LMS/MNT/S14775

Fifth Five-Year Review Report for Monticello Mill Tailings (USDOE) Site San Juan County Monticello, Utah

June 2017

U.S. DEPARTMENT OF ENERGY | Legacy Management

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for
Monticello Mill Tailings (USDOE) Site
San Juan County
Monticello, Utah

June 2017

Approved by: Date:

JASON NGUYEN
2017.07.24 13:19:34
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Jason Nguyen
Monticello Site Manager
U.S. Department of Energy, Office of Legacy Management

Concurrence Letter Enclosed July 25, 2017
U.S. Environmental Protection Agency

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
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Ref: 8EPR-SR JUN 20 2017

Jason Nguyen
Monticello Site Manager
US Department of Energy, Office of Legacy Management
2597 Legacy Way
Grand Junction, Colorado 81503

Re: Five Year Review Report for Monticello Mill Tailings US DOE Site, San Juan County, Utah

Dear Mr. Nguyen:

Thank you for submitting the Five-Year Review Report for Monticello Mill Tailings (MMTS) US DOE Site, San Juan County, Utah. The U.S. Environmental Protection Agency in consultation with the State of Utah concurs with your assessment that the remedy at this site is protective of human health and the environment. This information will be included in the EPA's annual Superfund Five-Year Review Report to Congress.

No issues or recommendations relating to this Five-Year Review are being tracked in the EPA's Superfund Environmental Management System (SEMS). The environmental indicator for this site is "current human exposure is controlled and a protective remedy is in place."

The due date for the next five-year review report will be June 20, 2022.

Sincerely,

Betsy Smidinger
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

cc: Michael Storck, UDEQ

Contents

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Attachments

Abbreviations

AOA	area of attainment
ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
COC	contaminant of concern
DOE	U.S. Department of Energy
DRCP	Deed Restriction City Property
EEP	Environmental Epidemiology Program
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Difference
FFA	Federal Facility Agreement
ft	feet
gpm	gallons per minute
GRO	groundwater remedy optimization
GTB	Groundwater Transfer Building
ICs	institutional controls
IRA	interim remedial action
LM	Office of Legacy Management
LTS&M	Long-Term Surveillance and Maintenance
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MMTS	Monticello Mill Tailings Site
MNA	monitored natural attenuation
mrem/yr	millirem per year
MRL	minimal risk level
MVP	Monticello Vicinity Properties
NPL	National Priorities List
OU	Operable Unit
pCi/g	picocuries per gram
pCi/L	picocuries per liter
PHA	Public Health Assessment
PRB	permeable reactive barrier

^{226}Ra	radium-226
RAO	remedial action objective
RBCs	risk-based concentrations
RI/FS	Remedial Investigation/Feasibility Study
RIA/FFS	Remedial Investigation Addendum/Focused Feasibility Study
ROD	Record of Decision
SFMP	Surplus Facilities Management Program
SOARS	system operation and analysis at remote sites
^{230}Th	thorium-230
UDEQ	Utah Department of Environmental Quality
UDOH	Utah Department of Health
UU/UE	unlimited use and unrestricted exposure
VMTE	Victims of Mill Tailings Exposure

Executive Summary

This report documents the fifth Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Review for the U.S. Department of Energy's (DOE) Monticello Mill Tailings Site (MMTS) in Monticello, Utah. The MMTS was placed on the U.S. Environmental Protection Agency (EPA) National Priorities List (NPL) on November 21, 1989. The MMTS is composed of three operable units (OUs) designated for cleanup. OU I consists of (1) the 78-acre former uranium and vanadium ore mill (mill site) that was contaminated with radioactive mill tailings and milling-related byproduct materials, and (2) the 90-acre engineered repository used for permanent disposal of contaminated materials resulting from the remediation of the MMTS and its companion NPL site, the Monticello Radioactively Contaminated Properties, also known as the Monticello Vicinity Properties (MVP) site. OU II consists of approximately 1700 acres of land peripheral to the former mill site that were contaminated by mill tailings through wind and water deposition. OU III consists of surface water and groundwater contaminated as a result of mill activities.

A Record of Decision (ROD) for OU I and OU II (combined) was issued in 1990 and for OU III in 2004. A Federal Facility Agreement between EPA, the Utah Department of Environmental Quality (UDEQ), and DOE, signed in December 1988, provides the regulatory framework for implementing the RODs through a consultative process between the parties. DOE is the lead agency for remediation, with oversight provided by EPA and UDEQ.

Five-year reviews are conducted for the MMTS, as mandated by CERCLA, because contamination remains in place that prevents unlimited use and unrestricted exposure (UU/UE) for portions of the site; those contaminated areas are described below. The review was conducted to determine if the selected remedies remain protective of human health and the environment. The period for this review, conducted in accordance with EPA guidance, is October 10, 2016, through June 20, 2017, and is based on information for the time period of June 20, 2012, to March 29, 2017 (date comments were received from EPA and UDEQ). This review was conducted by DOE as the CERCLA lead agency under Executive Order 12580, with assistance from EPA and UDEQ.

MMTS Operable Units I and II

The remedy for MMTS OU I and OU II was selected in the ROD. The primary component of the remedy was the removal of contaminated soil, sediment, and processing byproduct materials from the mill site and peripheral properties with permanent disposal of those materials in an onsite repository. Remedial action was completed in August 1999; encapsulation of contaminated materials within the onsite repository was completed in May 2000. Contamination remains on some properties and does not allow UU/UE.

OU II properties without surface water or groundwater contamination were deleted on October 14, 2003. The MMTS OU I mill site and OU II peripheral properties that have contaminated surface water or groundwater (OU III) were not deleted. The OU I DOE repository property, which does not have contaminated surface water or groundwater, was also not deleted.

MMTS Operable Unit III

The remedy for OU III, selected in 2004, was monitored natural attenuation with institutional controls (ICs) to restrict groundwater use. The primary purpose of the remedy was to limit exposure to contaminated groundwater while water quality restoration progressed by natural processes. Cleanup goals for groundwater and surface water are based on risk-based and federal and state standards.

By 2007, DOE recognized that the restoration progress did not meet performance metrics specified in the ROD. Therefore, as set forth in the ROD, a contingency remedy was implemented to evaluate the feasibility of active groundwater remediation to meet remedial action objectives. The contingency remedy, implemented through an Explanation of Significant Difference (ESD) in 2009, adopted two previously installed technology demonstration projects: (1) an in situ permeable reactive barrier and (2) an ex situ treatment system. ICs that were part of the initial OU III remedy continued as part of the contingency remedy.

The contingency remedy was further enhanced in 2014 with the installation of a more aggressive pump-and-treat remediation system (or groundwater remedy optimization system [GRO]) in a focused area (area of attainment) of the contaminant plume. The system became fully operational in January 2015, and use of the ex situ treatment system was suspended indefinitely. The permeable reactive barrier remains as a component of the contingency remedy.

MMTS Remedy Protectiveness

- The remedy at OU I is protective. Contamination in the mill area has been removed to an onsite waste repository, the engineered repository is effective in eliminating exposure to contaminants, long-term surveillance and maintenance takes place to maintain the remedy, and ICs are in place which protect the remedy and prevent new exposures.
- The remedy at OU II is protective. Contaminated soil was removed or contained, and ICs are in place to prevent additional exposure where contaminated soils remain under supplemental standards.
- The remedy for OU III is protective. Treatment is effective in removing contamination from groundwater, and ICs are in place to prevent use of contaminated groundwater.
- Sitewide: Because the remedy for each of the OUs at the MMTS is protective, the overall site is protective of human health and the environment.

Based on this Five-Year Review, the remedies for OU I, OU II, and OU III are functioning as intended and the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives are still valid. No other information has come to light that brings into question the protectiveness of the remedies. This Five-Year Review assessment concludes that the MMTS remedies continue to be protective of human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Monticello Mill Tailings (USDOE)		
EPA ID: UT3890090035		
Region: 8	**State:** Utah	**City/County:** Monticello/San Juan

SITE STATUS	
NPL Status: Partially deleted from the NPL: OU II properties without surface water or groundwater contamination were deleted on October 14, 2003. OU I, OU II properties underlain by contaminated groundwater and OU III are not eligible at this time for deletion from the NPL.	
Multiple OUs? Yes; OU I, OU II, OU III	**Has the site achieved construction completion?** Yes; September 2004

REVIEW STATUS
Lead agency: Other Federal Agency **If "Other Federal Agency" was selected above, enter Agency name:** United States Department of Energy (DOE)
Author name (Federal or State Project Manager): Jason Nguyen
Author affiliation: DOE Office of Legacy Management (LM)
Review period: October 10, 2016, through June 20, 2017
Date of site inspection: September 12 and 13, 2016
Type of review: Statutory
Review number: Five
Triggering action date: June 20, 2012 (end of fourth MMTS five-year review period)
Due date *(five years after triggering action date)*: June 20, 2017

Five-Year Review Summary Form (continued)

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU I, OU II, and OU III
Issues and Recommendations Identified in the Five-Year Review:

OU(s): None	**Issue Category:** Not applicable			
	Issue: Not applicable			
	Recommendation: Not applicable			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	No	Not applicable	Not applicable	Not applicable

Protectiveness Statement(s)

- The remedy at OU I is protective. Contamination in the mill area has been removed to an onsite waste repository, the engineered repository is effective in eliminating exposure to contaminants, long-term surveillance and maintenance takes place to maintain the remedy, and institutional controls (ICs) are in place which protect the remedy and prevent new exposures.
- The remedy at OU II is protective. Contaminated soil was removed or contained, and ICs are in place to prevent additional exposure where contaminated soils remain under supplemental standards.
- The remedy for OU III is protective. Treatment is effective in removing contamination from the groundwater, and ICs are in place to prevent use of contaminated groundwater.
- Sitewide: Because the remedy for each of the OUs at the MMTS is protective, the overall site is protective of human health and the environment.

Sitewide Protectiveness Statement (if applicable)

The MMTS remedies for OU I, OU II, and OU III are protective of human health and the environment.

1.0 Introduction

This report documents the fifth Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Review for the U.S. Department of Energy's (DOE) Monticello Mill Tailings Site (MMTS) in Monticello, Utah. The review was conducted to determine if the selected remedies remain protective of human health and the environment. This report covers the period from June 20, 2012, through June 20, 2017.

Five-Year Reviews are conducted for MMTS, as mandated by CERCLA, because contamination remains in place that prevents unlimited use and unrestricted exposure (UU/UE) for portions of the site. Contamination remains at the Operable Unit (OU) I repository and at OU II: 1) along parts of Montezuma Creek, 2) at properties containing mature piñon juniper forest, and 3) at properties with site-specific standards. Contamination in groundwater and surface water associated with OU III also prevents UU/UE. All other properties associated with the MMTS were cleaned up to meet standards allowing UU/UE. Those standards have not changed and the properties meeting the standards are still suitable for UU/UE.

CERCLA Section 121 (c) states the following:

> If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such review, and any actions taken as a result of such reviews.

The U.S. Environmental Protection Agency (EPA) interpreted this requirement further in the National Contingency Plan (Title 40 *Code of Federal Regulations* [CFR] Part 300.430[f][4][ii]), which states:

> If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

As the CERCLA lead agency under Executive Order 12580, DOE conducted this review with assistance from EPA and the Utah Department of Environmental Quality (UDEQ). This Five-Year Review of the MMTS was conducted based on current guidance provided by EPA.[1]

[1] *Comprehensive Five-Year Review Guidance* (EPA 2001), IC guidance supplement, *Recommended Evaluation of Institutional Controls: Supplement to the 'Comprehensive Five-Year Review Guidance'* (EPA 2011a), and the *Five-Year Review Summary* form (EPA 2011b). The *Five-Year Review Recommended Template* (EPA 2016a) was considered in preparing this review; however, that document remains under EPA review for potential application to federal facilities sites subject to EPA oversight.

The DOE Office of Legacy Management (LM) site manager conducted the review with the assistance of DOE contractor personnel. A separate but concurrent Five-Year Review was conducted for the Monticello Radioactively Contaminated Properties site, also known as the Monticello Vicinity Properties (MVP) site, the companion National Priorities List (NPL) site in Monticello. The site inspection for this Five-Year Review, conducted on September 12–13, 2016, corresponds to the most recent of the annual site inspections performed by DOE.

2.0 Site Chronology

The main events leading to the formation and remediation of the MMTS, and significant activities thereafter, are summarized chronologically in Table 1.

Table 1. Chronology of MMTS Events

Event	Date
Vanadium and uranium ore milling at the Monticello mill resulted in four tailings piles. Operations and tailings piles resulted in contamination of soils, buildings, processing equipment, surface water and groundwater, and peripheral properties.	1941–1960
AEC, a predecessor agency of the DOE, regraded and stabilized the tailings piles. Fill dirt and rock were spread over the tops and sides of all tailings piles.	1964
Contaminated soils were removed from surrounding ore-storage areas and used as fill material to partially bury the mill foundations.	1965
AEC began radiological surveys of Monticello properties.	1971
Monticello mill accepted into the DOE Surplus Facilities Management Program as a government facility retired from service but still containing radioactive contamination.	1980
Monticello Remedial Action Project, which included the mill site, mill site peripheral properties, and vicinity properties, was established.	1980
The Monticello Remedial Action Project was separated into the Monticello Radioactively Contaminated Properties site, also known as the MVP site and the MMTS.	1983
Federal Facility Agreement Pursuant to CERCLA Section 120 (FFA) signed by the EPA, Utah Department of Health, and DOE to establish roles and responsibilities for conducting remedial actions at the MMTS (DOE 1988).	December 1988
The MMTS was placed on the NPL.	November 21, 1989
Final Remedial Investigation/Feasibility Study–Environmental Assessment for the Monticello, Utah, Uranium Mill Tailings Site, which analyzed remedial action alternatives for OU I and OU II of the MMTS, are completed (DOE 1990a).	January 1990
Monticello Mill Tailings Site Declaration for the Record of Decision and Record of Decision Summary (ROD), selecting remedies for OU I and OU II, is signed (DOE 1990b). OU III is designated.	September 1990
MMTS OU I and OU II remedial actions initiated.	1992
MMTS OU III RI/FS initiated.	1992
Selection of the onsite disposal alternative is finalized by DOE.	December 22,1994
ESD issued to explain increased scope and costs of remediation for MMTS OU I.	April 1995
Pre-final design and specification package for mill site remediation completed.	April 28, 1995
EPA notification of stipulated penalty against DOE (in accordance with the FFA) for non-compliant discharges into Montezuma Creek.	May 1995
Repository construction initiated.	October 27, 1995
U.S. Environmental Protection Agency Region VIII Hazardous Waste Management Division Five-Year Review (Type Ia), Monticello Mill Tailings Site, San Juan County, Utah, first CERCLA Five-Year Review report completed (EPA 1997).	February 13, 1997

Table 1. Chronology of MMTS Events (continued)

Event	Date
Four MVP sites were administratively transferred to MMTS to accommodate construction of the repository (MS-01040, MS-01041, MS-01042, and MS-01080).	April 1997
Remediation of the mill site started.	May 1997
MMTS OU III RI/FS completed and *Record of Decision for an Interim Remedial Action at the Monticello Mill Tailings Site, Operable Unit III - Surface Water and Ground Water, Monticello, Utah, GJO-98-51-TAR* signed (DOE 1998c). The Interim ROD implemented an IRA until the OU III ROD was issued.	August 1998
ESD issued to provide rationale for applying supplemental standards to MMTS OU II properties in which contamination was left in place. Rationale for applying supplemental standards is found in *Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek* (DOE 1999a) and *Application for Supplemental Standards for Government-Owned Properties in Monticello, Utah, DOE ID Nos. MP-00391-VL, MP-01041-VL, and MP-01077-VL* (DOE 1999b).	February 1999
Ground-Water Management Policy for the Monticello Mill Tailings Site and Adjacent Areas (State of Utah 1999) issued by the Utah State Engineer. The policy established the groundwater restricted area and serves as an institutional control to prohibit the use of contaminated groundwater for domestic purposes.	May 21, 1999
Remediation of soil and sediment contamination from MMTS properties in the Montezuma Creek canyon, originally part of OU III remedy, was transferred for inclusion under the OU II remedy.	Spring 1999
Cooperative Agreement DE-FC13-99GJ79485 between the City of Monticello and the U.S. Department of Energy (DOE and City of Monticello 1999) signed. The agreement includes specifications for restoration of the mill site.	June 1999
Permeable reactive barrier treatability study started for OU III.	June 1999
Tailings removal completed from OU I and OU II.	August 1999
Covenant Deferral Request allowing transfer of federal property prior to completion of cleanup activities signed.	February 6, 2000
Transfer of mill site and other peripheral properties from DOE to the City of Monticello completed through a quitclaim deed. Some restrictions in the deed serve as ICs to restrict groundwater use. Some restrictions are related to site-specific cleanup standards. Other restrictions are related to land transfer, not contamination.	June 28, 2000
Repository construction completed (OU I).	July 30, 2000
Remedial Action Report for Monticello Mill Tailings Site National Priorities List Site Operable Unit II Non-Surface and Ground-Water Impacted Peripheral Properties Proposed for Partial Deletion: MP-00105-VL, MP-00178-RS, MP-00180-CS, MP-00198-VL, MP-00211-VL, MP-00845-VL, MP-00886-VL, MP-00887-VL, MP-00888-VL, MP-00947-VL, MP-00948-VL, MP-00949-RS, MP-00950-VL, MP-00963-OT, MP-00964-VL, MP-00988-VL, MP-01040-VL, MP-01041-VL, MP-01042-VL, MP-01081-VL, MP-01083-MR, and MP-01102-VL, (DOE 2001) issued. Established "construction complete" status for 22 OU II properties where surface water and groundwater contamination do not exist.	April 2001
Mill site restoration completed (OU I).	August 2001
MVP and MMTS transferred to DOE's LTS&M Program.	October 1, 2001
LTS&M Plan for the Monticello NPL Sites issued.	April 2002
Second CERCLA Five-Year Review report completed.	June 2002
MMTS OU II non-surface and groundwater impacted peripheral properties deleted from the NPL.	October 14, 2003
After LM is formed, MVP and MMTS transferred to LM for LTS&M.	December 2003
MMTS OU III RI/FS interim action implemented.	September 1998–January 2004
Monticello Mill Tailings Site, Operable Unit III Remedial Investigation Addendum/Focused Feasibility Study finalized (DOE 2004a).	January 2004

Table 1. Chronology of MMTS Events (continued)

Event	Date
Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface Water and Groundwater signed (DOE 2004b).	May 2004
Remedial Action Report for Monticello Mill Tailings (USDOE) Site National Priorities List Site Operable Units I and II Surface and Ground Water Impacted Properties (Soil and Sediment Remediation): MP-00179-VL, MP-00181-OT, MP-00391-VL, MS-00893-OT (the former millsite), MP-00951-VL, MP-00990-CS, MG-01026-VL, MG-01027-VL, MG-01029-VL, MG-01030-VL, MG-01033-VL, MP-01077-VL, MP-01084-VL issued (DOE 2004c).	August 2004
Remedial Action Report for Monticello Mill Tailings (USDOE) Site Repository (DOE 2004d) issued.	August 2004
MMTS OU III IRA report issued documenting interim action is complete.	September 2004
Preliminary Close Out Report Monticello Mill Tailings (USDOE) Site Operable Units I, II, and III issued (DOE 2004e). Established "construction complete" status for OU I properties, 12 OU II properties where contaminated surface water or groundwater is present, and OU III.	September 29, 2004
Ex situ groundwater treatment system installed as a treatability study for OU III.	2005
Ex situ groundwater treatment system expanded.	2007
Cooperative Agreement between DOE and City of Monticello extended to December 31, 2016.	April 2007
Third CERCLA Five-Year Review report completed.	June 2007
Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites updated, consolidated from volumes I–IV, April 2002 (DOE 2007a). The plan established procedures for conducting LTS&M at the MMTS to ensure that the remedy remains protective.	June 2007
MMTS OU III Analysis of Uranium Trends in Groundwater issued, confirming that ROD's specified performance metrics were not met for groundwater restoration.	August 2007
Explanation of Significant Difference (ESD) for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface Water and Ground Water (DOE 2009a) issued to implement the contingency remedy for MMTS OU III.	January 2009
Monticello Mill Tailings Site Operable Unit III Water Quality Compliance Strategy (DOE 2009b) issued.	December 2009
Fourth Five-Year Review Report for Monticello Mill Tailings (USDOE) Site, City of Monticello, San Juan County, Utah (DOE 2012) completed.	June 2012
Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan, for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah (State of Utah 2014) issued.	February 2014
Groundwater remediation system expanded in area of attainment under *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan, for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah* (DOE 2014).	January 2015
Seep 6 sampling by DOE.	September 2015
Remedial Action Completion Report for Operable Unit III Groundwater Contingency Remedy Optimization System, Monticello Mill Tailings Site, Monticello Site (DOE 2016a) issued.	May 2016
Cooperative Agreement between DOE and City of Monticello extended to March 31, 2022.	March 31, 2017
Revision to LTS&M Plan.	To Be Determined

Abbreviations:
AEC = U.S. Atomic Energy Commission
FFA = Federal Facilities Agreement
ICs = institutional controls
IRA = interim remedial action
LTS&M = Long-Term Surveillance and Maintenance
NPL = National Priorities List
RI/FS = Remedial Investigation/Feasibility Study
ROD = Record of Decision

3.0 Background

Figure 1 shows the location of the MMTS and its component properties.

