LMS/MNT/S08400

1236011

Five-Year Review Report

Fourth Five-Year Review Report

For Monticello Radioactively Contaminated Properties Superfund Site San Juan County Monticello, Utah

June 2012

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Fourth Five-Year Review Report

for
Monticello Radioactively Contaminated Properties Superfund Site
San Juan County
Monticello, Utah

June 2012

Prepared by
U.S. Department of Energy
Office of Legacy Management
Grand Junction, Colorado

Approved by:

Jalena Dayvault
Monticello Site Manager
U.S. Department of Energy, Office of Legacy Management

Date: 06/06/2012

Concurrence Letter Enclosed
U.S. Environmental Protection Agency

June 18, 2012

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
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JUN 18 2012

Ref: 8 EPR-FF

Jalena Dayvault
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 Vicinity Properties (MVP) US DOE Site, San Juan County, Utah

Dear Ms. Dayvault:

Thank you for submitting the Five Year Review Report for Monticello Vicinity Properties (MVP) US DOE Site, San Juan County, Utah. The US Environmental Protection Agency (EPA) in consultation with the State of Utah concurs with your assessment that the remedy at this site is in place and functioning as intended. The protectiveness statement that will be reported to Congress will be that the remedy at this site is protective of human health and the environment.

Currently no issues or recommendations are being tracked in the EPA's Superfund tracking system, CERCLIS. 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 30, 2017.

Sincerely,

Martin Hestmark
Acting Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

cc: Michael Storck, UDEQ

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Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
cm	centimeters
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Difference
FFA	Federal Facility Agreement
LM	Office of Legacy Management
LTSM	Long-Term Surveillance and Maintenance
MMTS	Monticello Mill Tailings Site
MRAP	Monticello Remedial Action Project
MVP	Monticello Vicinity Properties
NPL	National Priorities List
OU	operable unit
pCi/g	picocuries per gram
RI/FS	remedial investigation and feasibility study
ROD	Record of Decision
SFMP	Surplus Facilities Management Program
TSF	temporary storage facility
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UMTRCA	Uranium Mill Tailings Radiation Control Act of 1978
UU/UE	unlimited use and unrestricted exposure
VCA	Vanadium Corporation of America
VMTE	Victims of Mill Tailings Exposure
WL	working level

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Executive Summary

This report documents the fourth five-year review for the Monticello Radioactively Contaminated Properties site, also known as the Monticello Vicinity Properties (MVP), a National Priorities List (NPL) site located in Monticello, Utah. The MVP was remediated by the U.S. Department of Energy (DOE) in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986. The period of this review is July 2007 through June 2012.

DOE, as the CERCLA lead agency under Executive Order 12580, conducted the review with the assistance of the U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ). The review was conducted in accordance with guidance provided by EPA in the *Comprehensive Five-Year Review Guidance* (June 2001) and in the *Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance"* (September 2011). The review assessed performance of the MVP remedy in relation to remedy objectives and implementation requirements specified in the *MVP Project Declaration for the Record of Decision and Record of Decision Summary* (November 1989), also known as the Record of Decision (ROD). A CERCLA remedial investigation and feasibility study (RI/FS) was not conducted for the MVP; however, as stated in the ROD, EPA and UDEQ agreed that DOE had complied with CERCLA by performing the functional equivalent of an RI/FS, upon which the ROD was based.

MVP Remedy Description

The ROD was based on surveys initiated by the U.S. Atomic Energy Commission in 1971 to identify the nature and extent of radiological contamination associated with the waste byproducts from uranium and vanadium-ore processing that occurred at the Monticello mill from 1941 to 1960. These surveys identified 424 properties in the residential and commercial area of Monticello where contamination exceeded applicable protection standards. A Federal Facilities Agreement (FFA) between DOE, EPA, and UDEQ, signed in February 1990, provides the regulatory framework for implementing the ROD through a consultative process among the affected agencies. Remediation of the MVP was initiated in 1984 and was completed in July 1999. The MVP was deleted from the NPL in February 2000.

