cell ^a	yes	
Disposal cell sideslopes ^a	yes	
Ditches	yes	
Surrounding area	yes	
Evidence of:		
Vandalism	yes	
Intrusion by livestock	yes	
Burrowing animal damage	yes	
Intrusion by humans	yes	
Accumulation of trash	yes	

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

The cell looks good. The grasses and brush are drying out quickly now as we head to the end of summer.

Signature: *Arund Smith* Date: 7-25-13
 Monticello LM Representative

^aInspections required following a significant storm event

^bOpen to inspect quarterly

Figure 3-5. Example Repository Area Surveillance Checklist

Repository Area Surveillance Checklist

Monthly Surveillance Quarterly Surveillance (Feb., May, Aug., Nov.)

N/A Storm Event Triggered Surveillance due to _____ inches of rainfall over the past 24 hours.

Inspection Item	Acceptable (Yes/No)	Comments and Recommendations
Condition of:		
Fences and gates	<u>yes</u>	_____
Roads ^a	<u>yes</u>	_____
Signs	<u>yes</u>	_____
Site monuments	<u>yes</u>	_____
Drainage ditches ^a	<u>yes</u>	_____
Manholes	<u>yes</u>	<u>Need New Bolton MH S. Man hole is</u>
Vegetation	_____	<u>secure and no concern.</u>
Evidence of erosion of:		
Top of disposal cell ^a	<u>yes</u>	_____
Disposal cell sideslopes ^a	<u>yes</u>	_____
Ditches	<u>yes</u>	_____
Surrounding area	<u>yes</u>	_____
Evidence of:		
Vandalism	<u>yes</u>	_____
Intrusion by livestock	<u>yes</u>	_____
Burrowing animal damage	<u>NO</u>	<u>Prairie Dogs are near transect</u>
Intrusion by humans	<u>yes</u>	<u>E to I</u>
Accumulation of trash	<u>yes</u>	_____

Additional Quarterly Surveillance Requirements

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

Condition of:		
Settlement plate structures	<u>yes</u>	_____
Manholes ^b	<u>yes</u>	_____
Sediment Ponds	<u>yes</u>	_____
Evidence of:		
Structural Instability	<u>yes</u>	_____

Additional Comments

The vegetation on the site looks nice. Site
personnel wants to change the bolts on the manholes
for easier access now that the site is toured less.

Signature Frank Smith

 Monticello LM Representative

Date 8-26-13

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

Figure 3-5. Example Repository Area Surveillance Checklist

Repository Area Surveillance Checklist

X Monthly Surveillance N/A Quarterly Surveillance (Feb., May, Aug., Nov.)

N/A Storm Event Triggered Surveillance due to N/A inches of rainfall over the past 24 hours.

Inspection Item	Acceptable (Yes/No)	Comments and Recommendations
Condition of:		
Fences and gates	<u>yes</u>	
Roads ^a	<u>yes</u>	<u>erosion noted on the outside south road.</u>
Signs	<u>yes</u>	<u>not enough to correct.</u>
Site monuments	<u>yes</u>	
Drainage ditches ^a	<u>yes</u>	
Manholes	<u>yes</u>	<u>old bolts removed & new installation on</u>
Vegetation	<u>yes</u>	<u>manholes 2, 4, & 5.</u>
Evidence of erosion of:		
Top of disposal cell ^a	<u>yes</u>	
Disposal cell sideslopes ^a	<u>yes</u>	
Ditches	<u>yes</u>	
Surrounding area	<u>yes</u>	
Evidence of:		
Vandalism	<u>yes</u>	
Intrusion by livestock	<u>yes</u>	
Burrowing animal damage	<u>yes</u>	<u>prairie dogs continue to be on</u>
Intrusion by humans	<u>yes</u>	<u>top of the repository.</u>
Accumulation of trash	<u>yes</u>	

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

The new road installed this month around the disposal cell is holding up very well in the rain.

Signature Fred Smith Date 9-27-13
 Monticello LM Representative

^aInspections required following a significant storm event

^bOpen to inspect quarterly

Figure 3-5. Example Repository Area Surveillance Checklist

Monthly Pond 4 Surveillance Checklist

Level of Water in Pond 4 2 1/2 inches only at N.E. corner.