3.1 Physical Characteristics

The population of Monticello is about 1970 permanent residents (U.S. Census 2010). The former mill site and surrounding properties are situated in and along the valley of Montezuma Creek, a small perennial stream that flows eastward from its origins in the Abajo Mountains, which rise to 11,000 feet (ft) about 5 miles west of the site. In the western part of MMTS, the valley is relatively broad and gentle and contains the site of the former uranium and vanadium ore mill (mill site). The mill site comprises 110 acres at an average elevation of about 7000 ft. Eastward, the valley transitions to a steep canyon. The climate is semi-arid with four distinct seasons. Precipitation occurs mainly during late-summer and spring storms. Native woody vegetation is dominated by oak brush, piñon/juniper, sagebrush, and rabbitbrush. Dense willows line much of the riparian zone of Montezuma Creek. Wetlands in the vicinity of Montezuma Creek are considered to be environmentally sensitive areas, as are the mature stands of piñon and juniper forest on and near the MMTS.

3.2 Land and Resource Use

Monticello is the seat of San Juan County and also the location of district offices of the U.S. Bureau of Land Management and the U.S. Forest Service. Natural resource use in the area includes recreation, agriculture, and domestic and agricultural use of surface water and groundwater. Montezuma Creek does not support fish and does not contain sufficient flow to support recreational activities such as boating. No mineral, energy, or timber extraction exists within the MMTS. Land use within the MMTS includes ranching, farming, residential, and recreational. Much of the land surrounding Monticello and the MMTS is open range, ranchland, or is cultivated for dry-land farming.

Ownership of the OU I mill site and several adjacent OU II peripheral properties was transferred from DOE to the City of Monticello in June 2000 through the Federal Lands to Parks Program. Transferred lands, identified in Figure 1 as the Deed Restriction City Properties (DRCPs), are managed by the City as a public, day-use park as a condition of the land transfer.

The contaminated, shallow alluvial aquifer underlying portions of the MMTS has no current or historical use because of poor yield. Alternate sources of domestic water are readily available within OU III (the municipal water supply and uncontaminated bedrock aquifer sources). Surface water from Montezuma Creek is diverted in several locations for agricultural uses.

3.3 History of Contamination

The Monticello mill was constructed in 1941 by the Vanadium Corporation of America, with assistance from the federal government, and it provided vanadium during World War II. The Vanadium Corporation of America operated the mill until early 1944, and again from 1945 through 1946 to also extract uranium. In 1948, the U.S. Atomic Energy Commission, a predecessor agency of DOE, purchased the site and resumed uranium and vanadium ore milling in 1949. Vanadium processing ceased in 1955, but uranium milling continued until 1960 when

the mill was permanently closed. Mill tailings, the pulverized remnants of the processed ore, contain potentially hazardous radiological and non-radiological constituents. The mill tailings were impounded at four tailings piles at the former mill during and after operation. A salt-roast and carbonate-leach milling process generated tailings until approximately 1955. After 1955, wastes were later generated from an acid leach and carbonate-leach process. Approximately 1 million tons of ore were processed at the mill.

While the mill operated, some tailings were removed to properties in Monticello for use in construction projects and as fill for open land. The MVP site includes these affected properties. Some mill tailings were also dispersed from the mill site, primarily by wind and water erosion, to surrounding and downstream properties. Eventually these affected peripheral properties were included in MMTS OU II.

In addition, radiological and non-radiological constituents were mobilized from the tailings piles by residual process water and percolating rainwater to contaminate the underlying alluvial aquifer and Montezuma Creek. The bedrock aquifer underlying the alluvial aquifer is not contaminated.

3.4 Initial Response

Cleanup actions at the site before a Record of Decision (ROD) was issued included initial cleanup actions by the U.S. Atomic Energy Commission in the 1960s and activities conducted by DOE under the Surplus Facilities Management Program (SFMP) in the 1980s. These responses predated inclusion of the affected properties (later defined as OU I and OU II) on the NPL. Specific initial response actions are described in Table 1 (Section 2.0).

Prior to issuance of *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface Water and Groundwater, Monticello, Utah* (DOE 2004b), an Interim ROD, *Record of Decision for an Interim Remedial Action at the Monticello Mill Tailings Site, Operable Unit III - Surface Water and Ground Water, Monticello, Utah, GJO-98-51-TAR* (DOE 1998c), describing an interim remedial action (IRA) was in place. The IRA was implemented until the full impact of ongoing surface remediation of OU I and OU II on the groundwater and surface water could be assessed. Interim actions included: 1) dewatering and treating the alluvial aquifer on the mill site, 2) implementing groundwater institutional controls (ICs) to preclude extraction of contaminated groundwater from the shallow alluvial aquifer for domestic purposes,[2] 3) implementing a permeable reactive barrier (PRB) treatability study,[3] 4) monitoring and data collection, 5) groundwater modeling, and 6) updating the human health and ecological risk assessments. The results of these interim actions, reported in *Monticello Mill Tailings Site, Operable Unit III Remedial Investigation Addendum/Focused Feasibility Study* (RIA/FFS) (DOE 2004a), provided the remaining information necessary to select the OU III remedy.

[2] These ICs were incorporated into the OU III ROD in 2004 (Section 4.1.2).
[3] The PRB was incorporated into the OU III contingency remedy in 2009 (Section 4.1.3).

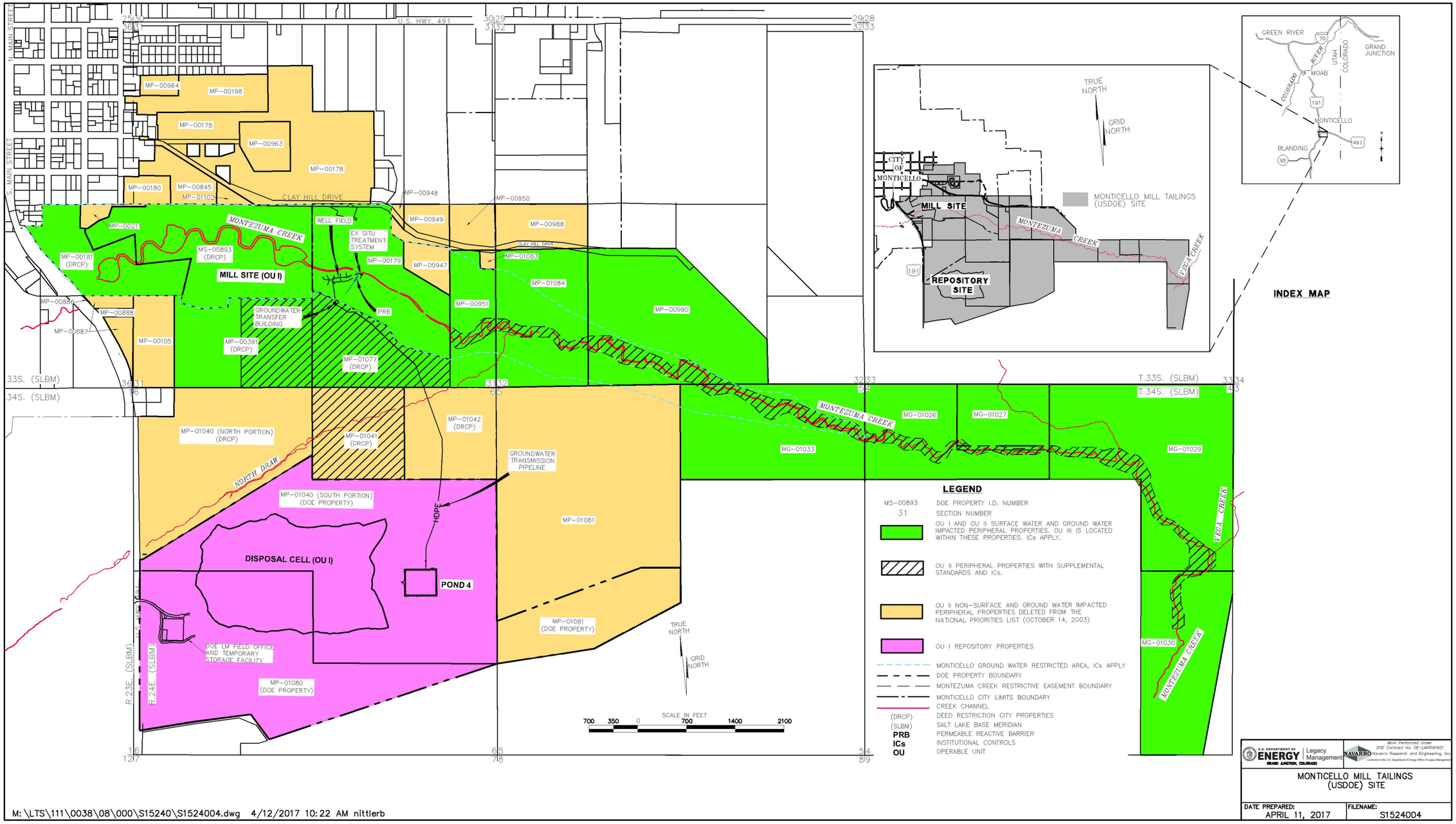

Figure 1. Monticello Mill Tailings Site

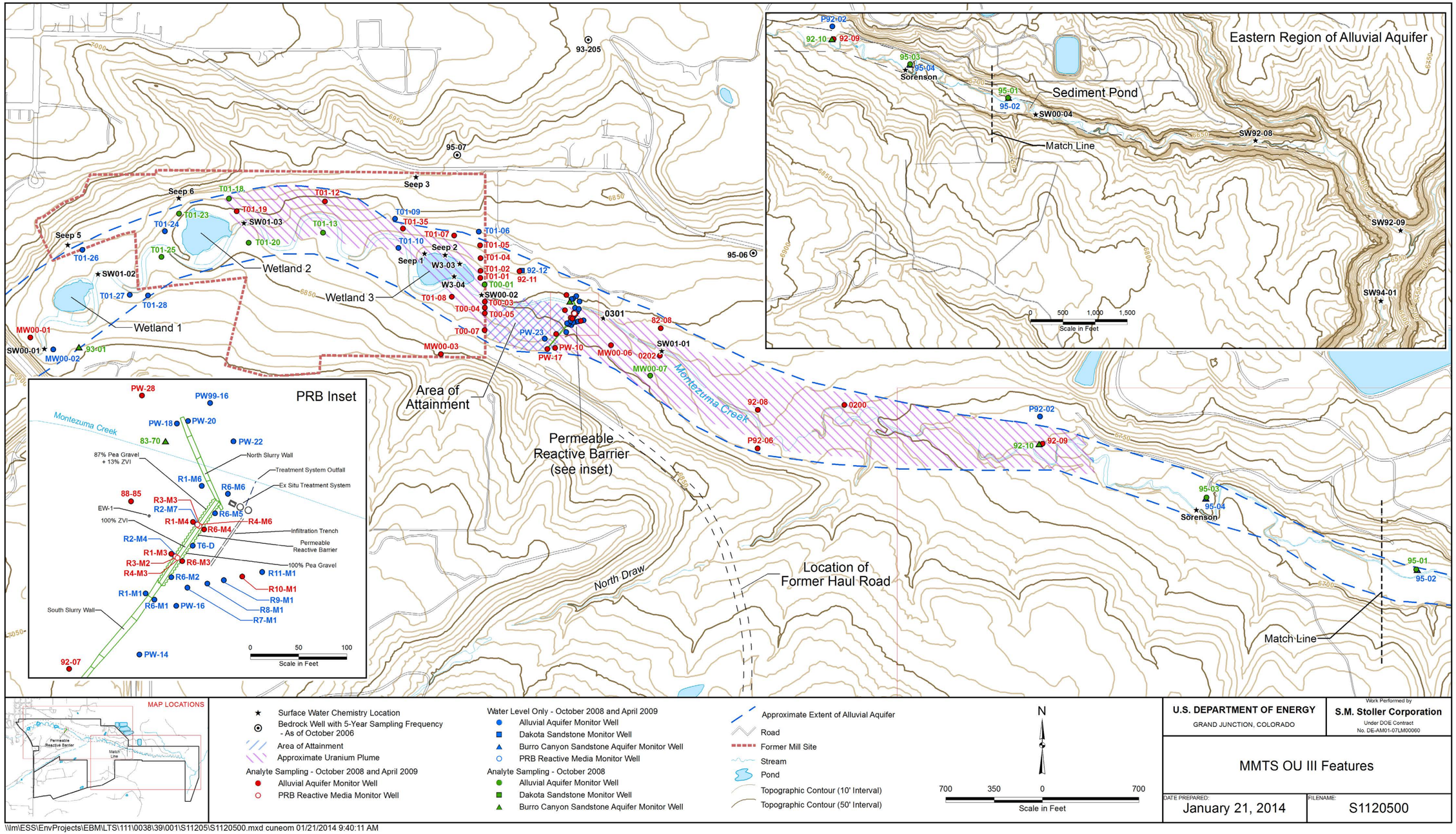

Figure 2. Monticello Mill Tailings Site OU III Features

3.5 Basis for Remedial Action

Hazardous substances that have been released in each OU of the MMTS are summarized in Table 2. Major pathways and receptors for site-related contamination are also provided.

Table 2. Summary of Contaminants and Receptors/Pathways at the MMTS

Operable Unit	Medium	Contaminants	Receptors and Pathways
OU I and OU II	Soil/sediment	^{226}Ra, uranium, ^{230}Th, vanadium	Soil/sediment ingestion by humans Direct gamma exposure Indoor radon
OU III	Surface water	Uranium, selenium	Drinking water by humans Terrestrial wildlife drinking water Aquatic life contact with wetlands Terrestrial wildlife ingestion of macroinvertebrates
OU III	Groundwater	Uranium, manganese, vanadium, selenium, arsenic, molybdenum, nitrate, uranium, gross alpha	Drinking water by humans Cattle grazing on vegetation with contaminant uptake

Abbreviations:
^{226}Ra = radium-226
^{230}Th = thorium-230

The two major contaminants of concern for the MMTS radiological public health evaluation (DOE 1990a) were determined to be radon gas and gamma radiation, both of which were attributable to the tailings piles and contaminated soils and materials on the mill site and other affected properties (DOE 1990b). As an indicator of potential individual risk due to exposure to tailings and soils under baseline radiological conditions, a gross estimate of the lifetime excess cancer incidence to the individual was estimated to be 1×10^{-5}. Although this estimate was within EPA's acceptable risk range, the decision was made to remediate the mill site to comply with pertinent health-based requirements in 40 CFR 192 Subparts A, B, and C. Potential use of groundwater as the primary source of drinking water was determined to result in significant risks, primarily attributed to the presence of uranium and vanadium (DOE 2004a).

4.0 Remedial Actions

The MMTS is composed of three operable units (OUs) as follows:

- **OU I:** Includes (1) the 78-acre former uranium and vanadium ore mill (mill site) near Monticello, Utah, that was contaminated with radioactive mill tailings and milling-related byproduct materials and (2) the 90-acre DOE onsite repository used for permanent disposal of MMTS remediation wastes, located approximately 1 mile south of the former mill site.
- **OU II:** Includes 34 mill site peripheral properties covering approximately 1700 acres that were contaminated by mill tailings that were primarily dispersed by wind and surface water.
- **OU III:** Includes properties that contain contaminated surface water or overlie contaminated groundwater, including the OU I former mill site and some of the OU II properties.

Table 3 summarizes current conditions at MMTS properties.

Table 3. Current Conditions at MMTS Properties

MMTS Properties	OU I	OU II	OU III	Soil Contamination Remains	Groundwater or Surface Water Contamination
MP-00105		X			
MP-00178		X			
MP-00179		X	X		X
MP-00180		X			
MP-00181		X	X		X
MP-00198		X			
MP-00211		X		X	
MP-00391		X	X	X	X
MP-00845		X			
MP-00886		X			
MP-00887		X			
MP-00888		X			
MS-00893 (former mill site)	X		X	X	X
MP-00947		X			
MP-00948		X			
MP-00949		X			
MP-00950		X			
MP-00951		X	X	X	X
MP-00963		X			
MP-00964		X			
MP-00988		X			
MP-00990		X	X	X	X
MG-01026		X	X	X	X
MG-01027		X	X	X	X
MG-01029		X	X	X	X
MG-01030		X	X	X	X
MG-01033		X	X	X	X
MP-01040 (north portion)		X			
MP-01040 (south portion) (repository property)	X			X	X[a]
MP-01041		X		X	
MP-01042		X			
MP-01077		X	X	X	X
MP-01080 (repository property)	X			X	
MP-01081		X			
MP-01083		X			
MP-01084		X	X	X	X
MP-01102		X			

Note:
[a] Pond 4 on this property is used for evaporating (1) contaminated leachate that drains from the nearby disposal cell and (2) contaminated groundwater that is extracted from the OU III contaminated shallow alluvial aquifer located approximately 1 mile north of the repository.

4.1 Remedy Selection

4.1.1 OU I and OU II

Remedial action alternatives for MMTS OU I and OU II were analyzed in the Remedial Investigation/Feasibility Study (RI/FS) (DOE 1990a). Alternatives ranged from no action to removal and disposal of MMTS remediation wastes in an offsite licensed repository. The final remedy for OU I and OU II was selected in the MMTS ROD (DOE 1990b).

The remedy for OU I was to excavate and remove all radiologically contaminated material and other hazardous substances from the mill site to levels protective of human health and the environment and to dispose of the materials for permanent isolation from the environment in an engineered, lined, and capped onsite repository located within OU I. The remedy selected for OU II was to remove contaminated soil and sediment from the affected properties and place the material in the OU I repository to thereby eliminate exposure pathways. If circumstances warranted, the ROD allowed radiological contamination to remain on some properties in accordance with supplemental standards (also called alternate cleanup standards). The ROD also allowed ICs to be implemented to restrict land use to prevent exposure to contamination left in place. Explanations of Significant Difference (ESD) for the MMTS ROD are included in Table 1 (Section 2.0).

Table 4 provides a summary of remedial action objectives (RAOs) in terms of cleanup standards for radiological contamination that were determined to be relevant and appropriate for MMTS OU I and OU II. Additional details about applicable cleanup standards and cleanup levels achieved for contaminated soil and sediment in OU I and OU II are provided in Section 4.2.1.

4.1.2 OU III

The MMTS ROD defined OU III as contaminated groundwater in the shallow alluvial aquifer and contaminated surface water. The OU III remedy was selected under a separate ROD from OU I and OU II. OU III alternatives ranged from no action with ICs to groundwater plume extraction and evaporative treatment with ICs, coupled with monitored natural attenuation (MNA). The remedy selected by the OU III ROD (DOE 2004b) was (1) MNA of contaminated surface water and groundwater, including biomonitoring to assess the potential for ecological receptors to be affected adversely at wetlands from selenium[4] and (2) continued implementation of the IC established in the IRA that precludes extraction of contaminated groundwater from the shallow alluvial aquifer for domestic purposes (the IC is described in Section 4.2.2). Contingency actions were specified in the ROD in the event that the progress of aquifer restoration failed to meet established performance criteria. A contingency remedy was implemented in 2009 (Section 4.2.2) and enhanced in 2014–2015 (Section 4.3) under an ESD for the OU III ROD (Table 1, Section 2.0).

RAOs for OU III include water quality remediation goals and ICs to prevent exposure to contaminated water. OU III contaminants of concern (COCs) and the water quality remediation goals are presented in Table 5.

[4] Biomonitoring was discontinued in 2012 when it was determined that contamination resulting from mill site remediation was below trigger levels for ecological receptors.

Table 4. Radiological Cleanup Standards for MMTS OU I and OU II

Contaminated Area	Cleanup Standard	Source of Cleanup Standard
Land (soil and sediment)	• ^{226}Ra concentrations in soil shall not exceed the background level by more than 5 pCi/g in the top 15 cm[a] • ^{226}Ra concentrations in soil shall not exceed the background level by more than 15 pCi/g in successively deeper 15 cm layers[a]	40 CFR 192.12(a)
Occupied or habitable structures	• Average concentration of radon decay products (daughters) in air shall not exceed 0.02 WL to the extent practicable, and in no case 0.03 WL[b] • Exposure rates to gamma radiation shall not exceed background by more than 20 microroentgens per hour	40 CFR 192.12(b)
Any	• Supplemental standards in lieu of the standards presented above may be applied if particular circumstances exist • Specific numerical standards are determined on a case-by-case basis	40 CFR 192.21 and 192.22
Land (soil and sediment)	• "Hot spot" criteria for ^{226}Ra • Specific cleanup standards for a hot spot of ^{226}Ra contamination vary based on the ^{226}Ra concentration and the surficial area (square meters) of the hot spot	*U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program* (Revision 2, March 1987) (DOE 1987)
Land (soil and sediment)	• Property-specific cleanup standards for mill site–related contaminants other than ^{226}Ra: ^{230}Th, uranium, and vanadium in soil • Property-specific cleanup standards were established for certain properties after the commencement of radiological assessments or remedial activities because of unusual conditions encountered on the properties. Table 6 provides detailed information about property-specific cleanup standards.	*Monticello Remedial Action Project, Radiological Sampling and Verification Procedures for Operable Unit I* (DOE 1998b) U.S. EPA Region III Risk-Based Concentration Table (first Quarter 1995), Soil Ingestion, Industrial Setting

Notes:
[a] When averaged over 100 m^2.
[b] A working level (WL) is a specific amount of alpha energy (1.3×10^5 mega electron volts) associated with the decay of radon daughters in air. The energy associated with a concentration of 4 pCi/L of radon in air is equivalent to 0.02 WL.

Abbreviations:
^{226}Ra = radium-226
^{230}Th = thorium-230
cm = centimeters
pCi/g = picocuries per gram
pCi/L = picocuries per liter
WL = working level

Table 5. OU III Contaminants of Concern and Water Quality Remediation Goals

COC[a]	Groundwater Remediation Goal[a]	Surface Water Remediation Goal[a, b]
Arsenic	10 µg/L[c]	10 µg/L
Manganese	880 µg/L[d]	-----
Molybdenum	100 µg/L[e]	-----
Nitrate (as N)	10,000 µg/L[c]	4000 µg/L
Selenium	50 µg/L[c]	5 µg/L
Uranium (metal toxicity)	30 µg/L[c]	-----
Vanadium	330 µg/L[d]	-----
^{234}U and ^{238}U (radiological dose)	30 pCi/L[e]	30 pCi/L[b]
Gross alpha activity	15 pCi/L[c, f]	15 pCi/L[g]
Gross beta activity[h]	-----	-----

Notes:
[a] Source: OU III ROD (DOE 2004b).
[b] State of Utah standard for surface water (Utah uranium standard post-dates OU III ROD). 30 pCi/L converts to approximately 44 µg/L.
[c] EPA maximum contaminant level.
[d] Based on OU III human health risk assessment.
[e] UMTRA maximum concentration limit.
[f] Excluding uranium and radon.
[g] Excluding uranium and radon for MMTS OU III.
[h] There is no remediation goal for gross beta because there is no activity-based standard for this constituent and because risk factors to derive a risk-based goal are radioisotope-specific.

Abbreviations:
µg/L = micrograms per liter
pCi/L = picocuries per liter

4.2 Remedy Implementation

4.2.1 OU I and OU II

4.2.1.1 Remediation Sequence

MMTS remedial actions started in 1992 with the construction of support facilities including access controls, health and safety and administrative support facilities, service roads, equipment staging areas, and decontamination facilities at the OU I mill site. Cleanup of the OU II peripheral properties was also initiated at that time. As removal actions proceeded on the various OU I and OU II properties, attainment of cleanup standards was verified by radiological surveys of the properties and laboratory confirmation of soil samples.

Remediation of the mill site began in 1997. During remediation, contaminated material removed from the peripheral properties (and MVP) was managed at an interim stockpile area on the mill site. The tailings piles and the interim stockpile were excavated, loaded into trucks, and hauled to the DOE repository by way of a dedicated haul road. To manage saturated materials during excavation, drainage controls, groundwater interception trenches, and a temporary water treatment plant were constructed onsite.

All OU I and OU II removal actions were completed by August 1999.

4.2.1.2 Repository Information

The repository was constructed approximately 1 mile south of the mill site and was designed to meet protective standards specified in 40 CFR 192.02 for the control of residual radioactive materials. The repository was also designed to be functionally equivalent to a Resource Conservation and Recovery Act Subtitle C hazardous waste landfill to manage any nonradioactive hazardous materials.

The double-lined base of the repository has a leak detection system constructed above the lower liner, and a leachate collection system constructed above the upper liner. Leachate from the repository is pumped to a triple-lined solar evaporation pond (Pond 4). The repository cover is composed of multiple layers, including a compacted soil radon barrier, a high density polyethylene geomembrane moisture barrier, and a vegetated evapotranspiration soil layer on the surface. The vegetated cover was designed and constructed under the EPA's Alternative Covers Assessment Program. Completion of the repository cover occurred in 2000. Approximately 2.54 million cubic yards of contaminated materials were placed in the repository.

4.2.1.3 DOE Land Transfer

In June 2000, DOE completed the transfer of 383.2 acres of land within OU I and OU II to the City of Monticello through the Federal Lands to Parks Program. Some ICs were placed on the properties at this time as a condition of transfer, some were placed because of property-specific cleanup standards, and some were placed as a result of EPA requirements[5] (Section 4.5, Table 7). *Cooperative Agreement DE-FC13-99GJ79485 between the City of Monticello and the U.S. Department of Energy* (DOE and City of Monticello 1999) required the City of Monticello to restore the mill site in accordance with DOE, EPA, and UDEQ approved design specifications, including constructed wetlands, final grading, reconstruction and realignment of Montezuma Creek, re-vegetation, and erosion control on surrounding upland areas.

4.2.1.4 Final Site Conditions

Most OU I and OU II properties were remediated to meet the cleanup standards for radium-226 (^{226}Ra) specified in 40 CFR 192.12 (Section 4.1.1, Table 4). However, it was necessary to leave some contamination in place at certain OU II properties and apply supplemental standards to those locations, as permitted under 40 CFR 192.21 and 192.22, because (1) the remedial action would have produced health and environmental harm that is excessive compared to the health and environmental benefits and (2) the cost of remedial action would have been unreasonably high relative to long-term benefits for radioactive materials that did not pose a clear present or future health or environmental hazard.

In addition to supplemental standards, certain OU I and OU II properties had property-specific cleanup standards that were not supplemental standards in accordance with 40 CFR 192.21 and 40 CFR 192.22. These property-specific cleanup standards were for mill site–related contaminants other than ^{226}Ra and were established because of unusual conditions found on the properties. Additional details about cleanup at properties with supplemental standards and other property-specific standards are provided below.

[5] Some ICs are related to radioactive contamination, and some are not.

Table 6 summarizes risk-based soil cleanup goals and/or cleanup levels achieved for OU I and OU II properties using supplemental and site-specific standards that do not meet UU/UE criteria. In all cases, an attempt was made to reduce contaminant concentrations to levels that were as low as reasonably achievable without causing undue harm to the environment (destruction of piñon-juniper habitat) or compromising the health and safety of remediation workers. In a number of cases, the numerical cleanup goals were determined during or after the remediation process as opposed to being established prior to and guiding remediation activities. This table is provided primarily to assist in evaluating the continued validity of cleanup levels and RAOs for properties where UU/UE was not achieved.

Table 6 does not provide specific cleanup goals and cleanup levels achieved for the properties located in Upper, Middle, and Lower Montezuma Creek. Instead, the included concentrations are the exposure point concentrations used in the RIA/FFS to assess the protectiveness of final site conditions. Because no comprehensive verification sampling was done in Montezuma Creek after the completion of remediation, the RIA/FFS used pre-remediation soil concentration data from the baseline risk assessment (DOE 1998a) as a worst-case scenario, recognizing that actual concentrations (and corresponding risks) are likely lower. There are a wide range of cleanup goals for the Montezuma Creek properties, which were based on levels of contamination found in soil and sediment before and after the start of remediation. Some areas were remediated to meet cleanup goals that were modified after the start of remediation because meeting the initial cleanup goals would cause excessive environmental harm. In some cases, all contamination was left in place to avoid harming the environment (i.e., destruction of native, mature piñon-juniper habitat) or because of other conditions encountered during remediation. Specific cleanup goals and cleanup levels achieved for these Montezuma Creek properties are documented in individual property completion reports, pertinent remedial action reports, and in the *Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek* (DOE 1999b).

Table 6. MMTS Properties with Residual Soil Contamination

Properties	Assumed Land Use	Established Cleanup Goals	Cleanup Levels Achieved
OU I Properties			
MS-00893 (former mill site)	Recreational/agricultural	• ≤ 30 pCi/g uranium (brine storage ponds)[e] • ≤ 300 pCi/g uranium (areas other than brine storage ponds)[e, f] • ^{230}Th dependent on ^{226}Ra concentration[f]	• 15.3 pCi/g uranium (brine storage ponds) • 125.4 pCi/g uranium (areas other than brine storage ponds) • 11.2 pCi/g ^{230}Th
• MP-01040 (south portion) • MP-01080 (both are repository properties)	Permanent disposal cell	Not applicable	Not applicable

Table 6. MMTS Properties with Residual Soil Contamination (continued)

Properties	Assumed Land Use	Established Cleanup Goals	Cleanup Levels Achieved
OU II Properties			
MP-00211 (Phase I)	Industrial	• ≤ 6,100 mg/kg uranium[a] • ≤ 14,000 mg/kg vanadium[a] • ≤ 15 pCi/g ^{230}Th[b]	• 418 mg/kg uranium (one location exceeds residential RBC of 230 mg/kg uranium); average uranium concentration is < 30 mg/kg • 250 mg/kg vanadium • 9.6 pCi/g ^{230}Th
MP-00211 (Phase II)	Recreational/agricultural	≤ 300 pCi/g uranium[c]	13.5 pCi/g
• MP-00391 • MP-01041 • MP-01077	Recreational/agricultural	≤ 32 pCi/g ^{226}Ra[d]	≤ 32 pCi/g ^{226}Ra
Properties	**Assumed Land Use**	**Concentrations Used in RIA/FFS Risk Assessment[g]**	
Upper Montezuma Creek: • MP-00951 • MP-00990 • MG-01033 • MP-01084	Extended backyard	• Arsenic—7.8 mg/kg • Uranium—26.3 mg/kg • Total uranium—approximately 17 pCi/g • Gamma—35 µR/hr	
Middle Montezuma Creek: • MG-01026 • MG-01027	Recreational or agricultural—pass-through area only between Upper and Lower Montezuma Creek	• Arsenic—7.7 mg/kg • Uranium—28.2 mg/kg • Total uranium—approximately 19 pCi/g • Gamma—29 µR/hr	
Lower Montezuma Creek: • MG-01029 • MG-01030	Recreational or visitor	• Arsenic—6.96 mg/kg • Uranium—18.9 mg/kg • Total uranium—approximately 13 pCi/g • Gamma—28 µR/hr	

Notes:
Shaded properties are those cleaned up to supplemental standards in accordance with 40 CFR 192.21 and 192.22. Supplemental standards areas on OU II properties are shown on Figure 1.
[a] EPA Region III Risk-Based Concentration Table (first quarter 1995), Soil Ingestion, Industrial Setting as specified in DOE 1999c.
[b] *Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program* (DOE 1987).
[c] Uranium PRG from mill site used. See footnote "e" below.
[d] DOE (1999b).
[e] Uranium PRG developed for mill site in the *Monticello Remedial Action Project, Radiological Sampling and Verification Procedures for Operable Unit I* (DOE 1998b).
[f] Collectively based on a maximum dose goal of 30 mrem/yr.
[g] Exposure point concentrations used in the RIA/FFS are the pre-remediation concentrations from the RI risk assessment (DOE 1998a); concentrations are not reduced in response to hot spot remediation.

Abbreviations:
µR/hr = microroentgen per hour; mg/kg = milligrams per kilogram; mrem/yr = millirem per year; pCi/g = picocuries per gram; PRG = preliminary remediation goal; RBC = risk-based concentration

4.2.2 OU III

The remedy for OU III was implemented with long-term monitoring that is conducted in accordance with the site's LTS&M plan (DOE 2007a) and *Sampling and Analysis Plan for*

U.S. Department of Energy Office of Legacy Management Sites (LMS/PRO/S04351). Section 4.4 describes operation and management, including OU III long-term monitoring activities, at the Monticello site. The OU III remedy was also implemented by monitoring ICs that prevent consumption of the contaminated groundwater. The extraction of contaminated groundwater from the shallow alluvial aquifer for domestic purposes is prohibited by the *Groundwater Management Policy for the Monticello Mill Tailings Site and Adjacent Areas* (State of Utah 1999), issued by the Utah State Engineer at the request of DOE. The policy defined the Monticello Groundwater Restricted Area (Figure 1 and Table 6). Properties in this area are subject to the policy. Additionally, among the ICs included in the 2000 quitclaim deed for transfer of DRCPs (Figure 1 and Table 6) is a specification that wells for domestic groundwater cannot be installed into the Montezuma Creek alluvial aquifer underlying certain transferred properties.

Contingency actions were specified in the OU III ROD in the event that the progress of aquifer restoration failed to meet established performance criteria. It was determined by 2007 that water quality restoration was progressing more slowly than predicted and that it was unlikely that remediation goals for water quality would be achieved during the allotted performance period for MNA (42 years beginning in 2002). This determination was first documented in the 2006 annual groundwater report (DOE 2006) and later confirmed in a separate analysis of uranium concentration trends (DOE 2007b). Therefore, a contingency remedy was selected in 2009 and implemented through an ESD to evaluate the feasibility of active groundwater remediation in meeting RAOs. The contingency remedy was implemented by:

- Incorporating the ex situ pump-and-treat system that was installed as a technology demonstration project in 2005 and expanded in 2007 (Table 1, Section 2.0) as an active remedy component.
- Incorporating the PRB or an equivalent replacement as a groundwater containment device.
- Modifying the OU III RAOs to include the State of Utah's uranium standard of 30 picocuries per liter (pCi/L) for domestic-use surface water, which did not exist when the OU III ROD was issued.
- Installation of the GROsystem in 2014 (Section 4.3) to replace the ex situ system (deactivated in December 2014) for more aggressive capture and treatment of contaminated groundwater.

4.2.3 Status of Remedial Actions for MMTS Operable Units

The MMTS was partially deleted from the NPL on October 14, 2003. The partial deletion pertained to 22 OU II peripheral properties where contamination in the land was remediated to pertinent cleanup standards in 40 CFR 192 (including supplemental standards) and where surface water or groundwater contamination does not exist. MMTS OU I and OU II peripheral properties underlain by contaminated groundwater have not been deleted from the NPL. The *Preliminary Close Out Report Monticello Mill Tailings (USDOE) Site Operable Units I, II, and III* (DOE 2004e) documents that the MMTS properties not deleted from the NPL achieved "construction complete" status in accordance with EPA guidance *Close Out Procedures for National Priorities List Sites* (EPA 2000). Operation and maintenance activities (Section 3.4) are ongoing for undeleted OU I and OU II properties. MMTS OU III has not been deleted from the NPL because water quality remediation goals for contaminated surface water and groundwater have not been achieved, and remedial action is ongoing.

4.3 OU III Groundwater Remedy Optimization System

This section summarizes the configuration, operation, and performance of the GRO system that was installed in 2014 (operational in January 2015). The information is taken from *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan, for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah* (DOE 2014); *Remedial Action Completion Report for Operable Unit III Groundwater Contingency Remedy Optimization System, Monticello Mill Tailings Site, Monticello Site* (DOE 2016a); and the 2016 Monticello site groundwater report (DOE 2016b) and groundwater reports from previous years (2007 through 2015). Groundwater remediation focuses on uranium because it is the primary risk driver and will likely require more time to meet RAOs than the other COCs.

4.3.1 Area of Attainment

Groundwater contamination at OU III occurs in the alluvial aquifer that underlies the valley of Montezuma Creek. Active groundwater remediation focuses on an area of attainment (AOA) that encompasses approximately 6 acres of land located immediately downgradient (east) of the former mill site. The AOA includes a subset of the contaminant plume. It was selected for active groundwater remediation because it has high concentrations of uranium (between about 300 and 1000 micrograms per liter [µg/L]) that occur in an area with well-defined hydrologic boundaries. Groundwater in the AOA occurs in heterogeneous mixtures of unconsolidated silt, sand, and gravel. Flow is predominantly west to east, parallel to the slope of the valley. The water table is generally within 10 ft of ground surface, and the depth to the bedrock aquitard is generally not more than about 15 ft.

4.3.2 OU III Remedy Optimization Design

Figure 3 shows the main components of the GRO system. It uses a network of eight vertical wells to extract groundwater in the AOA. Extracted water is pumped to the groundwater transfer building where it is batched and then pumped to Pond 4 for evaporation. Figures 4 and 5 show the interior of the groundwater transfer building. Pond 4 (Figure 6) was constructed as a component of the OU I remedy to evaporate leachate collected from the disposal cell; however, the design capacity (16 million gallons) was never approached.

The under-utilized capacity of Pond 4 provides the necessary treatment capacity for the GRO design. Pond 4 still receives leachate from the disposal cell as a small percentage of what is received from the GRO system. The area of Pond 4 at design capacity is approximately 3.2 acres. In Figure 6 there is approximately 4 million gallons of water in Pond 4, essentially all of which is from the GRO system.

The GRO system was designed for all-season, 24-hour-per-day operation. Sixteen monitoring wells were installed in the AOA to monitor water quality and the aquifer's response to groundwater extraction. The GRO system is equipped for remote monitoring and operation under the LM system operation and analysis at remote sites (SOARS) program.

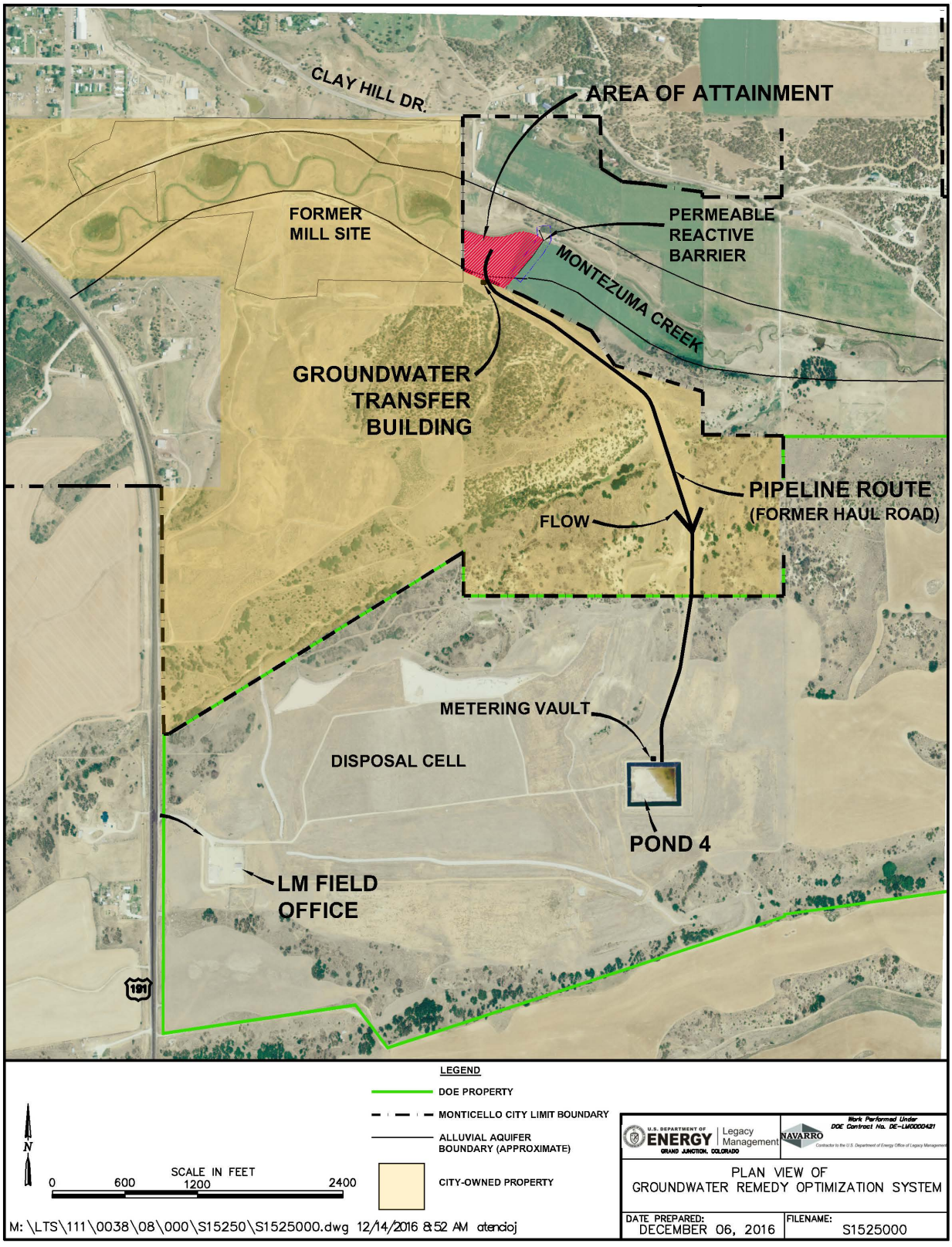

Figure 3. Plan View of the MMTS OU III Groundwater Remedy Optimization System

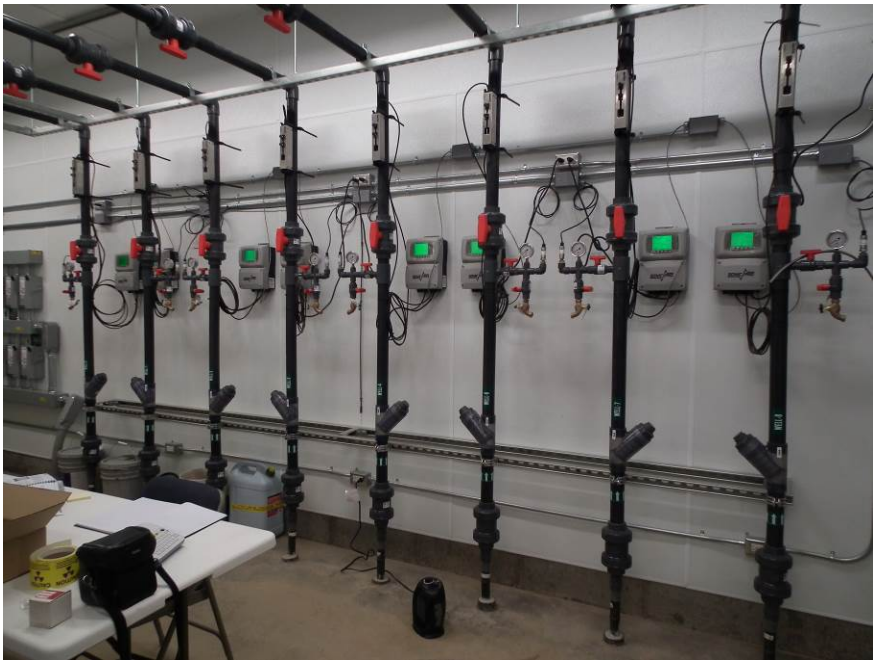

Figure 4. Photograph of Interior of the Groundwater Transfer Building (GTB) Showing Extraction Well Inflow Plumbing and Metering Instruments

Figure 5. Photograph of Interior of GTB Showing Groundwater Transfer Tank

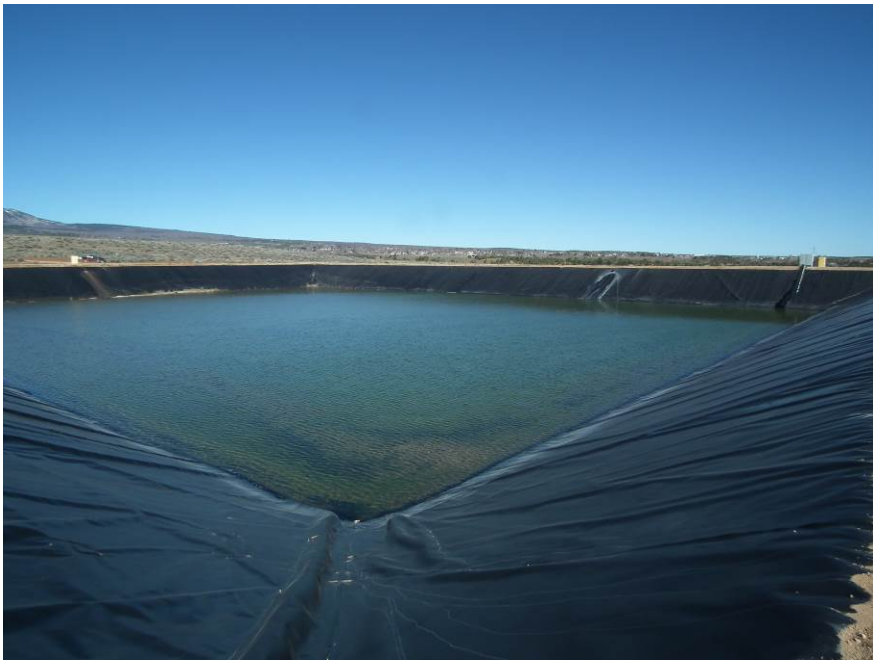

Figure 6. Pond 4 from Southeast Corner Looking Northwest

4.3.2.1 GRO Operations Plan

LM developed a procedure to prescribe the startup, operation, maintenance, and shutdown of the GRO system. It provides a concise description of the working components of the system and associated operating procedures to enable project site operators to diagnose and respond to potential maintenance needs. The plan also identifies roles and responsibilities for system operation and response actions required in the event of off-normal operating conditions. This procedure is provided as Appendix F of the remedial action completion report (DOE 2016b).