Inspection Item	Acceptable (Yes/No)	Comments & Recommendation
Condition of:		
Fences, gates, and locks	<u>yes</u>	
Roads	<u>yes</u>	
Signs	<u>yes</u>	
Visible piping	<u>yes</u>	<u>except as noted by Simbeckt Ass.</u>
Visible liner and anchors	<u>yes</u>	
Rescue equipment	<u>yes</u>	
Evidence of erosion of:		
Top of Pond 4 berm	<u>yes</u>	
Pond 4 sideslopes	<u>yes</u>	
Ditches	<u>yes</u>	
Surrounding area	<u>yes</u>	
Seepage from Pond 4	<u>yes</u>	
Overtopping of Pond 4	<u>yes</u>	
Evidence of:		
Vandalism	<u>yes</u>	
Intrusion by wildlife	<u>yes</u>	<u>Appears to be less burrowing than last month.</u>
Intrusion by humans	<u>yes</u>	
Accumulation of trash	<u>yes</u>	
Additional Comments		
<u>work on pond 4 will commence next month. We will</u>		
<u>clean up the rocks, brush, and debris in pond 4. The</u>		
<u>Ballast Tubes will be removed as per engineering</u>		
<u>direction.</u>		

Monticello I.M Representative [Signature] Date 7-25-13

Figure 3-6. Example Checklist for Monthly Pond 4 Surveillance

Monthly Pond 4 Surveillance Checklist

Level of Water in Pond 4 ~6" NE & SW CORNERS

Inspection Item	Acceptable (Yes/No)	Comments & Recommendation
Condition of:		
Fences, gates, and locks	<u>Yes</u>	
Roads	<u>Yes</u>	
Signs	<u>Yes</u>	
Visible piping	<u>Yes</u>	
Visible liner and anchors	<u>Yes</u>	<u>BALLAST TUBES AND BAGS REMOVED 8-12-13</u>
Rescue equipment	<u>Yes</u>	
Evidence of erosion of:		
Top of Pond 4 berm	<u>Yes</u>	
Pond 4 sideslopes	<u>Yes</u>	
Ditches	<u>Yes</u>	
Surrounding area	<u>Yes</u>	
Seepage from Pond 4	<u>Yes</u>	
Overtopping of Pond 4	<u>Yes</u>	
Evidence of:		
Vandalism	<u>Yes</u>	
Intrusion by wildlife	<u>Yes</u>	
Intrusion by humans	<u>Yes</u>	
Accumulation of trash	<u>Yes</u>	

Additional Comments

MUCH WORK PERFORMED WEEK OF AUG 12, 2013 TO CLEAN-UP AREA. ALL BALLAST TUBES REMOVED ALONG WITH MAJORITY OF SAND BAGS. DEBRIS REMOVED FROM POND FLOOR, AND ROCKS RAKED BACK FROM BERM EDGE TO PREVENT ROCKS FROM ROLLING INTO POND AND DAMAGING LINER.

Monticello LM Representative David Jille Date 8/20/13

Figure 3-6. Example Checklist for Monthly Pond 4 Surveillance

Monthly Pond 4 Surveillance Checklist

Level of Water in Pond 4 2 1/4" N.E. & S.W. corners

Inspection Item	Acceptable (Yes/No)	Comments & Recommendation
Condition of:		
Fences, gates, and locks	<u>yes</u>	
Roads	<u>yes</u>	
Signs	<u>yes</u>	
Visible piping	<u>yes</u>	
Visible liner and anchors	<u>yes</u>	<u>Liner Anchors have been removed</u>
Rescue equipment	<u>yes</u>	<u>and will not be addressed again.</u>
Evidence of erosion of:		
Top of Pond 4 berm	<u>yes</u>	
Pond 4 sideslopes	<u>yes</u>	
Ditches	<u>yes</u>	
Surrounding area	<u>yes</u>	
Seepage from Pond 4	<u>yes</u>	
Overtopping of Pond 4	<u>yes</u>	
Evidence of:		
Vandalism	<u>yes</u>	
Intrusion by wildlife	<u>yes</u>	
Intrusion by humans	<u>yes</u>	
Accumulation of trash	<u>yes</u>	

Additional Comments

The anchor ballasts have been removed. These will not be addressed again. The rain has washed the area where the rocks were raked back from the edge. No new rocks were seen. The annual inspection was completed this month.