4.3.2.2 GRO Monitoring and Reporting

- Groundwater extraction is monitored using in-line flow meters to measure instantaneous rate and cumulative volume for individual and combined extraction well flow.
- Water quality at the extraction wells is monitored monthly to evaluate uranium recovery.
- Water quality at the monitoring wells is monitored every 1 million gallons of extracted groundwater (combined) to monitor groundwater chemistry and contaminant concentration trends.
- Water levels are continuously monitored using dedicated pressure transducers to evaluate the aquifer response to natural stresses and those imposed by the GRO system.
- Water level in Pond 4 is monitored continuously to maintain operating capacity.
- Remote monitoring, operation, and data management is performed under the SOARS program.

Figure 7 shows the locations of the monitoring and extraction wells and other features of the AOA. GRO performance is reported (1) quarterly for bulk treatment parameters (e.g., operating conditions, volume of groundwater extracted, mass of uranium extracted, and Pond 4 capacity) and (2) annually to evaluate the overall progress of water quality restoration toward meeting groundwater RAOs.

4.3.2.3 Contingency Remedy Progress

The GRO system is operated to maintain flow rates of between about 10 and 20 gallons per minute (gpm) to balance aquifer productivity and the rate of evaporation at Pond 4. As of December 1, 2016, approximately 10 million gallons of contaminated groundwater was extracted from the AOA since January 2015. This equates to approximately 5 pore volumes of groundwater contained in the AOA before the onset of pumping. Approximately 144 pounds of uranium have been extracted to date from the AOA. Of this total, approximately 77 pounds were extracted during 9.5 years of ex situ system operation and 67 pounds were extracted during nearly 2 years of GRO system operation. The mass of mobile-phase uranium in the AOA is estimated to be approximately 350 pounds.

GRO system performance is summarized in Figure 8, which compares the average concentration of uranium detected in AOA monitoring wells (left-hand y-axis) to the cumulative volume of water extracted (right-hand y-axis). Average uranium concentrations over time are plotted in red, and the cumulative volume of groundwater extracted, recorded at 1-million gallon intervals, is shown as the blue upward trending dashed line. The green vertical line separates the baseline period from the start of the GRO system, and the black dashed lines bracket the two periods of extended system downtime (June–August 2015 and December 2015–March 2016) that were needed for mechanical repair and design reconfiguration. The yellow horizontal line corresponds to the estimated pore-volume of groundwater in the AOA (2 million gallons).

The data presented in Figure 8 indicate that

- The average uranium concentration decreased from about 800 µg/L (baseline) to 600 µg/L after the extraction of 2 million gallons.
- The average uranium concentration then decreased to about 500 µg/L with the extraction of an additional 3 million gallons (cumulative extraction of 5 million gallons).
- The average uranium concentration rebounded to approximately 630 µg/L during the winter 2015 shutdown (a 3-month duration).
- Downward concentration trending is evident since the system restart in March 2016 (630 µg/L) to August 29, 2016 (470 µg/L) at the 10 million gallon interval.

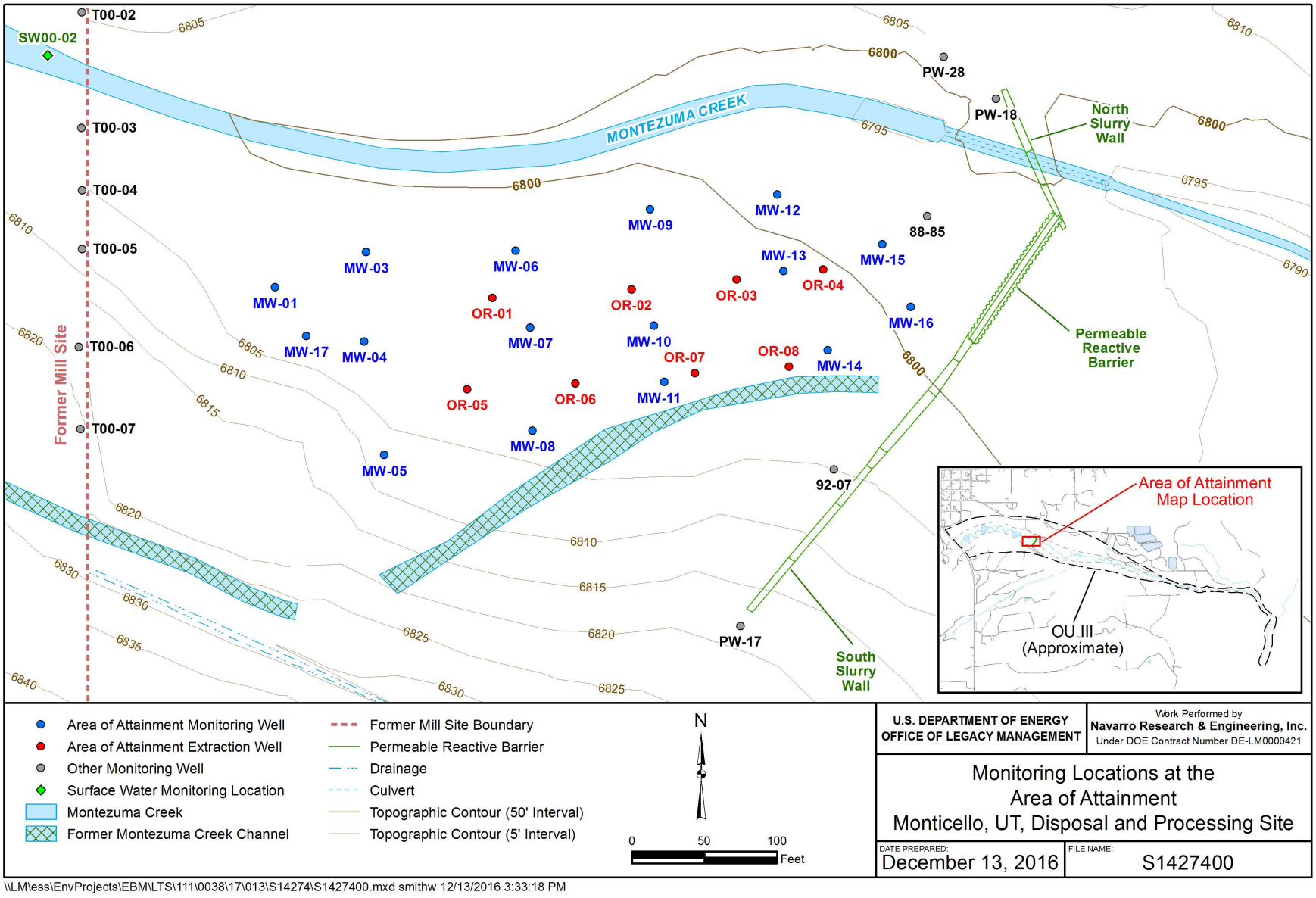

Figure 7. MMTS OU III Area of Attainment Monitoring Locations

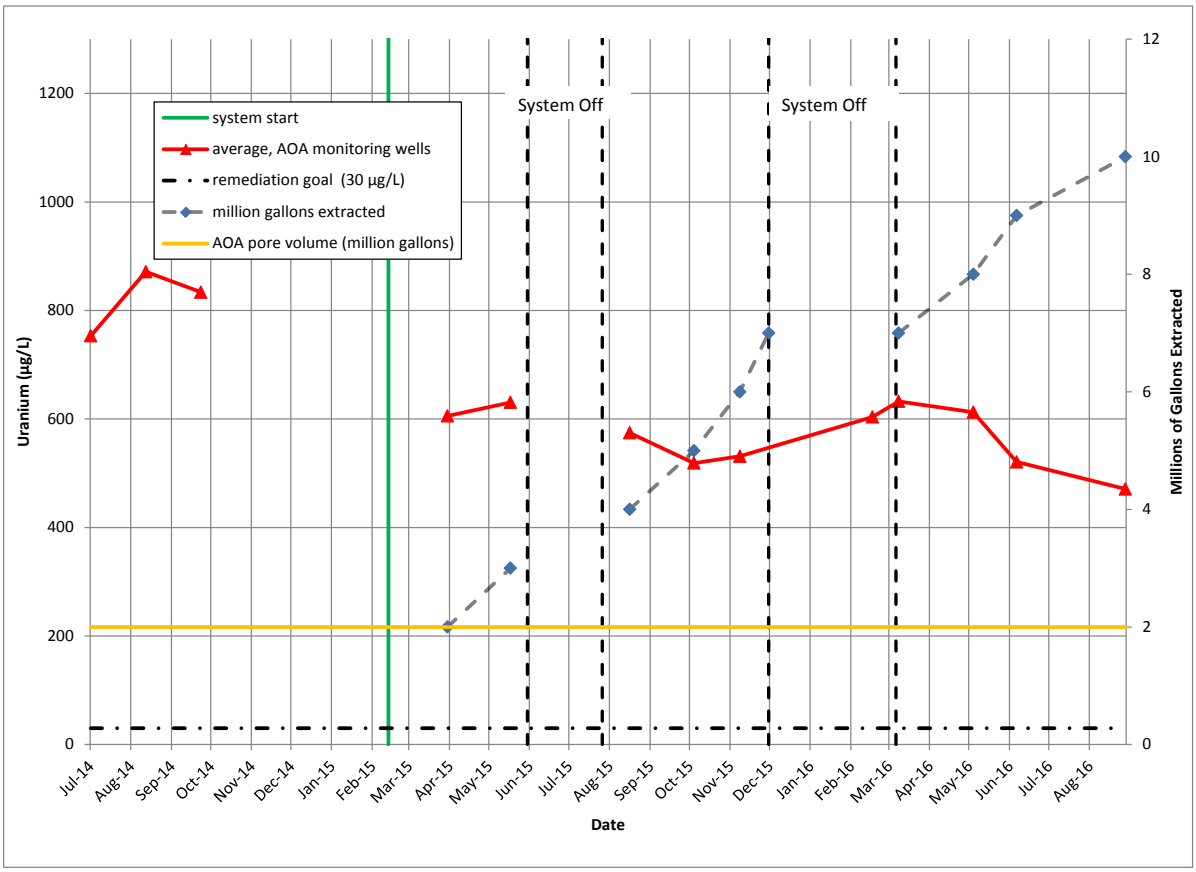

Figure 8. Graphical Summary of Uranium Restoration Progress in the AOA

The GRO system effectively captures and treats groundwater at the design rates and capacities. And since March 2016, the uranium concentration in the bulk extract ranges between about 600 and 700 µg/L, indicating that the system remains effective in capturing the highly contaminated groundwater in the AOA. With the removal of approximately 5 pore volumes of groundwater from the AOA, uranium concentrations remain at greater than 15 times the remediation goal; however, some reduction in uranium concentration, on average, is evident (Figure 8). Given the short duration of GRO system operation to date (startup in January 2015), a forecast of the expected restoration time for the AOA is premature and uncertain at this time. Analysis of uranium concentration trending in the sitewide aquifer region indicated that a prolonged period of aquifer restoration is likely (DOE 2007b). The monitoring data presented in subsequent annual groundwater reports confirm the results of that analysis.

4.4 Operation and Maintenance

LTS&M activities encompass CERCLA operation and maintenance activities to ensure that the MMTS remedies remain protective of human health and the environment. DOE LTS&M activities at the Monticello sites began on October 1, 2001, under the DOE Grand Junction Office LTS&M Program. In December 2003, activities formerly conducted under the LTS&M Program were transferred to the newly established DOE LM. LTS&M activities ensure that ICs remain relevant and effective in preventing exposure to contamination and that changing site

conditions do not compromise remedy protectiveness. The progress of water quality restoration is tracked and reported according to requirements in the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (DOE 2007a) and the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*.

The major LTS&M activities conducted during this Five-Year Review period were:

- The repository site and associated structures were routinely inspected and maintained. Repository settlement plates were surveyed on October 20, 2016.
- The repository leachate management system was operated and monitored with the assistance of a computerized telemetry system, which transmits data to a central database for real-time data analysis and response action, if necessary.
- All properties affected by land and water use restrictions (ICs) were routinely inspected, and ICs were verified annually. Properties and ICs are summarized in Table 7.
- Supplemental standards properties were inspected monthly for evidence of unauthorized excavation. They were also inspected and surveyed for radiological contamination after significant storm events. No remedial actions have been warranted.
- LM and contractor personnel responded to public and municipal inquiries.
- Revision of the LTS&M Plan was started.
- Semiannual monitoring of groundwater and surface water and annual evaluation and reporting of the progress of water quality restoration.
- Installation and operation of the GRO system (Section 4.3).

4.5 Institutional Controls

DOE administers many ICs on the MMTS properties, primarily to prevent exposure to contamination left in place. Table 7 summarizes ICs related to supplemental standards areas and site-specific cleanup standards for MMTS properties. Some ICs administered by DOE are not related to radioactive contamination. For example, some are land use restrictions related to the transfer of federal land, and others are EPA requirements (e.g., no disturbance to wetland areas on and near the former mill site). These restrictions are not included in Table 7.

Table 7. MMTS Institutional Controls

DOE Property ID	Type of Property					Institutional Control				
	Transferred from DOE to City of Monticello (quitclaim deed)	Contains Supplemental Standards Areas	Within Montezuma Creek Restrictive Easement	Within Groundwater Restricted Area (established by Utah State Engineer)	DOE-Owned Property	Restrictions on Construction of Habitable Structures	Recreational Day Use Only (no overnight camping)	No Soil Removal from Supplemental Standards or Easement Areas	Groundwater use Restrictions for Domestic Purposes on Shallow Alluvial Aquifer	Special Zoning Restrictions Related to Building Structures
OU I Properties										
MS-00893[a]	X			X		X	X		X	
MP-01040 (South Portion)[b]					X					
MP-01080[b]					X					
OU II Properties										
MP-00179				X					X	
MP-00181	X			X		X	X		X	
MP-00211				X					X	X[d]
MP-00391	X	X				X	X	X	X	
MP-00947				X					X	
MP-00951		X	X	X		X		X	X	
MP-00990		X	X	X		X		X	X	
MG-01026		X	X			X		X		
MG-01027		X	X			X		X		
MG-01029		X	X			X		X		
MG-01030		X	X			X		X		
MG-01033		X	X	X		X		X	X	
MP-01040 (north portion)	X					X	X			
MP-01041	X	X				X	X	X		
MP-01042	X					X	X			
MP-01077	X	X				X	X	X	X	
MP-01081[c] (south portion)					X					
MP-01084		X	X	X		X		X	X	

Notes:
[a] Former mill site property.
[b] DOE repository property.
[c] DOE retained this area as a wildlife corridor.
[d] Property MP-00211 is included in City of Monticello Overlay Zone OL-1, which was created through City of Monticello zoning ordinances 2002-04 and 2003-02.

5.0 Progress Since the Last Five-Year Review

The previous Five-Year Review, *Fourth Five-Year Review Report for Monticello Mill Tailings (USDOE) Site, City of Monticello, San Juan County, Utah* (DOE 2012) concluded that the MMTS remedies continue to be protective of human health and the environment. No issues were identified.

Non-routine activities that have occurred since the last Five Year Review include:

- Implementation of the GRO system (Section 4.3).
- Utah Division of Water Rights granted DOE fixed time water right 09-2347, which enables DOE to extract OU III contaminated groundwater from the shallow alluvial aquifer for subsequent evaporation from Pond 4.
- The Utah Department of Health (UDOH) completed *Public Health Assessment Monticello Mill Tailings Site (MMTS) and Monticello Vicinity Properties (MVP), Monticello, San Juan County, Utah* (State of Utah 2014). Based on a recommendation in the PHA, DOE conducted sampling of the Seep 6 area, located on the former mill site (MS-00893) (Figure 2, north of Wetland 2). A full discussion of the PHA is in Section 7.1.

6.0 Five-Year Review Process

The Five-Year Review process includes administrative planning (e.g., identifying the review team, developing a schedule), community notification, document and data review, a site inspection, and interviews. Administrative planning activities were completed by September 2016. The following subsections contain findings from the remaining activities.

6.1 Community Notification

The announcement concerning the CERCLA Five-Year Review was published the week of October 10, 2016, in the *San Juan Record*. The *San Juan Record* is the local weekly newspaper serving the Monticello area. The announcement described the CERCLA Five-Year Review process and objectives and told the public how to contact DOE and onsite LM contractor representatives for additional information or to provide comments. A copy of the announcement is provided in Attachment 2.

DOE received no public comments other than those solicited in interviews with stakeholders (see Section 6.4). In June or July 2017, DOE will place the final outcome of the Five-Year Review, as determined in Sections 7.0 to 9.0 of this report, in the *San Juan Record,* along with DOE contact information and the locations where copies of the final reports can be viewed.

6.2 Document and Data Review

Project documents and data were reviewed to form the basis of the technical assessment of remedy protectiveness, which compares actual site conditions to the protectiveness requirements set forth in the decision, design, and implementation phases of the project.

In addition to documents cited in Section 12, documents and data reviewed in this Five-Year Review were:

- Annotated deeds for the OU II supplemental standards properties.
- Water production data from the repository and Pond 4 Leachate Collection and Removal Systems (reported in Federal Facility Agreement [FFA] quarterly reports).
- Updated applicable or relevant and appropriate requirements (ARARs) and environmental guidance documents.
- Monthly, quarterly, and annual surveillance reports for compliance with ICs and site conditions.
- Annual groundwater reports for performance of the GRO system.

6.3 Site Inspection

Under the site's LTS&M Plan, comprehensive site inspections of the MMTS are conducted annually. The 2016 MMTS and MVP annual site inspection was conducted on September 12 and 13, 2016, by LM and LM contractor personnel. In 2006, DOE, EPA, and UDEQ agreed that the annual site inspection in the year preceding the five-year reviews would also serve for the CERCLA Five-Year Review. Relevant MMTS site inspection observations are summarized in Table 8. No conditions were observed that represent a compromise of remedy protectiveness. Results and details of the inspection are reported in the *2016 Annual Inspection Report for the DOE Monticello, Utah, Mill Tailings Site and Monticello Vicinity Properties* (DOE 2016c). Attachment 1 contains excerpts from the report.

Table 8. 2016 MMTS Annual Inspection Observations

Observation
The repository site was well-maintained and well-managed. The vegetation community, including the repository cover, was healthy.
There was no evidence of the violation of any ICs on City-owned properties. No groundwater drilling applications were sought, and no drilling activities were noted or reported.
No land use changes on restricted private properties were apparent. No well drilling permit applications were received by the Utah Division of Water Rights within the Montezuma Creek Restrictive Easement Area or the Groundwater Restricted Area.
Deed restrictions were verified at the San Juan County Recorder's Office and found to be up to date.
Site record books were correct and complete with only minor deficiencies. The OU III Administrative Record (last updated in October 2012) and MMTS/MVP Information Repository (last updated in April 2014) were available.
Facilities related to the groundwater remedy optimization system were intact and functional.

6.4 Interviews

As part of the five-year reviews for the MMTS and MVP, a community relations specialist of the LM contractor interviewed local property owners and stakeholders to gather information about the site's effect on the community. The interviews were conducted during October 2016 in Monticello and by telephone. Interviewees and their relation to the sites are listed below.

- A former mayor, City of Monticello
- The city manager, City of Monticello
- A Monticello City Council member and representative of the Victims of Mill Tailings Exposure (VMTE) committee
- Two peripheral property owners
- One former peripheral property owner
- One highway maintenance supervisor
- A board member of the Transportation Special Service District

Interviews were conducted to evaluate public and municipal perception of the effectiveness of the remedies implemented for MMTS and MVP in protecting human health and the environment. Interview questions were designed to determine if roles and responsibilities in maintaining the ICs were clearly defined, and whether the onsite LM contractor representatives provided sufficient response and support in maintaining these controls.

Specific interview questions and responses are provided in Attachment 3. Interview responses are summarized as follows:

- The public and municipal perception generally is that the remedial actions and subsequent safeguards are adequate in protecting human health. Several residents expressed an opposing perspective.
- Representatives of the City of Monticello and UDOT expressed no concern in their ability to comply with ICs that restrict land use and groundwater use.
- Interviewees associated with supplemental standards properties were aware of the ICs involved (e.g., the former mayor of Monticello and the transfer of the mill site property to the City). Other interviewees were not always aware of ICs.
- Onsite LM contractor representatives are effective in communicating with private, municipal, and UDOT interests in maintaining radiological control at supplemental standards properties, in coordinating activities involving private property, and in responding to information requests by citizens and private interests.
- Concern was raised regarding a perceived lack of communication between DOE and the community regarding past and present site activities. Some criticisms regarding post-remediation activities that are City responsibilities were misdirected to DOE. DOE provides adequate information about past and present site activities to the public through such means as the LM website, the publically available Information Repository, the LM public relations program, and LM contractor representatives present at the site. Interviewees were aware of how to contact DOE if they had questions.

- Several criticisms—to the effect that remedial actions were perceived as insufficient—may be attributable to a misunderstanding of the implementation process, including community involvement, for those actions. DOE provides information to the public about the CERCLA implementation process, the scope of investigations and remedial actions, and community involvement through such means as the LM website, the publically available Information Repository, the LM public relations program, and LM contractor representatives present at the site.

7.0 Technical Assessment

EPA guidance on conducting CERCLA Five-Year Reviews recommends that a technical assessment of remedy protectiveness be based upon the answers to the three specific questions posed in Sections 7.1, 7.2, and 7.3.

7.1 Question A: Is the remedy functioning as intended by the decision documents?

OU I and OU II Soil Remediation

The remedy for OU I and OU II was removal of radiologically contaminated material from the former mill site and placement in an onsite repository. The remedy has been completed and is functioning as intended to prevent additional exposures where contaminated soils remain. Management plans are in place to contain or remove remaining contamination which may become exposed. Routine surveillance and monitoring is conducted to ensure that the ICs remain effective. Figure 3 in Attachment 1 shows where radioactively contaminated soil remains in place on supplemental standards properties.

OU I Repository

There are no compliance issues associated with the disposal cell or Pond 4 waste collection systems, or performance of the repository cover system. Monitoring of the OU I repository is performed under the approved LTS&M Plan (DOE 2007a), which includes operations and maintenance activities. Continued monitoring of the disposal cell cover and basal liner system indicates that the encapsulated wastes are effectively isolated from the environment. Additionally, continued monitoring of Pond 4 indicates that the contained water is isolated from the environment.

OU III Surface Water and Groundwater

The OU III remedy (including the contingency remedy) is functioning as intended to prevent risk of exposure to contaminated groundwater through the use of ICs. Remediation is ongoing to restore water quality in the surficial aquifer to meet drinking water standards. Refer to Figure 8 for concentration trending in the AOA.

Public Health Assessment and Seep 6 Sampling

The first PHA for the MMTS and the MVP was completed in 1997 at the time of the first Five-Year Review, *U.S. Environmental Protection Agency Region VIII Hazardous Waste*

Management Division Five-Year Review (Type Ia), Monticello Mill Tailings Site, San Juan County, Utah (EPA 1997). The PHA completed in February, 2014, was conducted in response to continued resident concerns over residual radioactivity and because a follow-up health investigation was recommended by the 1997 PHA. The PHA was conducted by the Environmental Epidemiology Program (EEP) within the Bureau of Epidemiology in the UDOH. The EEP conducted the PHA by following the Agency for Toxic Substance and Disease Registry assessment protocols, through a cooperative agreement with that agency.

The EEP reviewed historical information from the site, examined the progress of remedial actions, and evaluated data collected since 1997. It was concluded that all of the completed exposure pathways identified in the original PHA have been eliminated through active remediation (e.g., soil and air contamination) or ICs (e.g., groundwater). Potentially complete exposure pathways to contamination in surface water and the food chain were further evaluated. It was concluded on the basis of site-specific studies that the food chain pathway poses no current risk. Although elevated uranium concentrations occur in surface water in Montezuma Creek, it was concluded that because the usage of these waters is limited, it does not pose a risk to human health. The EEP did express concern that the high concentrations of uranium observed at Seep 6 could further accumulate in soils; soil sampling in this area was recommended to determine if uranium concentrations in soil could be a health concern. As a result, DOE prepared and implemented *Seep 6 Soil Sampling and Analysis Plan Monticello Mill Tailings Site Monticello, Utah* (DOE 2015) for sampling these soils. Soil sampling was conducted on September 29, 2015.

A total of 10 surface soil samples were collected from the Seep 6 area. Uranium concentrations ranged from 9.8 to 89 milligrams per kilogram (mg/kg), with an average concentration of approximately 42 mg/kg. The overall conclusion of the PHA is that the former mill site does not pose a risk to human health as long as ICs continue to be maintained. Continued monitoring of site conditions is recommended to ensure no changes in site conditions occur. Seep 6 is located on the former mill site (MS-00893) as shown on Figure 2 (north of Wetland 2).

Institutional Controls

ICs are effective in preventing exposures. Information is provided to affected landowners and prospective new buyers through deed restrictions established when supplemental standards were implemented. These restrictions are verified annually to ensure that they are retained on deeds as properties are sold or divided. There is also a procedure in place for the LM representative to notify new landowners of land use restrictions. Groundwater ICs are also in place and effective in preventing exposure to contaminated groundwater.

7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of remedy selection still valid?

OU I and OU II

OU I and OU II exposure assumptions (identified in the RI/FS) have not changed since the MMTS ROD was signed and are still valid. It is assumed that the primary land use will be recreational/agricultural and that no habitable structures will be built on properties with elevated

radiological soil contamination. One property is designated as industrial use. As discussed below, some toxicity data and recommended cleanup levels have changed, but these are unlikely to affect protectiveness of the remedy as implemented.

The millsite cleanup goals for uranium (300 picocuries per gram [pCi/g]) and thorium-230 (^{230}Th) (sliding scale based on ^{226}Ra concentration in the soil) and the supplemental standards for ^{226}Ra (32 pCi/g) on certain peripheral properties was based on achieving a 30 millirems per year (mrem/yr) total effective dose equivalent, as agreed to by EPA and DOE in *Monticello Remedial Action Project Radiological Sampling and Verification Procedures for Operable Unit I* (DOE 1998a) (see Table 6). This dose corresponded to a risk level of approximately 6×10^{-4} (EPA 1997). EPA's currently recommended dose-based ARAR is 12 mrem/yr (EPA 2014), and corresponds to a risk level of about 3×10^{-4}. However, while DOE used the 30 mrem/yr dose level as a cleanup goal, the guiding approach for cleanup of radioactive materials was to reduce levels to as low as reasonably achievable. Therefore, standards that were actually applied to these properties were more conservative than required and concentrations achieved through cleanup were much lower than the established goals. For example, it was estimated that the 300 pCi/g uranium cleanup goal for the mill site would result in only a 5 mrem/yr dose for a recreational scenario (DOE 1998a) (e.g., a groundskeeper at a golf course). In addition, the highest observed uranium concentration remaining at the mill site was 125.4 pCi/g (approximately 185 mg/kg). Based on the conservativeness of the remediation approach, final radiological conditions at the site likely meet doses at or below EPA's recommended 12 mrem/yr dose level under likely future land uses. Residual uranium levels will also be protective due to potential chemical exposures (see discussion below).

For eight properties along Montezuma Creek, supplemental standards were applied based on a risk assessment that showed risks from residual soil contamination were within the acceptable risk range for chemicals and radionuclides in *Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek* (DOE 1999a) for a recreational/agricultural use scenario. Risks were estimated to be about twice that of background with external exposure to gamma radiation dominating. Calculated doses for areas along the creek were all less than 5 mrem/yr. Updated soil and sediment risks for properties in this area were determined as part of the RIA/FFS for OU III (DOE 2004a). Soil concentrations used in the updated risk assessment were those present before hot spot remediation of Montezuma Creek took place, and therefore overestimate residual risks. The updated risk assessment had results that were similar to those in DOE (1999a).

Since the time, the RIA/FFS were written, there have been minor changes in toxicity values used for manganese and vanadium. However, these changes would have little impact on overall risks calculated for the properties along Montezuma Creek, which were very low. More recently, EPA published the memorandum "*Considering a Noncancer Oral Reference Dose for Uranium for Superfund Human Health Risk Assessments*" (EPA 2016c). This memorandum indicates that the Agency for Toxic Substances and Disease Registry's minimal risk level (MRL) for uranium reflects a better scientific basis for assessing chronic health risks of soluble uranium than the reference dose currently available in EPA's Integrated Risk Information System. The intermediate MRL for uranium of 0.0002 mg/kg/day is significantly lower than the chronic reference dose for uranium of 0.003 mg/kg/day, which was used in the MMTS risk assessments. For example, using the uranium MRL instead of the reference dose would reduce EPA's

residential soil screening level from 230 mg/kg to 15 mg/kg and the industrial soil screening level from 3500 mg/kg to 233 mg/kg.

Using the MRL to calculate residual risks from uranium in soil and sediments along Montezuma Creek would increase the risk estimates by a factor of about 15. Hazard indexes calculated for Montezuma Creek ranged up to 9.4×10^{-4}. Using the MRL, the maximum hazard index could increase to 1.41×10^{-2}, still well below the maximum of 1.0. Residual uranium concentrations along Montezuma Creek (Table 6) exceed the MRL-based residential screening level of 15 mg/kg, but are lower than the MRL-based industrial level of 233 mg/kg. This indicates that restrictions are needed to prevent residential use (which are currently in place) and allow recreational use. As long as land use in these areas remains recreational/agricultural, residual soil concentrations will continue to be protective.

Risk-based concentrations (RBCs) for industrial use were used as cleanup standards for uranium and vanadium in soil at OU II property MP-00211 Phase I because one soil sample exceeded the residential RBC for uranium of 230 mg/kg. Cleanup goals used were 6100 mg/kg and 14,000 mg/kg, respectively, for uranium and vanadium. The current industrial soil value for vanadium is 2000 mg/kg (EPA 2016b); the highest residual vanadium concentration on the property was 250 mg/kg (Table 6) so this criterion is met. As noted above, an industrial soil screening level for uranium based on the MRL would be approximately 233 mg/kg. The highest uranium concentration on property MP-00211 Phase I exceeds this at 418 mg/kg, but based on data from the completion report (DOE 1999c), the 95% upper confidence level on the mean concentration is approximately 115 mg/kg. Therefore, the site is currently suitable for industrial use. In addition, the LTS&M Plan for the Monticello sites (DOE 2007a) contains a requirement that residual soils on the property be cleaned up to 230 mg/kg uranium before a habitable structure can be built on the property. This requirement will ensure that the site remains protective for industrial use. If any other site uses are considered in the future (e.g., residential), additional site cleanup may be needed. DOE maintains regular communication with the City of Monticello regarding planned uses of City-owned properties.

OU III

The current remediation goals for groundwater and surface water are presented in Table 5. With the exception of the groundwater remediation goals for manganese and vanadium, these goals are ARAR-based. These ARARs are still valid. The remediation goals for manganese and vanadium were risk-based. Each was established based on meeting a hazard quotient of 1.0 for use of residential tap water. The remediation goals in the ROD for manganese and vanadium were 880 µg/L and 330 µg/L, respectively. RBCs for manganese and vanadium in tap water from EPA's most recent regional screening level table (EPA 2016b) are 430 µg/L and 150 µg/L, respectively. These RBCs reflect both changes in toxicity values and changes in default assumptions for computing RBCs (e.g., for a child rather than an adult). Because there are ICs in place that prevent the use of groundwater, changes in the RBCs do not affect remedy protectiveness.

7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No.

8.0 Issues, Recommendations, and Follow-Up Actions

This Five-Year Review did not identify any issues or site conditions that could potentially compromise the protectiveness of the remedy for MMTS OU I and OU II. Similarly, no issues were identified that indicate the protectiveness of the remedy for MMTS OU III is compromised in the near term. No recommendations or follow-up actions were identified for the MMTS remedies. To maintain continuity in the remedies, the following actions apply:

- The Cooperative Agreement between DOE and City of Monticello has been extended to March 31, 2022.
- The LTS&M Plan will be updated to include revised procedures and new technologies.

9.0 Protectiveness Statements

The remedy at OU I is protective. Contamination in the mill area has been removed to an onsite waste repository, the engineered repository is effective in eliminating exposure to contaminants, LTS&M takes place to maintain the remedy, and ICs are in place which protect the remedy and prevent new exposures.

The remedy at OU II is protective. Contaminated soil was removed or contained, and ICs are in place to prevent additional exposure where contaminated soils remain under supplemental standards.

The remedy for OU III is protective. Treatment is effective in removing contamination from groundwater, and ICs are in place to prevent use of contaminated groundwater.

9.1 Comprehensive Protectiveness Statement for MMTS

Because the remedy for each of the OUs at the MMTS is protective, the overall site is protective of human health and the environment.

10.0 Next Review

The next Five-Year Review for the MMTS is due June 30, 2022.

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Attachment 1

Executive Summary, Inspection Checklist, and Excerpted Figures from the *2016 Annual Inspection Report for the DOE Monticello, Utah, Mill Tailings Site and Monticello Vicinity Properties*

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Executive Summary, Inspection Checklist, and excerpted figures from the *2016 Annual Inspection Report for the DOE Monticello, Utah, Mill Tailings Site and Monticello Vicinity Properties*.

Executive Summary

The annual inspection of the U.S. Department of Energy (DOE) Monticello Mill Tailings Site (MMTS) and Monticello Vicinity Properties (MVP) was conducted on September 12 and 13, 2016. These sites, which are part of the Monticello, Utah, Disposal and Processing Sites, are inspected annually to ensure that the selected remedies remain protective of human health and the environment. Under those remedies, uranium mill tailings–related contamination remains in place at some locations where use is restricted and exposure is limited. Annual inspections (1) verify that long-term surveillance and maintenance (LTS&M) activities implemented throughout the year are effective and appropriate, (2) confirm that the institutional controls (ICs) restricting land and groundwater use under the MMTS and MVP remedies remain effective, and (3) identify deficiencies and maintenance items, and recommend corrective actions as needed. This report summarizes the results of the 2016 annual inspection. In accordance with the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (DOE–LM/1465–2007), also known as the LTS&M Plan, the results will also be used to prepare the 2017 Comprehensive Environmental Response, Compensation, and Liability Act Five-Year Reviews.

Repository Findings

The repository site consists of the access area (support buildings and the Temporary Storage Facility [TSF]), the repository perimeter, runoff/run-on controls, Pond 4, the repository cover, and cover penetrations (manholes, settlement monuments, and structures associated with the embedded lysimeter). The site is well-maintained and well-managed. New signs displaying updated information were on order. The TSF bin did not contain any material. Site fences were intact and functional with no evidence of vandalism. The repository cover did not show any settling, slumping, fracturing, seepage, ponding, or significant erosion. Site vegetation is healthy and composed primarily of desirable species. Evidence of some movement of surface rock, identified in 2015, is still visible on the repository side slopes but does not indicate slope failure or subsurface movement of materials. Sediment and materials movement and vegetation were apparent in some of the drain ditches and toe trenches but do not impair their function. Perimeter signs, though legible, were faded and will be replaced in 2017. There was approximately 8 feet of water in Pond 4, mostly from the operation of the groundwater remedy optimization system.

City-Owned Property Findings

There was no evidence of the violation of any ICs on properties owned by the City of Monticello (City). Signs on the properties posting ICs (such as a prohibition against overnight camping) were peeling and difficult to read. Wetlands were ecologically healthy and undamaged. No groundwater drilling applications were sought for the City-owned properties, and no drilling activities within the restricted area were noted or reported by onsite personnel. Fire pits and day campsites discovered during previous annual inspections showed no evidence of additional use. Mountain bike trails were in good condition, and they appeared to be regularly used by the public.

City Streets and Utility Corridor Findings

No unplanned or unmonitored excavations related to city streets and utility corridors were identified during the 2016 annual inspection. No new erosion of highway shoulders or along the Highway 191 embankment at Montezuma Creek was apparent. All planned excavations had been properly monitored by onsite personnel.

Private Property Findings

No changes in land use on restricted properties were apparent. No well-drilling permit applications were received by the Utah Division of Water Rights within the Montezuma Creek Restrictive Easement Area or the Groundwater Restricted Area. Onsite personnel also verified during routine surveillance that no wells were drilled in the alluvial aquifer for domestic use within the Groundwater Restricted Area. No significant land-use changes in these areas were apparent.

Records Findings

Deed restrictions were verified at the San Juan County Recorder's Office, including those associated with the sale of properties. The Information Repository (updated in April 2014) and the Operable Unit III Administrative Record (updated in October 2012) were present and accessible. The site record books were correct and complete with only minor deficiencies.

Operable Unit III Findings

Facilities related to the groundwater remedy optimization system, including the pipeline access road, transfer building, and extraction well field were intact and functioning. The Permeable Reactive Barrier is a subsurface installation that cannot be inspected visually. The ex situ treatment system was inactive, but surface features were intact and in good condition. No evidence of standing water, saturated soil, surface disturbance, or stressed vegetation was observed in the area of the groundwater wells. Water sampling teams noted no deficiencies during routine well inspections in October 2015 and April 2016. Several inactive wells on property MP-00179 were found to be missing surface components.

Conclusions and Recommendations

The 2016 annual inspection confirmed that DOE LTS&M activities implemented throughout the year remain effective and appropriate, and ICs restricting land and groundwater use as part of the MMTS and MVP remedies remain effective. No corrective actions or maintenance actions are necessary. Minor maintenance of inactive wells on property MP-00179 is recommended to prevent damage from livestock. The Information Repository also requires an update.