Monticello LM Representative [Signature] Date 9-27-13

Figure 3-6. Example Checklist for Monthly Pond 4 Surveillance

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.)?

25 yd. 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: HDPE Ballast tubes and sand bags were removed from pond 4. Most of these materials were placed in the TSF for storage. we had to create an RMA inside the security fence to accommodate the remaining sand bags. These within FS 8-26-13 will be removed when they are bagged in the haul bags.

[Signature]
Signature of Monticello LM Representative

8-26-13
Date of Inspection

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Appendix B
Climatological Summaries

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MONTHLY CLIMATOLOGICAL SUMMARY for JUL. 2013

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	76.4	89.2	5:30p	59.0	6:30a	0.4	11.8	0.00	7.1	31.0	5:00p	N
2	75.1	88.1	5:30p	63.9	3:30a	0.0	10.2	0.00	7.4	25.0	5:30p	S
3	75.5	89.4	5:00p	58.8	4:00a	0.4	10.9	0.00	7.3	31.0	3:30p	SSW
4	76.5	86.7	3:30p	64.4	6:30a	0.0	11.6	0.00	6.0	23.0	11:30a	NW
5	75.1	86.0	5:30p	64.6	6:00a	0.0	10.1	0.00	5.9	31.0	12:00m	W
6	70.8	79.5	1:00p	61.9	6:00a	0.2	5.9	0.11	6.3	31.0	1:00a	S
7	71.9	85.9	6:00p	57.9	6:30a	1.1	8.1	0.00	6.0	39.0	8:00p	SSE
8	74.0	84.8	6:30p	62.2	4:30a	0.2	9.2	0.02	5.7	26.0	4:30p	NNW
9	74.7	87.1	6:00p	62.0	6:30a	0.1	9.8	0.05	5.5	33.0	12:30p	SSW
10	78.1	91.8	6:30p	62.8	6:30a	0.1	13.2	0.00	5.7	24.0	10:30p	W
11	73.3	84.1	4:30p	64.0	12:00m	0.0	8.3	0.03	9.6	28.0	9:30a	SSW
12	70.5	83.8	4:30p	57.6	6:30a	1.7	7.2	0.08	6.8	30.0	10:00p	SSW
13	70.1	82.9	4:00p	56.9	6:30a	1.8	6.9	0.01	5.6	25.0	1:30p	S
14	73.0	84.8	6:00p	64.6	1:30p	0.0	8.0	0.07	4.8	21.0	1:30p	NNE
15	69.6	81.6	4:00p	60.9	11:30p	0.8	5.5	0.37	7.8	24.0	4:00p	SSW
16	66.9	77.6	5:00p	57.5	7:00a	2.0	3.9	0.02	7.8	20.0	9:00a	S
17	70.6	81.7	5:30p	61.5	7:00a	0.4	6.0	0.01	7.3	25.0	11:30a	SSW
18	67.9	83.0	5:30p	58.4	12:00m	2.1	4.9	0.24	6.0	34.0	11:30p	SW
19	69.1	80.2	3:30p	57.7	2:30a	1.8	6.0	0.01	4.0	21.0	11:30p	NNW
20	73.3	87.6	4:30p	61.1	4:00a	0.5	8.8	0.00	6.2	20.0	6:00p	S
21	73.2	86.1	5:00p	61.4	6:30a	0.3	8.4	0.00	8.4	23.0	2:00p	SSW
22	73.8	88.4	5:00p	56.2	7:00a	1.5	10.3	0.00	5.3	22.0	2:00p	S
23	72.1	85.0	3:00p	57.4	6:30a	0.9	8.1	0.00	5.3	23.0	1:00a	SSW
24	71.9	81.7	3:30p	63.7	6:30a	0.1	7.0	0.00	4.0	19.0	11:00p	S
25	71.7	86.2	5:00p	59.8	2:00a	1.1	7.8	0.05	6.6	23.0	5:30p	SSW
26	75.4	87.5	6:00p	61.6	6:30a	0.2	10.6	0.00	7.7	26.0	1:30p	N
27	68.4	81.6	4:30p	60.6	6:30a	1.0	4.4	0.01	9.9	26.0	1:30a	SSW
28	62.9	72.8	11:30a	56.7	11:30p	3.0	0.9	0.65	4.5	22.0	9:30a	SSW
29	63.7	78.8	5:00p	54.2	6:30a	3.7	2.4	0.08	4.8	31.0	5:30p	N
30	66.0	76.2	4:00p	54.1	6:00a	2.8	3.7	0.10	3.2	14.0	5:30p	NW
31	73.2	84.5	3:00p	61.3	2:00a	0.7	8.9	0.00	5.3	26.0	3:30p	W

	71.8	91.8	10	54.1	30	28.9	238.8	1.91	6.3	39.0	7	SSW

Max >= 90.0: 1
 Max <= 32.0: 0
 Min <= 32.0: 0
 Min <= 0.0: 0
 Max Rain: 0.65 ON 07/28/13
 Days of Rain: 13 (>.01 in) 4 (>.1 in) 0 (>1 in)
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for AUG. 2013

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	COOL	AVG			DOM	
	DEG	DEG					WIND	RAIN	SPEED	HIGH	TIME		DIR
1	68.6	78.0	78.0	5:00p	57.5	12:00m	0.6	4.2	5.4	22.0	11:00p	SE	
2	65.6	75.0	75.0	1:30p	56.7	3:00a	2.4	3.0	5.8	22.0	12:30p	SSE	
3	68.1	80.5	80.5	7:00p	60.1	7:30a	1.2	4.3	6.6	28.0	2:00p	S	
4	68.7	80.4	80.4	5:00p	57.8	7:00a	1.2	4.9	5.2	32.0	1:00p	W	
5	67.7	77.4	77.4	12:30p	60.4	6:00a	0.5	3.2	6.7	30.0	2:00p	S	
6	64.8	77.5	77.5	3:30p	58.4	9:30p	2.7	2.5	5.0	20.0	5:00p	S	
7	59.9	71.3	71.3	4:30p	53.4	12:00m	5.4	0.3	6.0	32.0	7:30p	WNN	
8	63.4	75.2	75.2	5:30p	53.5	12:30a	3.5	1.9	5.7	33.0	3:00a	NW	
9	66.8	78.3	78.3	6:00p	54.9	3:30a	2.5	4.3	7.1	27.0	2:30p	SSW	
10	63.3	70.5	70.5	10:00a	55.7	4:00a	2.8	1.1	6.5	25.0	2:30p	SW	
11	63.2	76.1	76.1	6:30p	50.5	7:00a	4.2	2.4	5.8	27.0	3:30p	SSW	
12	63.2	76.0	76.0	2:00p	54.8	5:00a	3.9	2.1	5.8	24.0	5:00p	NW	
13	67.5	78.9	78.9	5:30p	56.6	12:30a	1.7	4.2	5.3	33.0	4:30a	W	
14	70.4	81.0	81.0	5:00p	59.5	5:30a	1.1	6.5	4.5	24.0	6:00p	W	
15	71.8	84.6	84.6	4:00p	57.4	5:30a	1.2	8.1	4.0	15.0	12:30p	W	
16	71.8	85.4	85.4	6:00p	58.6	4:00a	0.7	7.6	4.5	19.0	11:30a	W	
17	70.1	82.6	82.6	5:30p	60.0	7:30a	0.7	5.9	5.1	31.0	7:00p	WSW	
18	68.6	80.4	80.4	3:30p	56.3	2:30a	2.3	5.9	3.3	28.0	2:00p	WSW	
19	72.1	81.4	81.4	6:30p	61.4	6:00a	0.3	7.3	4.3	18.0	3:00p	W	
20	69.9	81.8	81.8	1:00p	59.4	7:00a	0.5	5.4	6.2	29.0	3:00p	NW	
21	69.4	81.8	81.8	12:00p	60.1	12:00m	0.4	4.8	6.0	29.0	10:00p	W	
22	67.7	79.2	79.2	5:00p	56.8	7:00a	1.9	4.6	3.4	17.0	6:30p	NW	
23	68.3	79.2	79.2	3:30p	57.0	7:30a	1.2	4.5	7.9	29.0	4:00p	SSW	
24	65.9	73.3	73.3	3:30p	56.5	12:00m	1.5	2.4	7.3	21.0	3:30p	SSW	
25	57.9	62.1	62.1	2:30p	56.1	3:30a	7.1	0.0	3.4	16.0	2:30p	S	
26	62.2	72.9	72.9	6:30p	56.2	6:00a	4.2	1.4	5.8	17.0	2:30p	S	
27	65.4	77.1	77.1	3:00p	56.8	7:00a	2.6	3.0	5.2	18.0	2:30p	N	
28	68.2	80.7	80.7	5:00p	57.6	5:00a	2.0	5.2	4.8	19.0	1:00p	NNW	
29	70.9	80.7	80.7	12:30p	61.8	3:30a	0.7	6.6	4.2	20.0	1:30p	NW	
30	71.6	84.2	84.2	4:00p	61.9	7:00a	0.3	6.9	3.9	19.0	6:30p	SSE	
31	69.7	81.4	81.4	2:00p	58.4	7:00a	0.8	5.5	3.8	20.0	3:00p	WNN	