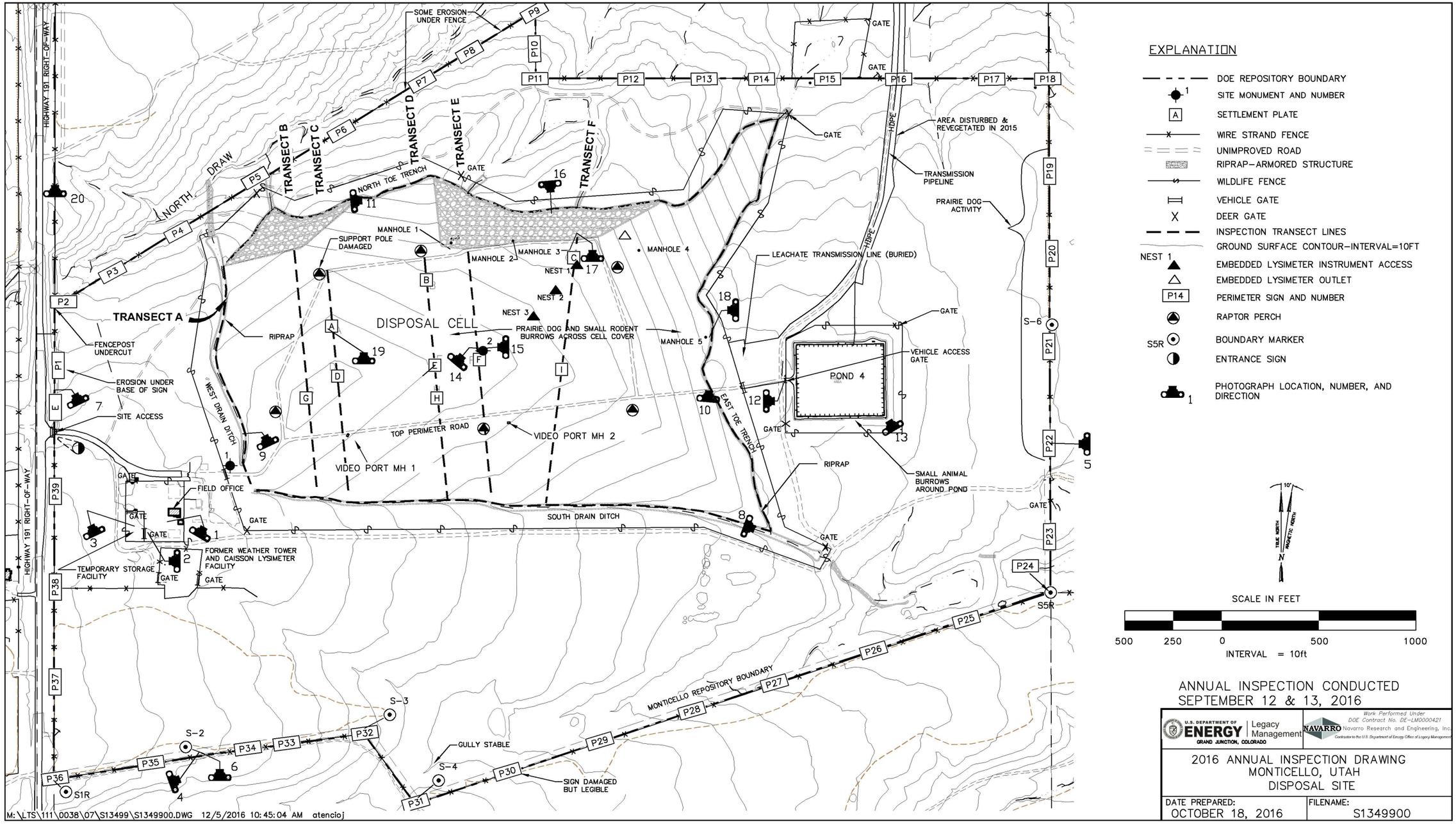

Figure 2. Monticello, Utah, Repository Site

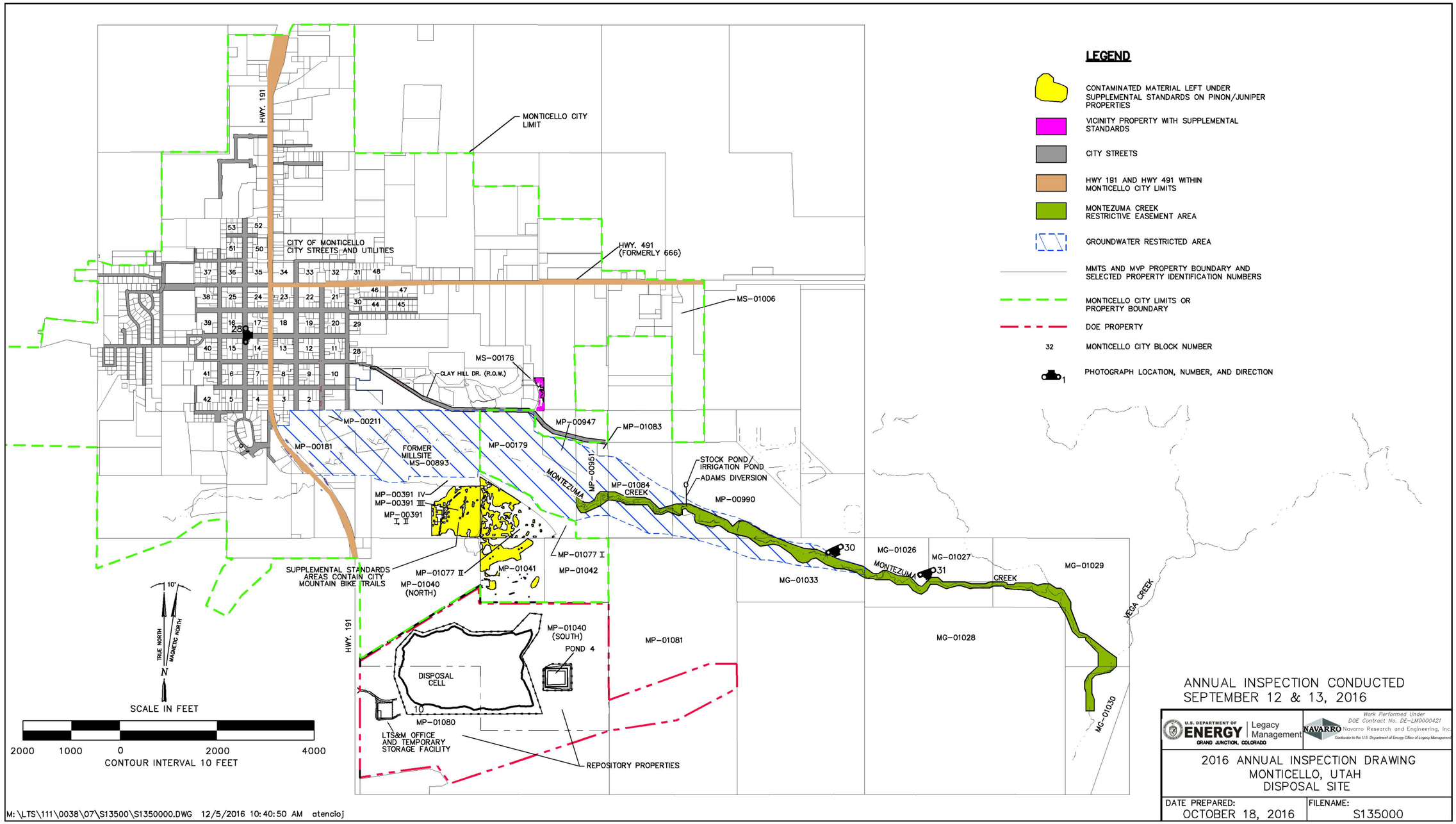

Figure 3. MMTS and MVP Supplemental Standards and Groundwater Restricted Areas

MMTS: Monticello Mill Tailings (USDOE) Site; Operable Units I, II, and III (UT 3890090035)
MVP: Monticello Radioactively Contaminated Properties (Monticello Vicinity Properties) (UTD 980667208)
Location: Monticello, Utah: EPA Region 8

Note: Section 6.1 of the Long-Term Surveillance and Maintenance Plan contains detailed inspection procedures. See attached maps for the location of site inspection features identified in this checklist.

Annual Inspection Preparation:

The following tasks were completed in preparation for the current MMTS and MVP annual inspection:

	Y	N
Review annual inspection requirements outlined in Section 6.1 of the LTS&M Plan	☒	☐
Schedule site inspection and appoint chief inspector	☒	☐
Review previous reports and records as outlined in Section 6.1.2 of LTS&M Plan	☒	☐
Notes:		
Review OU III water quality data for contaminant trends and distribution	☐	☒
(This is reviewed by the groundwater team independent of the annual inspection)		
Provide team members with background information, maps, and inspection checklists	☒	☐
Notify EPA and UDEQ at least 2 weeks prior to site visit and invite them to participate	☒	☐
Notify representatives from other agencies as necessary and invite them to participate	☒	☐
Verify names and telephone numbers of parties with access or notification agreements	☒	☐
Verify key contact information listed in Section 6.1.2 of the LTS&M Plan	☒	☐
Contact State Engineer's Office for water well permit applications in/near GWMA	☒	☐
Verify annual contact with UDOT re: planned highway projects for current year	☒	☐
Verify regular contact with City of Monticello re: planned or unplanned excavations	☒	☐

Date(s) of Annual Inspection: 9/12/16 - 9/13/16

Inspection Team Members

Name	Affiliation	Phone Number	E-mail
Linda Sheader	Navarro Research and Engineering, Inc. (ecologist and curator of site records)	(970) 248-6711	Linda.Sheader@lm.doe.gov
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Danika Marshall	Navarro Research and Engineering, Inc. (ecologist)	(970) 248-6137	Danika.Marshall@lm.doe.gov
Jason Nguyen	U.S. Department of Energy (site manager)	(970) 248-6707	Jason.Nguyen@lm.doe.gov
Fred Smith	Navarro Research and Engineering, Inc. (site manager)	(970) 248-6182	Fred.Smith@lm.doe.gov
David Dille	Navarro Research and Engineering, Inc. (site operations manager)	(435) 587-2902	David.Dille@lm.doe.gov

Notes: Attach additional sheets as needed for any of the following sections.

I. Interviews		
Name of Individual Interviewed	**Affiliation**	**Date Interviewed**
D. Dille	Onsite LM Representative	September 12, 2016
Notes: ***The onsite LM representative accompanied inspectors on portions of the inspection. Notes are included in individual checklist sections, below.***		
Name of Individual Interviewed	**Affiliation**	**Date Interviewed**
	City of Monticello	
Notes: ***Individuals from the City of Monticello were not interviewed during the 2016 inspection. Interview related to the CERCLA Five-Year Review were conducted separately from the annual inspection.***		
Name of Individual Interviewed	**Affiliation**	**Date Interviewed**
Marc Stilson	State Engineer	September 20, 2016
Notes: ***Mr. Stilson, Southeast Regional Engineer with the Utah State Engineer's office (i.e., Utah Division of Water Rights), confirmed via e-mail to P. Wetherstein that in 2016:*** • ***There were no requests or approvals to drill into or through the shallow alluvial aquifer in DOE's Groundwater Restricted Area (GWRA).*** • ***There were no new applications or approvals, or change applications or approvals, to appropriate water for domestic purposes from or near the shallow alluvial aquifer in DOE's GWRA.*** ***Limitations on water appropriation and drilling activities in DOE's GWRA were established at DOE's request in the UDWR* Ground-Water Management Policy for the Monticello Mill Tailings Site and Adjacent Areas, *May 1999.***		
Name of Individual Interviewed	**Affiliation**	**Date Interviewed**
Notes: ***No additional individuals were interviewed during the 2016 inspection.***		

II. Administrative and Records Inspection

	Readily Available Y	Readily Available N	Current Y	Current N
1. General LTS&M Documents				
Ready access from field office to online manuals (Long-Term Surveillance and Maintenance Plan, Health and Safety Manual, QA Manual)	×	☐	×	☐
2. LTS&M Training Records *(ID names in TSF log; verify with Training dept.)*				
Onsite employees (*verified via past-due training list online*)			×	☐
City workers *(unescorted workers must have current training)*	***N/A 2016***		☐	☐
3. Public Records *(verify records are present and in order)*				
OU III Administrative Record ***no update necessary***	×	☐	×	☐
Information Repository (Monticello) ***updated 2/2014***	×	☐	☐	×
Information Repository (Grand Junction) ***n/a - extra GJ copy decommissioned in 2012***				

4. Record Books ***(Note:*** *Inspection guidelines are listed inside covers of record books; LTS&M Plan Appendix B contains record book management and entry protocol.)*

Record book entries/documentation	× *satisfactory*	☐ *unsatisfactory*		
Repository Site Record Book	×	☐	×	☐
TSF Record Book *(see LTS&M Plan Section 3.4)*	×	☐	×	☐
City-owned properties *(see LTS&M Plan Section 4.4)*	×	☐	×	☐
Private Property Restricted Areas *(see LTS&M Sec. 4.4)*	×	☐	×	☐
Public Roads and Utilities Record Book	×	☐	×	☐
Documentation/recordkeeping requirements met	× *satisfactory*	☐ *unsatisfactory*		
Information readily traced to updated drawings	× *satisfactory*	☐ *unsatisfactory*		
Rad scan info for eroded/excavated material	× *satisfactory*	☐ *unsatisfactory*		
Entries include TSF transfers	☐ *satisfactory*	☐ *unsatisfactory*	× *N/A*	
Entries include info on stockpiled material and follow-up scan results	× *satisfactory*	☐ *unsatisfactory*	☐ *N/A*	
Hwy 191/491 entries include information on scan Results and material returned to excavation	× *satisfactory*	☐ *unsatisfactory*	☐ *N/A*	
Storm event surveys documented	× *satisfactory*	☐ *unsatisfactory*	☐ *N/A*	

Notes for Record Books Inspection:

General LTS&M documents are available online.

The Information Repository update has not been completed since 2014, as the current paper-based system is almost never used by the public. Discussions are planned to transfer the record to an electronic, online system.

No transfer of radioactive material into TSF in FY 2016. Material removed and transported to Grand Junction Disposal Site in April 2016.

5. Radiological As-Built Drawings

Drawing updated annually	× *satisfactory*	☐ *unsatisfactory*
Documentation/recordkeeping requirements met	× *satisfactory*	☐ *unsatisfactory*
Radiological scan information recorded	× *satisfactory*	☐ *unsatisfactory*

6. Surveillance Checklists and Records	**Readily Available**		**Current**	
(Note: *Repository and Pond 4 LCRS and LDS monitoring records are sent electronically on a regular basis.)*				
TSF Access/Security Logs	×	☐	×	☐
Meteorological Monitoring Data, Monthly and Quarterly Repository Surveillance Checklists, and Monthly Pond 4 Surveillance Checklists	×	☐	×	☐

Notes for checklist and records inspection: ***Monitoring data are managed electronically.***

Minor deficiencies found in Public Roads and Utilities record book or on drawings. Corrections were made in record book and/or on drawings by September 14, 2016.

7. Agreements ***(Note:*** *verify inclusion in Information Repository.)*		
DOE/City Cooperative Agreement *(in file IR074; agreement expires on 12/31/16)*	×	☐
DOE/UDOT Memorandum of Understanding *(in file IR021; does not expire)*	×	☐
8. Zoning Restriction—Overlay Zone OL-1 *(in file IR044; do not expire)*		
Restriction is verified as current through City for property MP-00211-VL	×	☐
Restriction is verified as current through City for property MP-00176-VL	×	☐

9. Deed Restrictions *(verify at San Juan County Recorder's Office, 117 S. Main)*

Properties Transferred from DOE to City of Monticello

DOE ID	Parcel	Document	Book	Page	IC Annotations in Place Y	N
Electronic Record	A34240063004 applies to properties listed in notes				×	☐
MP-00181-OT	A33230367201	E061691	B788	100-113	×	☐
	33S23E367204					
MP-00391-VL	33S24E316001	E061691	B788	100–113	×	☐
MS-00893-OT	33S24E315400	E061691	B788	100–113	×	☐
MP-01040-VL (N)	34S24E061200	E061691	B788	100–113	×	☐
	34S24E061201		electronic record		×	☐
MP-01041-VL	34S24E060600	E061691	B788	100–113	×	☐
MP-01042-VL	34S24E060000	E061691	B788	100–113	×	☐
MP-01077-VL	33S24E318400	E061691	B788	100–113	×	☐

Note: Correction to quitclaim deed for properties transferred to City recorded as E062130, B789, P450–452 (applies to all of the above listed properties).

Properties Sold by DOE to Private Parties

DOE ID	Parcel	Document	Book	Page		
MP-01081-VL	34S24E053000	114283	933	105-111	×	☐

Montezuma Creek Soil and Sediment Properties

DOE ID	Parcel	Document	Book	Page		
MP-00990-CS	33S24E324800	E063343	B793	831–852	×	☐
	33S24E328400	E063343	B921	474–476	×	☐
	33S24E324802	E063343	electronic record		×	☐
	A33240324802	E063343	electronic record		×	☐
	A33240324804	E063343	electronic record		×	☐
MG-01033-VL	34S24E050000	E063343	B793	831–852	×	☐
	34S24E050601	E063343	electronic record		×	☐
MG-01026-VL	34S24E043000	E063343	B793	831–852	×	☐
MG-01027-VL	34S24E042400	E063343	B793	831–852	×	☐
MG-01030-VL	34S24E047200	E063255	B793	526–538	×	☐
MG-01029-VL	34S24E040000	E063255	B793	390–404	×	☐
	34S24E040001	E063255	electronic record		×	☐
MP-00951-VL	33S24E317200	E063926	B796	188–202	×	☐
	33S24E317204	E063926	electronic record		×	☐
	33S24E317207	E063926	electronic record		×	☐
	A33240317206	E063926	electronic record		×	☐
MP-01084-VL	33S24E326000	E063926	B796	188–202	×	☐

Note: Correction to warranty deed for MP-01026-VL recorded as E073394, B830, P611.

Utah Department of Transportation Properties

DOE ID	Parcel	Document	Book	Page		
MS-00895-OT	A33230367811	E068703	B814	533	×	☐
	A33230367825		electronic record		×	☐
MS-00892-OT	A33230367202	E068704	B814	534	×	☐
MS-01021-OT	A33230367812	E068705	B814	535–536	× ***book***	× ***electronic***
MS-01020-OT	A33230369001	E068706	B814	537–538	×	☐

Notes for deed restriction inspection:

A34240063004 applies to all transferred City properties: 181, 391, 893, 1040, 1041, 1042, and 1077. There is an error in the records for property MP-00181: the annotation shows an access agreement for a well, but the well is not located on this property (it is located on MP-00179).

III. Repository Inspection

A. Access Area

1.	**Site Access Sign/Emergency Information**	☒ Satisfactory	☐ Repairs/Maintenance Needed	
2.	**Field Office**	☒ Satisfactory	☐ Repairs/Maintenance Needed	
3.	**Temporary Storage Facility**	☒ Satisfactory	☐ Repairs/Maintenance Needed	
	Bin cover	☒ Functional	☐ Not Functional	
	Approximate volume of bin contents (cubic yards) 0 .	***Material shipped in April 2016***		
	Health and safety/rad postings	☒ Appropriate	☐ Inadequate	
	Drums and secondary containment	☒ Good condition	☐ Unavailable/not good condition	
	Vandalism/trespassing	☒ Not evident	☐ Evident (locate on map)	

Describe access area repairs/maintenance needed:
New signs for the front gate were on order at the time of the inspection.

B. Repository Perimeter *(Note locations of erosion, noxious weeds, vandalism, or excessive vegetation on map)*

1.	**Outer Fencing and Gates**	☒ Satisfactory	☐ Repairs/Maintenance Needed	
2.	**Signs** *(Note condition of 40 numbered reference signs and posts)*			
	Signs damaged but legible, requiring monitoring: ***All perimeter signs are faded but legible and are scheduled to be replaced in 2017.***			
	Signs requiring replacement: ***none***			
3.	**South Boundary Markers**	☒ All six markers located	☐ Marker(s) _____ not located	
4.	**Erosion/Gullying**	☐ Not evident	☒ Evident ***(but stabilized)***	
5.	**Vegetation**	☒ Not excessive	☐ Excessive growth	
		☐ Noxious weeds absent	☒ Noxious weeds present	
6.	**Land use changes on adjoining property**	☒ No change	☐ Change	
7.	**Vandalism/trespassing**	☒ Not evident	☐ Evident	

Notes for condition of repository perimeter (e.g., repairs needed, erosion areas, vandalism):
Roads accessing the pipeline and transfer building were recently graded. Infestations of noxious weeds were mapped (and subsequently treated with herbicide on September 15, 2016).

C. Repository Runoff/Run-On Controls *(North and East Toe Drains; South and West Drain Ditches)*

1.	**Settlement**	☐ Not evident	☒ Evident	***Not significant***
2.	**Material Degradation**	☐ Not evident	☒ Evident	***Not excessive; no change since 2015***
3.	**Erosion/gullies**	☒ Not evident	☐ Evident	
4.	**Siltation**	☐ Not evident	☒ Evident	***Not affecting integrity of cell***
5.	**Obstructions**	☒ Not evident	☐ Evident	
6.	**Excessive Vegetation**	☒ Not evident	☐ Evident	

Notes for condition of repository runoff and run-on controls *(Note: locate all areas of concern on map)*:
Rock above the North Toe Trench shows evidence of some movement and settlement, but trench function is not impaired. Continued monitoring is recommended.

D. Pond 4 ***(Note:** Locate all areas of concern on map.)*

1.	**Perimeter Fence and Access Gate**	☒ Satisfactory	☐ Unsatisfactory	
2.	**Erosion/Biointrusion of Pond Berm**	☐ Not evident	☒ Evident	***small animals only***
3.	**Safety Equipment** Pond barrier rope intact		☒ Yes	☐ No
	Personal floatation device (PFD) posting present and visible		☒ Yes	☐ No
	PFD storage containers appropriately marked and in good condition		☒ Yes	☐ No
	PFDs accessible, in good condition, and appropriately sized		☒ Yes	☐ No
4.	**Pond 4 LCRS and LDS Electrical Housing/Surface Installations**			
	Physical condition is:	☒ Satisfactory	☐ Unsatisfactory	
5.	**Liner—Holes/Cracks/Tears**	☒ Not Evident	☐ Evident	
6.	**Liner Anchors**	**No longer needed in pond; removed in 2014**		
7.	**Siltation and Vegetation in Pond 4**	☐ Not evident	☒ Evident	***patches of***
8.	**Pond 4 Water Level** Estimated water depth is 8 ft.			***emergent reeds***
9.	**Vandalism**	☒ Not evident	☐ Evident	

Notes for condition of Pond 4 features:

Electrical components were being upgraded at the time of the annual inspection.

E. Repository Cover Inspection

1. Top Perimeter Road and Road to Pond 4 ☒ Satisfactory ☐ Unsatisfactory

2. Interior Wildlife Fence and Wildlife Gates

Physical condition is: ☒ Satisfactory ☐ Unsatisfactory

Wildlife gates are: ☒ Open ☐ Closed

3. Cover Vegetation

See attached Repository Cover Vegetation Index form; note areas of concern on map

4. Riprap Armoring

☒ Slumping/sliding not evident ☐ Slumping/sliding evident (locate on map)

☒ Rock deterioration not evident ☐ Rock deterioration evident (locate on map)

5. Settlement/Desiccation/Erosion/Gullies

☒ Settlement depressions not evident ☐ Settlement depressions evident (locate on map)

☒ Desiccation cracking not evident ☐ Desiccation cracking evident (locate on map)

☒ Erosion/gullies not evident ☐ Erosion/gullies evident (locate on map)

6. Holes/Burrows/Biointrusion

☐ Holes/burrows/biointrusion not evident ☒ Holes/burrows/biointrusion evident (locate on map)

7. Seepage/Ponding

☒ Seepage not evident ☐ Seepage evident (locate on map)

☒ Ponding not evident ☐ Ponding evident (locate on map)

☒ Soft subgrade not evident ☐ Soft subgrade evident (locate on map)

☒ Phreatophytes not present ☐ Phreatophytes present (locate on map)

8. Site Monument at apex of cover ☒ Satisfactory ☐ Repairs/maintenance needed

Site Monument at boundary gate ☒ Satisfactory ☐ Repairs/maintenance needed

Notes for repository cover inspection:

Some movement of rock evident above the North Toe Trench, creating horizontal features in the rock. Rock also building up just above the smaller rock on the North Toe Trench. A channel-shaped feature on the repository side slope described in 2015 was not photographed. Areas continue to be monitored. Minor animal burrowing on disposal cell top.

F. Cover Penetrations *(Caution: confined space entry requirements in effect for all manholes)*

1. Manholes 1 and 3 (LCRS and LDS access vaults)

Covers secure and operable	☒ Yes	☐ No
Exterior pump access ports are undamaged	☒ Yes	☐ No
Evidence of leakage into vaults	☐ Yes	☒ No
Evidence of drainage through cover penetrations	☐ Yes	☒ No
Telemetry surface installations in good condition	☒ Yes	☐ No
Vaults are posted as confined-spaces	☒ Yes	☐ No

2. Manholes 2, 4, and 5

Covers secure and operable	☒ Yes	☐ No
Evidence of drainage through cover penetrations	☐ Yes	☒ No
Manholes are posted as confined-spaces	☒ Yes	☐ No

Notes for condition of manholes:

Some signs have been removed from manhole covers because they are no longer applicable.

3. LCR Video Ports (check covers only; ports are inoperable)

Covers secure and operable	☒ Yes	☐ No
Evidence of drainage through cover penetrations	☐ Yes	☒ No

4. Settlement Monuments (A to I) ***(Note:*** *Plates surveyed during Five-Year Reviews only.)*

Surface completions undamaged	☒ Yes	☐ No
Inner plates undamaged	☒ Yes	☐ No

5. Embedded Lysimeter

Evidence of seepage at outlet	☐ Yes	☒ No
Instrumentation installations undamaged	☒ Yes	☐ No
Evidence of drainage along cover penetrations	☐ Yes	☒ No
Telemetry surface installations in good condition	☒ Yes	☐ No

6. Operation of Repository and Pond 4 LCRS and LDS (interview onsite LM operator)

LCRS and LDS pumps, water level sensors, and flow meters are fully operational	☒ Yes	☐ No
Telemetry system is fully operational	☒ Yes	☐ No
Leachate production is below action levels	☒ Yes	☐ No
Leachate production rates are stable	☒ Yes	☐ No
Water levels do not exceed top of sumps	☒ Yes	☐ No
Monitoring data are managed through SOARS	☒ Yes	☐ No

Pumping rates (gallons/week): LCRS 1 _____ LCRS 2 _____ LDS 1 _____
LDS 2 _____ Pond 4 LCRS 1 _____ Pond 4 LDS 1 _____

Notes for cover penetrations inspection and operation of LCRS/LDS:

Pumping rates are reported in quarterly Federal Facility Agreement reports to EPA and UDEQ. No anomalies reported. Reports are available in SOARS. Leachate pumps every 6 to 7 weeks.

IV. City-Owned Properties Inspection

A. City-Owned Properties Transferred from DOE

(MP-00181, MP-00391, MS-00893, MP-01040 (North Portion), MP-01041, MP-01042, and MP-01077)

Property	**181**		**391**		**893**		**1040**		**1041**		**1042**		**1077**	
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Accessible to public	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐
Evidence of camping	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒
Habitable structure(s)	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒
Gullies/erosion	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☒	☐
Runoff/drainage controls intact and in good repair (ditches, riprap structures, dams, check dams, berms)	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐
Land use changes	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒
Evidence of vandalism	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒
Soil removal evident	n/a		☐	☒	n/a		n/a		☐	☒	n/a		☐	☒
Water well installation	☐	☒	n/a		☐	☒	n/a		n/a		n/a		☐	☒
Wetland/creek damage	☐	☒	n/a		☐	☒	n/a		n/a		n/a		n/a	
Supp. Stds. fence intact	n/a		☐	☒	n/a		n/a		☐	☒	n/a		☐	☒

Describe any violations of institutional controls and/or repair/maintenance issues (locate on map):

Sign posting the IC for no overnight camping is peeling and difficult to read. A gully has formed on property 1077 and will be monitored. Bow hunting is allowed on some City properties. The supplemental standards fence is no longer intact/maintained because of use by mountain bike trails; the area is scanned after significant rainfall events in accordance with the LTS&M Plan.

B. City-Owned Property MP-00211	Yes	No	N/A
Evidence of excavation or construction	☐	☒	
If yes, confirm the following with onsite LM representative:			
In accordance with Monticello zoning district Overlay Zone (OL-1)	☐	☐	☒
Violation has been reported	☐	☐	☒
Radiological contamination was encountered	☐	☐	☒
Radiological contamination was appropriately managed	☐	☐	☒
Corrective action required	☐	☒	

Notes for City-owned property MP-00211 inspection:

No evidence of activity on this property.

V. Montezuma Creek Soil and Sediment Properties

*(**Note:** Refer to Plates 2 and 3 in the LTS&M Plan for boundary of restricted areas on the following properties: MP-00951, MP-00990, MP-01084, MG-01026, MG-01027, MG-01029, MG-01030, and MG-01033.)*

Evidence of habitable structures within the restricted area	☐ Yes	☒ No	
Evidence of soil removal from the restricted area	☐ Yes	☒ No	
Land use/ownership has changed *	☐ Yes	☒ No	
Land owners are aware of use restrictions *	☒ Yes	☐ No	
Violations have been reported *	☐ Yes	☐ No	☒ N/A
Corrective action required	☐ Yes	☒ No	

Notes for Soil and Sediment Properties inspection: ***The entire canyon was not visited, as beaver/muskrat dams blocked access to the lower canyon. No anomalies have been reported by sampling teams or onsite representatives.***

* *Confirm with onsite LM representative.*

VI. Groundwater Management Area

*(**Note:** The boundary of the Groundwater Management Area [GWMA] is shown in Plate 4 of the LTS&M Plan and includes the following properties: MP-00181, MS-00893, MP-00211, MP-00179, MP-00947, MP-00951, MP-01084, MP-00990, and MG-01033.)*

Evidence of water well installation within the restricted area*	☐ Yes	☒ No	
No permits for water well installation within the restricted area†	☒ Yes	☐ No	
Violations have been reported*	☐ Yes	☐ No	☒ N/A
Land ownership has changed*	☐ Yes	☒ No	
Landowners are aware of water use restriction*	☒ Yes	☐ No	
Corrective action required	☐ Yes	☒ No	

Notes for Groundwater Management Area inspection:
Onsite representatives regularly inspect area to verify that new wells have not been drilled.

* *Confirm with onsite LM representative.*
† Confirm with State Engineer's Office.

VII. OU III Monitoring Wells and Water Treatment Systems

A. Monitoring well surface completions *(**Note:** Active wells are inspected and maintained twice annually during sampling events. Inactive wells are inspected during the annual inspection. See attached map for locations.)*

	Yes	No
Active wells in working condition (verify with sampling teams)	☒	☐
Outer casing or flush mount vault intact	☐	☒
Wells are locked/flush mount well lids secured	☐	☒

Notes for inactive monitoring well inspection (note location of any maintenance issues on map):
Wells are checked and maintained twice a year by groundwater sampling team. Approximately 4 of the inactive wells are missing bolts, and one is missing a cover. Repairs will be requested to prevent damage to the wells by the landowner's livestock. Some wells are no longer flush mounted.

B. Permeable Reactive Barrier (PRB) and Auxiliary Treatment Cells and Infiltration Trench

	Yes	No
Electrical panel, antenna, fence, and vault access in satisfactory condition	☒	☐
Evidence of ponded water or saturated soil	☐	☒
Evidence of surface disturbance	☐	☒
Evidence of stressed vegetation	☐	☒

Notes for PRB and treatment cells inspection:
Treatment cells are inactive but capable of being restarted if needed.

VIII. MVP Field Inspection

A. City Streets and Utilities

Roads/Utilities Under Construction	Y	N
Unmonitored excavations observed during inspection	☐	☒
Planned excavations are identified by onsite LM representative	☒	☐
Radiological material is properly controlled and managed ***N/A*** in 2016	☐	☐
The utility locator service is contacted regularly by the onsite LM representative	☒	☐

Notes for city streets and utilities inspection:

Onsite personnel normally drive city streets daily to look for excavation work. The utility locator service is accessed through blue stakes notices (811 from the State of Utah). No radioactive material was encountered during 2016.

B. UDOT Highways 191 and 491 Rights-of-Way

1. Roads Under Construction	Y	N
Unmonitored excavations observed during inspection	☐	☒
Planned excavations are identified by onsite LM representative	☒	☐
Radiological material is properly controlled and managed ***N/A*** in 2016	☐	☐

The local UDOT official is contacted periodically by the onsite LM representative – ***n/a – website only***

Notes for UDOT highways inspection:

UDOT information available on website; no construction. Onsite LM representative routinely consults website for future projects. No highway projects in 2016.

2. Erosion *(highway shoulders and Highway 191 embankment at Montezuma Creek)*

☐ New erosion evident ☒ Previous erosion evident; unchanged ☐ No erosion evident

Eroded material scanned for radiological contamination and properly managed

☐ Yes ☐ No ☒ N/A

Describe erosion noted on UDOT highways:

UDOT is planning to repair erosion areas on the embankment, but a time frame has not been published. Onsite representatives will scan the area prior to work.

C. Property MS-00176 *(**Note:** Observations and activities for MS-00176-VL are recorded by the onsite LM representative in the Private Properties Restricted Areas Record Book.)*

Monticello zoning district Overlay Zone (OL-1) requires radiological scanning of the footprint of new habitable structures. Radiologically contaminated material is removed under the direction of the onsite LM representative.

	Y	N
Unmonitored excavations observed during inspection	☐	☒
Planned excavations are identified by onsite LM representative	☒	☐
Site conditions indicate ICs properly implemented	☒	☐

Notes for property MS-00176 inspection:

No changes noted since last annual inspection.

Parcel #A33240310009

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Attachment 2

CERCLA Five-Year Review Announcements

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U.S. DEPARTMENT OF ENERGY | Legacy Management

Notice of CERCLA Five-Year Review for the Monticello Mill Tailings Site and the Monticello Vicinity Properties

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is conducting its fifth five-year review of remediation remedies for the Monticello Mill Tailings Site (MMTS) and the Monticello Vicinity Properties (MVP) in Monticello, Utah. The review is conducted under the *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA) to ensure the CERCLA remedies remain protective of human health and the environment.

Remedies included removing and relocating approximately 2.5 million cubic yards of uranium mill tailings and radiologically contaminated soil and debris from the mill site, adjacent properties, and vicinity properties to a permanent repository constructed south of Monticello. Land use restrictions, in conjunction with alternate cleanup standards (supplemental standards), and groundwater use restrictions were implemented as part of the remedy to ensure that known contamination left in place is not further dispersed and does not adversely affect human health and the environment. Additionally, one area of contaminated groundwater is being treated through a pump and evaporate system installed in 2014.

The review team will study site reports, past and present monitoring and inspection data, monitoring and surveillance practices, and conduct a physical inspection of the site. In addition, interviews will be conducted with selected land owners, local government, and State of Utah officials for comments and concerns regarding remedy effectiveness and administration of the sites. The review will begin in September 2016 and conclude in April 2017. A Five-Year Review Report will be prepared at the conclusion of the review to document and present the findings.

The final report will be available on the LM website at **http://www.lm.doe.gov/monticello/Sites.aspx**.

Results of the last five-year review, conducted in 2012, are available at **http://www.lm.doe.gov/Monticello/S08399_MNT.pdf**. For more information, visit the LM website located at **www.lm.doe.gov/monticello/Sites.aspx**, or contact:

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Attachment 3

CERCLA Five-Year Review Interviews

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Interviews for the MMTS and MVP 2012 CERCLA Five-Year Reviews

As part of the five-year reviews for the MMTS and MVP, a public affairs specialist of the DOE LM contractor (Navarro Engineering and Research, Inc.) interviewed local property owners and stakeholders to gather information about the site's effect on the community. The interviews were conducted during October 2016 in Monticello and by telephone.

Interviewees and their relation to the sites are listed below.

2017 Monticello Five-Year Review
Interviews for Five-Year CERCLA Review

Former mayor, City of Monticello
Interview Date: September 20, 2016
Location: Blue Mountain Foods, Monticello, Utah

Question 1: What is your general impression of the DOE management (remediation and post remediation) of the Monticello Mill Tailings Site (repository, former mill site, supplemental standards properties, groundwater restricted area)?

Answer: Pretty good. I think overall they've seemed to do a good job. They've been helpful to the community. I'm not in City government anymore, but I know they assist our city people when they need to dig.

Question 2: Are you aware of any restrictions placed on your property regarding land use or groundwater use following remedial actions by DOE?

Answer: No [for myself], but speaking for the city, yeah. There is the mill site itself that has restrictions.

Question 3: Are you concerned about the level of safety provided by the remedial actions?

Answer: Currently, no I'm not very concerned. I think there's always a little underlying fear that there's something that still could be lingering. I know there are still some areas in the mill site that could possibly be problematic. I can't give any updates on it because it's been 3 years since I've been in the know. I have friends who live downstream from the mill site. Some of their concerns have been about the contaminated water. They've been advised to not spend a lot of time in water. But, when it is summer and it's hot, the kids will be in the water. I think as far as the Monticello vicinity, they did a good job of cleaning it up and continue to do a good job. It'd probably be cheaper for them to move us.

Question 4: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Answer: Just on the possibilities of the surface-water contamination around the mill site and downstream. Beyond that, I hear very little concern, if any. There is still an underlying concern about the effects of the exposure during the mill operations and before cleanup. There's still a lot of concern of cancer potential. That is gonna be a cloud over people till they all die off, I guess. It's not a concern of them living now, but if they lived here before the cleanup. It wasn't just the people who lived close by, but the whole town was affected. The people who lived here, went to work or school all have been affected. We export our greatest resource, our children. The effects of the contamination covers a lot more than the 2,000 people that live here, since many of the children have moved. It's hard to tell how many could have been exposed.

Question 5: Have you noticed any unusual activities on the mill site or surrounding properties that may affect the level of protection provided by the remedial actions?

Answer: No.

Question 6: Do you feel the safeguards provided by the site remedy are adequate in protecting the public from contaminated soil? From contaminated groundwater?

Answer: I think so. The known factors are adequate, but what if there was a weather-related incident that could expose the contamination? I haven't been involved for a while. I remember DOE thought there was a high level of contamination in the seeps. I don't know if they wanted to fence us off from the seeps. I don't think that's happened. I don't think there's a danger to the community. A flash flood hasn't been a concern, but there's always a possibility. Possibly with groundwater changes, springs can change. It's always gonna need to be monitored.

Question 7: Are there general or specific community concerns regarding the administration or operation of the site by DOE? By the City?

Answer: Not that I'm aware of.

Question 8: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (David Dille, Gary McKinnon) regarding site operations?

Answer: I believe so. I've never heard anything to the contrary. Nate Langston (City of Monticello Public Works Director) has never brought anything to our attention that's been a big concern.

Question 9: Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or current activities?

Answer: No.

Question 10: How do you keep informed about site activities?

Answer: Just through the grapevine basically, anymore. I'm on the VMTE committee. We do meet 6 to 8 times a year. If something major happens, I'd be informed of that there.

Question 11: Can you suggest anyone else we should talk to?

Answer: Steve Young, the VMTE chair. You could also contact Nate Langston. He's on City council. Willie Greyeyes and Rebecca Benally, San Juan County Commissioner, would also be helpful. She's an educator and is well-spoken.

Question 12: If you had questions or concerns, would you know how to contact DOE/Utah Department of Environmental Quality (UDEQ)/U.S. Environmental Protection Agency (EPA)?

Answer: Yes.

Question 13: Any other comments?

No, not that DOE can help out on. I wish the federal government or DOE would own up to the health issues in Monticello. We got an appropriation through Senator Hatch of $900,000 to do cancer screening. We felt like it saved lives. Even though it's not DOE's mission to take care of that, their mission says they are about health and safety. It's a tough pill to swallow when DOE says [to get compensation] it takes an act of Congress. Our senators don't touch it anymore because of earmarks. Those are dirty words anymore.

We have a kiosk and display at the visitors center. The previous issues about the visitor's center not wanting the kiosk because they thought it would affect tourism and economic development is not a factor anymore. Everyone's pretty positive that it's been cleaned up and it's a healthy place now. I don't see it as a detriment to our growth. Sometimes realtors met with families interested in moving to Monticello. They would Google Monticello and find out about the radiation and get fearful. I don't think that's the biggest pressing problem to Monticello's economic development.

DOE contributed funds to make the area usable to the citizens. The City of Monticello used those funds toward creating a golf course. The walking area does get used.

VMTE is trying to explore compensation issues. If you worked on the mill site anytime during the mill operation days or were a cleanup worker, there are programs that would give lifetime cancer screenings and help pay for cancer and respiratory-related illnesses. There's a magic line, and that's called Monticello. If you're on other side of the fence, you don't get the support. The argument from VMTE is that anybody that has lived in Monticello, worked or gone to school here for at least 6 months should be eligible for funding. That needs direction from Congress.

RESEP and RECA (Radiation Exposure Compensation Act) covers miners and millers or haulers and RESEP covers down-winders. Someone who lived in Grand Junction and transported piping to the Monticello site once every year was covered. The community, who lived near it, daily, and got exposed from the smokestack chemicals and from the operation and were not covered. It doesn't make sense. Kids swam in ponds that were left that were made out of radioactive ore tailings. They were not protected. The City of Monticello community members were all site participants.

I think the federal government should sponsor a screening program. All it would take is $500,000 per year. It'd have to be kept up for 20 years. DOE has said that would be a drop in the bucket. We have a hard time swallowing that—especially when they say, "You'd have to get an act of Congress to do that." It seems like no politician wants to touch it. Our best bet is to convince the bureaucrats that the people who lived here were onsite participants for the mill site. That's all we're asking.

We've had to shut down the screening program because there wasn't funding. We were doing it really efficiently. We had hundreds of residents screened. The criteria to get screened was to live or work in the community from 1941 to 2000. If health insurance covered the screening, the program would pay the deductible. It went a long ways and saved lives. That's why we think it wouldn't take much to provide a screening program, given federal and DOE budgets. Just getting cancer screenings would be huge. VMTE is at a loss of what to do.

City Manager, City of Monticello
Date of Interview: September 21, 2016
Location: By phone

Question 1: What is your general impression of the DOE management (remediation and post remediation) of the Monticello Mill Tailings Site (repository, former mill site, supplemental standards properties, groundwater restricted area)?

Answer: I'm new to the area. I've been here 2 years. I moved here from Grantsville [Utah]. I don't know. I don't know what they do right now to manage the past. I know there's [DOE or contractor staff] who come to public works to ask if we're digging. No one understands what they do other than drive in their trucks and drink coffee.

Question 2: Are you aware of any restrictions placed on your property regarding land use or groundwater use following remedial actions by DOE?

Answer: Not that I know of. I live on Blue Mountain Drive.

Question 3: Are you concerned about the level of safety provided by the remedial actions?

Answer: No. I think everything's been cleaned up.

Question 4: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Answer: No.

Question 5: Have you noticed any unusual activities on the mill site or surrounding properties that may affect the level of protection provided by the remedial actions?

Answer: No.

Question 6: Do you feel the safeguards provided by the site remedy are adequate in protecting the public from contaminated soil? From contaminated groundwater?

Answer: Yes.

Question 7: Are there general or specific community concerns regarding the administration or operation of the site by DOE? By the City?

Answer: No. I get technical reports. I don't have the time to review them or know what they mean. It would be easier if someone could stop by and visit. Usually, it's just a contractor and not DOE. I don't have time to read or decipher the report. It would be good if DOE was interested in joint planning efforts for trails, parks or whatever else we could do to enhance the mill site as a community asset. I don't know if anything else is possible. The golf course is an amazing resource. DOE could do more with the mill site so that more people would view it as a community resource. Maybe they could create little ponds to walk around? We have people

come and walk on golf course instead of the mill site trails. You can't force them to go over there because it's dense and ugly and not enjoyable.

Question 8: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (David Dille, Gary McKinnon) regarding site operations?

Answer: I've heard from public works guys that DOE comes and asks if we're digging. Usually [the public works employees] say no. They are viewed as wasting tax payer dollars. I'm sure there's a purpose, but I don't know what it is.

Question 9: Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or current activities?

Answer: I look forward to how to we can enhance the mill site, given the restrictive nature of it. As far as land use, it's an eyesore. No one knows what we can put into it. We ought to be developing the green space. I'd like to know what the possibilities are.

Question 10: How do you keep informed about site activities?

Answer: Technical report is all I ever see. I get readings of what the levels and water flow are. I don't have enough time to pretend I'm smart enough to understand the material.

Question 11: Can you suggest anyone else we should talk to?

Answer: Natalie Randall, she's the recreation director and is working on the trails master plan, but as far as what our options are to move the community forward, the community needs something to look forward to change the stigma. It would change the entire conversation. We've done, as a city, amazing work with what we were left with. We're trying to do things with the mill site. The kiosk is pathetic. Whatever we can do as a community or if there are partnership opportunities to work together to get past the stigma and look forward to using the resource, that would be helpful—even if it's a memorial.

Question 12: If you had questions or concerns, would you know how to contact DOE/UDEQ/EPA?

Answer: Not directly. I ask our public works and parks and recreation employees.

Question 13: Any other comments?

Answer: No. I think if there's anything DOE could do, working together would be good. As far as a city, we don't mind sticking on message, if we can work together. If we don't have any response [from DOE] or what DOE is working toward, then it doesn't help change the conversation.

A Monticello City Council member and representative of the Victims of Mill tailings Exposure (VMTE) committee
Date of Interview: September 21, 2016
Location: City Office, Monticello, Utah

Question 1: What is your general impression of the DOE management (remediation and post remediation) of the Monticello Mill Tailings Site (repository, former mill site, supplemental standards properties, groundwater restricted area)?

Answer: I don't know all facts and details, but in all, a lot of people are really actually surprised that anything is happening. It's a quiet thing. I don't think it's a bad thing. I'm not an expert to say they're doing enough or not enough. But I would think it would be beneficial to have a little bit more of DOE explaining what they are doing and why, especially for the people who move into town. A lot of people who move in here don't know it exists. I didn't know much about it until I joined city council. They asked me to be on the VMTE subcommittee. When I learned about the history, I was shocked. I had no idea. A lot of people and old timers would understand. I'd guess if you polled the old timers, they'd think [what damage happened] was done.

I'm from northern Utah. We keep hearing about possible studies. [The community] wants to do it, but they feel like they're worn out, especially for someone to come out and ask questions we don't like talking about. I've lived in Monticello for 15 years.

Question 2: Are you aware of any restrictions placed on your property regarding land use or groundwater use following remedial actions by DOE?

Answer: No. I would say, when we bought our house, we bought form an older gentleman who passed away. When bought, they said, this house hasn't been tested. Didn't understand it until later on. There was a time where they were testing homes. Some homes were using tailings. The assumption is, I don't think anybody would think about. We ordered a radon kit.

Question 3: Are you concerned about the level of safety provided by the remedial actions?

Answer: No, I'm not. I'm a trusting person. I assume that what they're doing is being done right. I can't image where DOE would not be super sensitive of the situation to do everything they can.

Question 4: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Answer: Yes, Tammy Gallegos brought up water issues concerns from the springs coming out of [the] site and the safety of the water. That's probably the only thing I'm aware of.

Question 5: Have you noticed any unusual activities on the mill site or surrounding properties that may affect the level of protection provided by the remedial actions?

Answer: No.

Question 6: Do you feel the safeguards provided by the site remedy are adequate in protecting the public from contaminated soil? From contaminated groundwater?

Answer: I don't know even what they are. I would be willing to guess that's more common.

Question 7: Are there general or specific community concerns regarding the administration or operation of the site by DOE? By the City?

Answer: Not that I'm aware of.

Question 8: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (David Dille, Gary McKinnon) regarding site operations?