	67.2	85.4	85.4	16	50.5	11	62.1	130.0	2.06	5.3	33.0	8	W

Max >= 90.0: 0
 Max <= 32.0: 0
 Min <= 32.0: 0
 Min <= 0.0: 0
 Max Rain: 0.56 ON 08/25/13
 Days of Rain: 10 (>.01 in) 8 (>.1 in) 0 (>1 in)
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for SEP. 2013

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	68.4	80.0	3:00p	57.2	5:30a	1.5	4.9	0.00	5.4	24.0	3:30p	SSW
2	70.0	81.6	3:30p	58.9	4:00a	1.1	6.1	0.00	5.9	24.0	12:30p	SSW
3	69.7	80.3	4:30p	61.3	6:30a	0.5	5.2	0.00	4.8	21.0	2:00p	W
4	73.1	84.7	5:30p	61.2	7:30a	0.3	8.4	0.00	3.4	15.0	12:30p	W
5	72.8	83.9	3:30p	60.5	7:30a	0.2	8.0	0.00	5.8	21.0	4:00p	SSW
6	72.1	85.7	3:30p	58.4	5:30a	0.9	8.0	0.00	4.6	18.0	4:00p	W
7	73.6	84.3	3:30p	59.0	7:00a	0.3	8.9	0.00	6.4	21.0	11:30p	S
8	64.4	70.8	3:00p	58.8	12:00m	1.8	1.2	0.00	5.0	26.0	3:00p	S
9	59.5	64.9	12:00p	53.9	12:00m	5.5	0.0	0.65	4.2	20.0	12:00p	NNE
10	57.3	63.9	3:30p	53.6	12:30a	7.7	0.0	0.55	5.6	19.0	12:30p	S
11	60.2	68.2	4:30p	55.8	6:00a	5.2	0.4	0.02	5.4	22.0	10:30p	SSW
12	60.8	71.3	5:30p	52.4	2:00a	5.2	1.1	0.01	3.0	17.0	11:30a	W
13	60.8	71.2	4:30p	52.9	4:30a	5.3	1.1	0.00	6.7	22.0	5:00p	SSW
14	56.9	66.5	4:30p	52.2	12:00m	8.2	0.0	0.79	5.4	18.0	2:30p	S
15	57.2	68.0	4:00p	50.9	7:30a	8.0	0.2	0.00	5.0	27.0	4:30p	SSW
16	60.9	71.9	5:00p	51.7	4:00a	5.3	1.3	0.00	4.1	19.0	2:30p	W
17	62.0	71.6	4:30p	54.7	2:30a	3.8	0.8	0.00	6.9	27.0	11:30a	SSW
18	62.0	73.7	5:30p	54.0	4:00a	4.3	1.3	0.03	4.2	27.0	3:00p	ESE
19	59.3	68.9	5:00p	48.2	7:00a	6.2	0.6	0.00	6.6	21.0	9:00a	NW
20	60.1	73.6	4:00p	46.3	7:30a	7.2	2.2	0.00	4.4	20.0	4:30p	NW
21	61.1	73.0	3:30p	50.7	7:30a	5.7	1.8	0.00	5.3	28.0	12:00p	S
22	51.1	59.3	11:30a	42.0	10:30p	13.9	0.0	0.60	5.7	41.0	9:00p	SSW
23	50.3	59.4	3:30p	39.2	7:30a	14.7	0.0	0.00	6.6	24.0	11:00a	NNW
24	53.5	64.6	4:30p	41.0	6:30a	11.5	0.0	0.00	6.0	22.0	3:30p	S
25	58.1	70.5	5:00p	43.5	4:00a	7.8	0.9	0.00	13.6	42.0	1:00p	SSW
26	56.8	67.0	4:00p	46.5	7:30a	8.3	0.1	0.07	17.5	44.0	3:30p	SSW
27	43.6	49.9	4:00p	35.2	10:30p	21.4	0.0	0.08	7.3	25.0	4:30p	NW
28	44.2	58.1	4:30p	33.3	7:00a	20.8	0.0	0.00	5.5	20.0	12:30a	NNW
29	51.5	63.1	4:00p	37.3	5:30a	13.5	0.0	0.00	6.9	27.0	2:30p	S
30	57.9	68.5	3:30p	44.8	7:30a	7.6	0.5	0.00	7.4	22.0	3:30p	S

	60.3	85.7	6	33.3	28	203.7	63.0	2.80	6.2	44.0	26	S

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

Max Rain: 0.79 ON 09/14/13

Days of Rain: 8 (>.01 in) 4 (>.1 in) 0 (>1 in)

Heat Base: 65.0 Cool Base: 65.0 Method: Integration

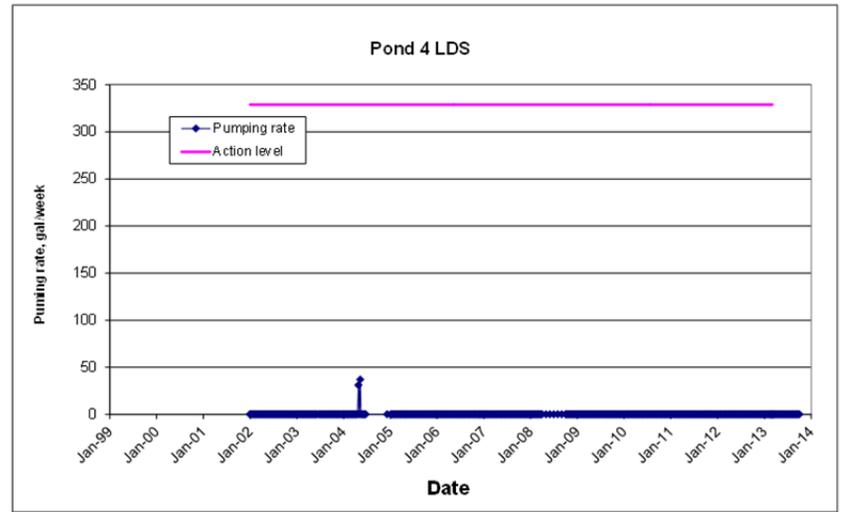
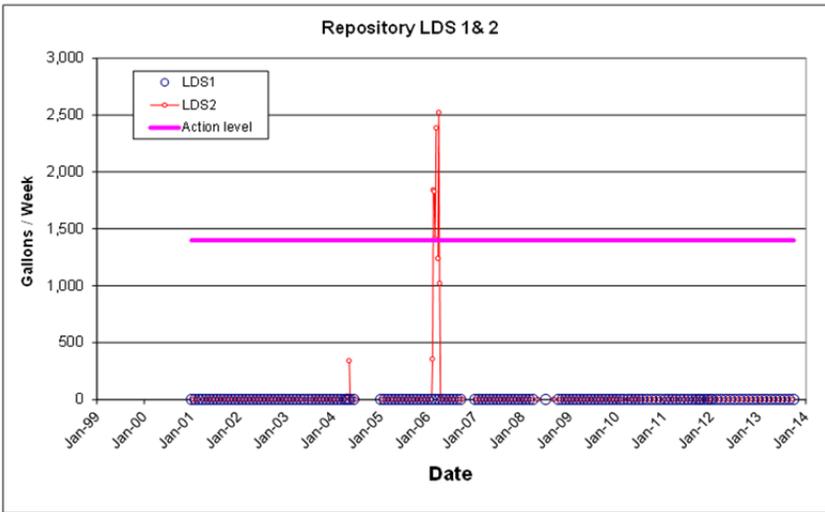