Answer: No. It's not because I feel that they're avoiding it. If most citizens like myself don't know what's going on, it would be beneficial to have more communication and updates. I don't feel like they're hiding anything, but they're not communicating it either.

Question 9: Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or current activities?

Answer: Maybe just communicate or educate folks and do it early on. There are other people who have not been educated on it. Time has a way of changing things. When things were fresh and new and happening more obviously, there was a lot more being talked about. It's been quiet for so long that if you'd ask the high school seniors, they'd have no idea what was out there. But the old timers tell story after story. It's important to communicate through the changes in generation.

Question 10: How do you keep informed about site activities?

Answer: [Shaking head] Out of sight, out of mind. It would be awesome if someone from the site could come to a city council meeting—not every one—but quarterly or bi-yearly. Come in and offer to answer questions or clarify things. It would be a good thing. It would be published in the local paper and people could know. We have city council two times a month. All we know is that somebody comes one or two times per year and takes water samples.

There was a point, a couple of years ago; someone came in to talk about the work. They were gonna put in water drainage lines. The feedback we gave them was to use as many local people as they can. People have wanted bike trails out there. [DOE has] heavy equipment out there. Why wouldn't it be a win-win situation while the equipment is there to create some trails?

Question 11: Can you suggest anyone else we should talk to?

Answer: Natalie Randall and Andy Platt. They are mountain bikers and have some ideas about mountain bike trails. Him and Natalie probably have the same perspective.

There's not anything [at the mill site park]. It would be nice for visitors who came to have a kiosk at the visitor's center. The people visiting the visitor's center could learn from it.

Question 12: If you had questions or concerns, would you know how to contact DOE/UDEQ/EPA?

Answer: No.

Question 13: Any other comments?

Answer: Few local folks are getting into birding. There's bird watching down there. It's been my point of view that a little bit of extra funding or investment would change the perception. What DOE could contribute would be well worth the money. In the big scheme of things, it's a drop in the bucket money-wise. It costs $5,000 or $6,000 bucks to build a trail system or professionally built displays, and it goes a long ways. There are probably some things I'm missing. It would be nice for someone to put mileage markers in there. Anything like that would make it publicized in the newspaper. I would like to re-emphasize and offer for DOE to come to city council consistently. It would show that DOE is transparent and that they're not hiding anything. People will take things better if they're upfront.

Positive things go a long way. I think it goes a long way. The golf course is unreal. It's absolutely gorgeous. You don't go to a small town and find a course here. It's amazing what's been done.

City council meets on the second and fourth Tuesdays of every month. They have a VMTE committee meeting. Come to that committee meeting. There's a lot of people on that committee.

Peripheral-property owner
Date of Interview: September 29, 2016
Location: By phone

Question 1: What is your general impression of the DOE management (remediation and post remediation) of the Monticello Mill Tailings Site (repository, former mill site, supplemental standards properties, groundwater restricted area)?

Answer: Well, I think they've done an ok job. I don't know. I wasn't here when the mill was operating. I've talked to a lot of people with claims of having family die from uranium exposure to tailings. I am not really sure if the stuff around here was really that radioactive. I don't know. Some of the guys think it was because they had family who've died from cancer. I don't know. I think they've done a pretty good job.

I live not too far [from the mill site]. They tore our yard up when they cleaned up.

Question 2: Are you aware of any restrictions placed on your property regarding land use or groundwater use following remedial actions by DOE?

Answer: No.

Question 3: Are you concerned about the level of safety provided by the remedial actions?

Answer: No.

Question 4: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Answer: I think they were in the olden days. Now that it's cleaned up, they put a monument for people who've passed away where the mill used to be. Who knows? That could've been from Down-winders. You don't know.

Question 5: Have you noticed any unusual activities on the mill site or surrounding properties that may affect the level of protection provided by the remedial actions?

Answer: No.

Question 6: Do you feel the safeguards provided by the site remedy are adequate in protecting the public from contaminated soil? From contaminated groundwater?

Answer: I think so.

Question 7: Are there general or specific community concerns regarding the administration or operation of the site by DOE? By the City?

Answer: No.

Question 8: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (David Dille, Gary McKinnon) regarding site operations?

Answer: I think so. I think they must. I never hear of any complaints. I don't know the people down there [as of today]. When the cleanup was going on, my wife had a cleaning business. She cleaned the offices down there for them. The people were always nice. I think it was ok. I really do.

Question 9: Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or current activities?

Answer: No. I think it's pretty well resolved. I think they've taken care of it. I'm not worried about it.

Question 10: How do you keep informed about site activities?

Answer: I don't know how to answer that. I don't know anybody that is out there taking care of it. I knew a guy once, Joe Slade. He was taking care of it. I know Joe worked for the company that cleaned it up. When they left, I think he stayed on as someone to watch over that thing.

Question 11: Can you suggest anyone else we should talk to?

Answer: I don't know who that would be.

Question 12: If you had questions or concerns, would you know how to contact DOE/UDEQ/EPA?

Answer: I think so.

Question 13: Any other comments?

Answer: No.

Peripheral-property owner
Date of Interview: September 20, 2016
Location: By phone

Question 1: What is your general impression of the DOE management (remediation and post remediation) of the Monticello Mill Tailings Site (repository, former mill site, supplemental standards properties, groundwater restricted area)?

Answer: I'm very disappointed with DOE. I feel like they contaminated the whole community. They covered the people that were at the mill site and left the town behind. I have 11 members of my family who've all had cancer. I've had half of [my] thyroid removed. I feel like DOE dropped the ball for the City of Monticello. The community members should be classified as onsite participants because they were. I know that the people of Monticello have asked for at least the last 13 to 14 years, for DOE to recognize the residents as onsite participants and DOE has completely ignored that. I feel like they don't want any part of it and they haven't acknowledged what they've done.

Question 2: Are you aware of any restrictions placed on your property regarding land use or groundwater use following remedial actions by DOE?

Answer: There are no restrictions that I'm aware of. I live across the highway from where the mill site was. The home I live in was part of the remediation project. They tore down a room in my house because some of the mortar materials were used from the mill site. It took several years for them to do it. They'd come in with these radiation suits and monitor it. Then, they said they would be back in a year to clean it up. After a few years of this, I said, "If it's too dangerous and you have to wear protective suits, then tear my wall down." This is the only home I can afford. I was very disappointed.

Question 3: Are you concerned about the level of safety provided by the remedial actions?

Answer: Yes.

Question 4: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Answer: Yes, there are over 700 cases of cancer in a community of 2,000 people. DOE won't accept responsibility. There are 16 cases of childhood leukemia. The health concerns are the biggest concerns. The problem is most of the people who worked there, lived here. Most of have passed away and they're not here anymore. The people who have lived in the town [but didn't work there] have been completely forgotten. They need healthcare and need included in being onsite participants. Every time the [VMTE] committee talks with DOE, we're told we need it to be written into legislation. Then, we were told [what we want] can't be written into legislation because it needs to go through EEOICPA (Energy Employees Occupational Illness Compensation Program Act). The committee went back east and met with DOE several years ago and DOE told them go to Health and Human Services and have them add it as a line item to the legislative budget. VMTE went to Health and Human Services, who said DOE had to recognize the site. Then they would write it into the budget. It's a runaround. About 2 years ago, we had DOE down here and we spoke with them to ask how to get the community as onsite

participants. We were told we had to go to EPA. That was a whole new level of legislation. Every time, we've tried, we get nowhere.

Question 5: Have you noticed any unusual activities on the mill site or surrounding properties that may affect the level of protection provided by the remedial actions?

Answer: No, a lot of people think that there's still a stigma about it. Not a lot of people utilize the [mill site trails] because they believe it's dirty still. When we've had benefits for cancer victims in our community and done cancer runs and other community events, people wonder if they'll be contaminated. We've talked about having a 5K run and I get asked, "Will I be contaminated?" A lot of people feel like it's still not clean.

Question 6: Do you feel the safeguards provided by the site remedy are adequate in protecting the public from contaminated soil? From contaminated groundwater?

Answer: I wish I had faith in DOE, but I've lost faith in DOE. I'm on the fence. They can tell me it's clean, but I don't know if I trust them anymore.

Question 7: Are there general or specific community concerns regarding the administration or operation of the site by DOE? By the City of Monticello?

Answer: Aside from health concerns, there was a time that DOE was spending $50,000 to monitor blackbirds [for radiation effects]. The citizens felt like if they could monitor blackbirds, they could spend those funds on the community members. That sentiment is shared in the community.

Question 8: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (David Dille, Gary McKinnon) regarding site operations?

Answer: I haven't seen a lot of onsite personnel. I used to know who the representative was, but I don't know who it is anymore. I used to see the vehicles drive through every once in a while. I don't know if you have someone who monitors the site now.

The community would like to see more movement on being seen as onsite participants. More [of the same] communication is not what they want. It would be looked at negatively. If the community was hearing about being made as onsite participants, then that would help. I don't know if it would ever happen.

Question 9: Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or current activities?

Answer: Yes, get the City of Monticello included in the EEOICPA benefits so that those who were contaminated in the community would have the same benefits as workers did. The community was just as contaminated. I don't know if you've been to Monticello, but the wind blows from the south. My dad was a child here when the mill site was running. They'd have chemicals, radiation, and enrichment come from smokestacks. They'd wipe the clothes hanging on the lines with cloth because the chemicals would be so bad. The chemicals would eat the screen doors. It would be nice if the community were considered onsite participants.

That would be the absolute best if we could get that pushed through.

Question 10: How do you keep informed about site activities?

Answer: I'm informed, usually, if we have something going on. We have the path down there; we've gotten the kiosk down there. That wasn't done by DOE. It was put there by the VMTE committee. Before the kiosk was installed, DOE never had anything down at the mill site. The VMTE found earmarks to get the kiosk. The earmarks are no longer allowed in [Washington] DC now. The earmarks helped provide the kiosk and it provided screening for participants in Monticello. We couldn't provide treatment. All we could do was provide screening. We could only screen.

Question 11: Can you suggest anyone else we should talk to?

Answer: Steve Young. He will probably be more educated in most of the stuff than I am. I'm new to VMTE. He'd be a great. Or, there's Fritz and Barbara Pipkin.

Question 12: If you had questions or concerns, would you know how to contact DOE/UDEQ/EPA?

Answer: I usually just Google them. Google is my way to find who I need to find. The website is adequate.

Question 13: Other comments?

Answer: Go to the kiosk and read the information. There is actually information in the kiosk that talks about the level of contamination. It will give you a brief education about the contamination from the mill site from beginning to end.

Highway maintenance supervisor
Date of Interview: September 28, 2016
Location: By phone

Question 1: What is your general impression of the DOE management (remediation and post remediation) of the Monticello Mill Tailings Site (repository, former mill site, supplemental standards properties, groundwater restricted area)?

Answer: I think it's done great. It's managed well—great. We communicate back and forth. Good communication.

Question 2: Are you aware of any restrictions placed on your property regarding land use or groundwater use following remedial actions by DOE?

Answer: I don't think so.

Question 3: Are you concerned about the level of safety provided by the remedial actions?

Answer: No.

Question 4: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Answer: None.

Question 5: Have you noticed any unusual activities on the mill site or surrounding properties that may affect the level of protection provided by the remedial actions?

Answer: I Have not.

Question 6: Do you feel the safeguards provided by the site remedy are adequate in protecting the public from contaminated soil? From contaminated groundwater?

Answer: Yes, I do.

Question 7: Are there general or specific community concerns regarding the administration or operation of the site by DOE? By the City?

Answer: I don't know of any.

Question 8: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (David Dille, Gary McKinnon) regarding site operations?

Answer: Yes.

Question 9: Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or current activities?

Answer: I think you're doing well. David and Fred are great.

Question 10: How do you keep informed about site activities?

Answer: David and Fred tell me. They come and ask if I have anything going on. It's small-town communication. It's all good.

Question 11: Can you suggest anyone else we should talk to?

Answer: I don't think so. There's no activity to speak of, so the port of entry wouldn't have any interest.

Question 12: If you had questions or concerns, would you know how to contact DOE/UDEQ/EPA?

Answer: Yes.

Question 13: Any other comments?

Answer: I wanna make sure that they know that David and Fred are doing a great job here.

Former peripheral-property owner
Date of Interview: September 21, 2016
Location: By phone

Question 1: What is your general impression of the DOE management (remediation and post remediation) of the Monticello Mill Tailings Site (repository, former mill site, supplemental standards properties, groundwater restricted area)?

Answer: I'm disgusted with them. We went to a meeting with them once in Grand Junction. Stoller was there. I couldn't believe the amount of waste in food and services and open bar and they lied to us all through the meeting. I'm disgusted. They came all the way from [Washington] DC. The meeting was in October or November 2011. We had to get special permission to be there. We had to beg for that. Our chairman of the committee did a wonderful job [speaking for the community]. DOE said the reasons why they couldn't help us. Then they said they didn't say it. There was so much waste and so much money spent. I don't know why they can't help who they've harmed. If they just gave the money they paid for the meeting, it would help.

The management of the site itself is hard to comment on. I think they're doing better at it. Before, it was abused. They were riding around in 4-wheelers. The work on the site that's been done was done from the community. The community built a kiosk and planted the trees. Someone was down there from DOE, maybe named Julie? I don't remember her name. She was down there with a bunch of Oriental people and commenting on how Monticello was such a good outcome because of the work DOE had done. The community did the work. We couldn't believe it.

Question 2: Are you aware of any restrictions placed on your property regarding land use or groundwater use following remedial actions by DOE?

Answer: There weren't any restrictions on land use. We always planted gardens. My grandfather grazed cows above the mill. About 5 years ago, we sold our home and moved to St. George, 400 miles from away from Monticello. When we lived in Monticello, our home was always 2 to 3 blocks away from site. But everyone living in the community was close to the site. Our home went through cleanup before we bought it.

Question 3: Are you concerned about the level of safety provided by the remedial actions?

Answer: Yes. Everybody asks us if it's clean. How do we know? We can't trust them anyway.

Question 4: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Answer: I'm not aware of other concerns than health. I don't think there's any more they can do. The study (Monticello Cancer Study July 2006 to July 2007) got us a little bit of money for screening, but there was no compensation in any way. People think it's really crappy they don't get compensation when it's available for millers, miners, or haulers, or people who worked on the mill. There's no compensation for [the community]. It's almost gotten to the point of, "What the heck, it won't do any good any way." I think DOE should make the community onsite participants, because they are. They need to recognize what they've done to us. We know it's

political. We know if they recognize us—I realize it's political—They'd have to recognize other sites. But, our lives are valuable, too.

Question 5: Have you noticed any unusual activities on the mill site or surrounding properties that may affect the level of protection provided by the remedial actions?

Answer: There was a time where there was [*sic*] a lot of people driving 4-wheelers down there. In your mind, you wonder what they're disturbing. DOE said they dug and went down to bedrock, but the stuff lasts a long time. It has concerned us.

Question 6: Do you feel the safeguards provided by the site remedy are adequate in protecting the public from contaminated soil? From contaminated groundwater?

Answer: They say it is. Who knows, you know, especially with the water? That water, on a wet year, runs down the hillside. We know there's still contamination up there.

Question 7: Are there general or specific community concerns regarding the administration or operation of the site by DOE? By the City?

Answer: I don't know of any concerns in the community other than health concerns. I guess their [management is] ok. I don't know if DOE manages the site to any extent other than monitoring it on a regular basis.

We brought up the black birds case 100 times, and I think we embarrassed them because they don't do the program anymore.

In about 2009, there was one time where a DOE person drove down to the mill site after huge snowmelt. Their pickup truck got stuck. It was not intelligent management.

Question 8: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (David Dille, Gary McKinnon) regarding site operations?

Answer: I don't think we ever met with the onsite person ever. If we ever met with anyone, it was from Stoller. I don't ever remember meeting with an onsite person. I don't think I'd want to meet them. My husband seeks information. Everything they have they get from Grand Junction. They are a puppet to be honest with you.

Question 9: Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or current activities?

Answer: I wish I could suggest a way for DOE to do better. When started, we spoke to people from New York to California. Every time I talk to someone [in DOE] they say there are RECA and RESEP [compensation programs]. The [community members] don't qualify for these programs. The people involved in the legislation don't understand what's in it. It's about the children who go to school here and the women who've [been exposed]. Those people don't qualify. There's no way to compensate them, other than through screening.

At first, [my husband] was diagnosed with leukemia, but the diagnosis changed to lymphoma. We were adamant he be diagnosed in Monticello, because it is a tiny community, and we needed the support. The doctor had to send the tests to Albuquerque where it was diagnosed through his blood. His records show he was diagnosed in Albuquerque. The cancer registry doesn't recognize it, and it affects our [cancer statistics in Monticello]. The study in 2006 and 2007 was to pull numbers into a cancer cluster study. It worked to some extent. A lot of people were missed because they were not living in Monticello when they were diagnosed. A friend we have who lived here all his life moved 2 miles away before the study. He had brain cancer. The cancer cluster didn't recognize him because he didn't live in Monticello [when he was diagnosed].

[Some of] the children's cancer records weren't recognized because the cancer registry hadn't been established yet. There were so many childhood leukemia. [At one time], there were 7 in the community of Monticello. DOE said time and time again poo poo'd that because they said we couldn't prove it. The parents weren't lying about their kids having cancer when they were burying their children at the cemetery.

The community is so untrusting. It's become…it's like with all the studies. When we did the last cancer cluster study, it was like twisting arms [to get the community to attend]. We had meetings at the high school, and the community thought something would happen. We couldn't get people to show up.

Question 10: How do you keep informed about site activities?

Answer: Living there, of course. We watched it continually. We've seen it and we're aware of it. We were constantly at the site in walks and monitoring stuff. When we built the kiosk, the kids were going down there breaking it up. We contacted the city and let them know. They found out who it was because we watched it through binoculars. We were in contact with the site. We also get the [*Program Update*] from DOE if there's anything. Now, it comes by email.

Question 11: Can you suggest anyone else we should talk to?

Answer: No.

Question 12: If you had questions or concerns, would you know how to contact DOE/UDEQ/EPA?

Answer: Yes. Usually, Steve does though email.

Question 13: Any other comments?

Answer: [The cancer] has literally devastated us financially. We feel like it could have been handled so much better. We should be onsite participants, because the community itself was a cleanup area. It was a superfund site. The mill, the community, and the water. We feel like DOE has turned their back on us. We don't know where else to go.

When we first started with the VMTE committee and called people, we'd lay awake at night and cry after hearing the stories. We've gathered funds and sent [the cancer victims] a card and a

$100 to give reassurance that we're thinking of them and that they haven't been forgotten. It was our way of saying, "We know you're there."

Julie [peripheral property owner] came to me and said "You saved Mike's life. If it weren't for the [screening] program, we wouldn't have known he had cancer. When she came to us, we thought that if that's all the success we got, it was a success.

We felt strongly that we saved lives in doing that. I don't know what you could say that would make it better. We've seen family after family bankrupt. It was 30,000 a month for [my husband's] treatment. We didn't have any insurance. And once he was diagnosed, there wasn't any insurance that would cover $30,000 a month for treatments. And, we felt blessed because he is still alive today.

The only help we've gotten is through [Utah Senator] Orrin Hatch and the grants he got us. The funding's run dry and we don't know where to turn. Government in DC is so bad. I don't know where we can go from here. We're spinning our wheels.

As a committee we sponsored a walk and light the path with luminarias that the kids would decorate. It was a wet year. My husband shoveled the path by hand to have walk in May. I'm pretty sure it was first walk. That was when we dedicated the kiosk. Salt Lake news was there. It was memorable. We've combined our effects into San Juan County's health fair. We couldn't get [enough of the community] interested. We recognize those that were lost and those still fighting the fight.

Transportation Special Service District board member and property owner
Date of Interview: September 29, 2016
Location: By phone

Question 1: What is your general impression of the DOE management (remediation and post remediation) of the Monticello Mill Tailings Site (repository, former mill site, supplemental standards properties, groundwater restricted area)?

Answer: I think they do a good job. Oh, they seem like… I know DOE has certain rules and regulations, trainings, and sign-ins. They seem like they know what's going on and get it figured out. I think that's nice. They're always looking to take care of the site and upgrade things as they need it. I think overall they seem like they have a good, well-rounded desire to do a good job out there.

Question 2: Are you aware of any restrictions placed on your property regarding land use or groundwater use following remedial actions by DOE?

Answer: No.

Question 3: Are you concerned about the level of safety provided by the remedial actions?

Answer: No, I mean. I can see you're asking me questions as a citizen. I've done a lot of work for them. Quite frankly, I've done a lot of work for them and I'm not afraid of it. They cleaned it up.

Question 4: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

Answer: No. I really don't. It's quiet since they stopped working around town.

Question 5: Have you noticed any unusual activities on the mill site or surrounding properties that may affect the level of protection provided by the remedial actions?

Answer: No, I haven't. I don't think anyone goes out there much.

Question 6: Do you feel the safeguards provided by the site remedy are adequate in protecting the public from contaminated soil? From contaminated groundwater?

Answer: Yes, I think so. What I understand and know of it, yes.

Question 7: Are there general or specific community concerns regarding the administration or operation of the site by DOE? By the City?

Answer: Not that I know of.

Question 8: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (David Dille, Gary McKinnon) regarding site operations?

Answer: Yes, I do.

Question 9: Do you have any comments, suggestions, or recommendations regarding the site's management, operation, or current activities?

Answer: No, not really. They seem like everything's pretty quiet. Whatever they're doing they're doing fine. It seems like everything is pretty quiet.

Question 10: How do you keep informed about site activities?

Answer: I know a couple of the guys is how I know as much as anything. If I was a normal citizen, I probably wouldn't know if anything was going on out there.

Question 11: Can you suggest anyone else we should talk to?

Answer: Some of the people who live down there. I don't think they'd have a lot to say because they probably wouldn't know what's going on.

Question 12: If you had questions or concerns, would you know how to contact DOE/UDEQ/EPA?

Answer: Yes. I've got their phone numbers in my phone.

Question 13: Any other comments?

Answer: I don't think so.