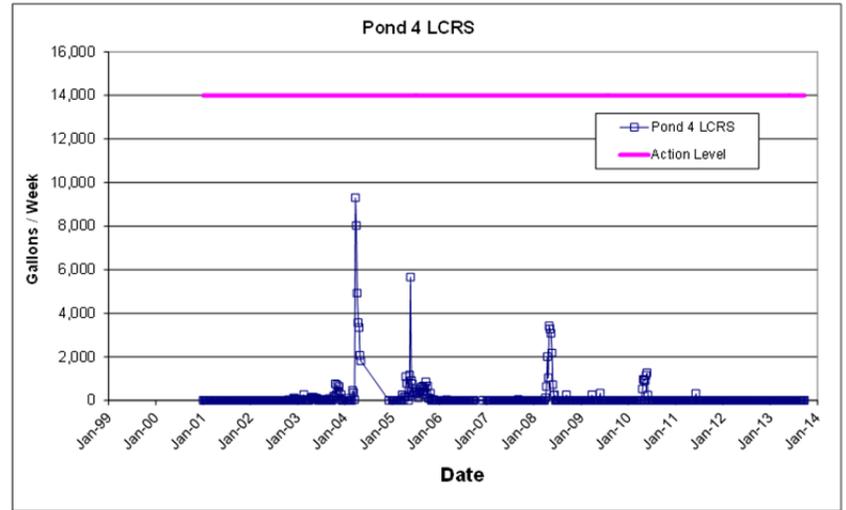
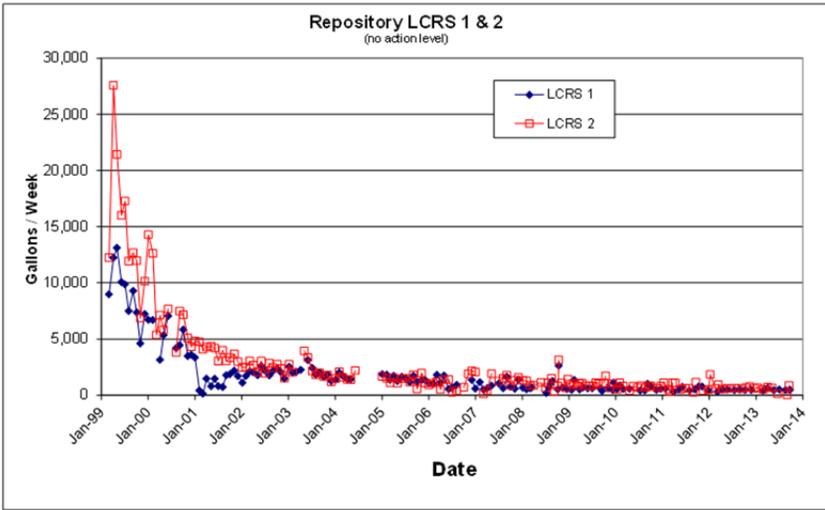
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Appendix C

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

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



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