The MVP is comprised of eight operable units (OUs), designated OU A to OU H, that were contaminated with mill tailings originating from the former mill. Contamination in the properties comprising OU A to OU H resulted primarily from the use of mill tailings as a construction material. The primary ore- and tailings-related contaminants at MVP are radionuclides in the uranium decay series, particularly thorium-230, radium-226, radon-222, and daughters of radon-222 (particularly polonium-214 and polonium-218).

Pursuant to the ROD, the selected remedy for OU A to OU G was excavation of tailings, ore, and related byproduct material from vicinity properties; temporary storage on the mill site; final disposal in the repository constructed and operated under the Monticello Mill Tailings Site remedy, and restoration of the affected properties using uncontaminated soil and construction materials. Areas of each property requiring remediation and the remedial design are documented in a Remedial Action Design for each property. Completion reports for each property document

the specific actions taken at the property and certify compliant remediation. Properties were restored to their original condition to the extent possible. Cleanup levels for OU A to OU G, as promulgated in Title 40 *Code of Federal Regulations* Part 192 (40 CFR 192) pursuant to the Uranium Mill Tailings Radiation Control Act of 1978, allow unlimited use and unrestricted exposure. Accordingly, pursuant to CERCLA, five-year reviews are not required for OUs A to G.

OU H consists of (1) one residential property with residual windblown contamination and (2) city-street and utility corridors and Utah Department of Transportation (UDOT) rights-of-way where buried contamination, used as construction backfill, may exist. The single residential property, known as MS-00176-VL, was not remediated because of landowner refusal. In conjunction with supplemental cleanup standards for these properties as allowed in 40 CFR 192.22, DOE implemented institutional controls to minimize exposure to and prevent dispersal of contamination at these properties. Supplemental standards are cleanup levels that prevent unlimited use and unrestricted exposure. Remedy protectiveness at OU H is implemented through a cooperative agreement between DOE and the City of Monticello (see Section 4.3) and through DOE long-term maintenance and surveillance activities to ensure that residual radiological contamination is appropriately managed. Five-year reviews of OU H are required because contaminated soil was left in place that prevents unlimited use and unrestricted exposure.

MVP Remedy Protectiveness

This MVP five-year review addresses the three questions posed in the EPA guidance to assess the protectiveness of the selected remedy, with the following approach and conclusions as pertaining to OU H:

Question A: Is the remedy functioning as intended?

The answer to this question is "yes," based on a review of technical documents and the findings of remedy surveillance and maintenance activities implemented by DOE.

- Institutional controls are in place to prevent exposure to residual contamination at OU H as documented in *Application for Supplemental Standards for Highway 191 Rights-of-Way Within the City of Monticello* (May 1999), *Application for Supplemental Standards for City of Monticello Streets and Utilities* (May 1999), and *Application for Supplemental Standards for DOE ID No. MS-00176-VL* (May 1999).
- DOE procedures are in place for proper operation, maintenance, and implementation of institutional controls in accordance with the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (revision 0, June 2007).
- Compliance with institutional controls for OU H is ensured through a cooperative agreement between DOE and the City of Monticello and in a memorandum of understanding between DOE and UDOT. By these arrangements, the City and UDOT allow DOE contractor representatives to monitor all excavations for radiologic contamination and to manage contaminated material, if encountered, in accordance with procedures established in the Long-Term Surveillance and Maintenance (LTSM) Plan.

- The institutional control specific to property MS-00176-VL is implemented through a zoning ordinance that restricts the building permit process for that property.
- All radiological monitoring, inspection, and reporting activities were completed in accordance with required scope and schedule established in the LTSM Plan. No items were found that would call into question the protectiveness of the remedy. Findings of LTSM activities are documented quarterly for review by EPA and UDEQ.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives still valid?

The answer to this question is "yes," based on the following:

- The exposure scenario for OU H remains valid and no changes have occurred in reference doses or applicable or relevant and appropriate requirements that would change the protectiveness of the remedy.

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

The answer to this question is "no," based on the following:

- There was no information found during the review that suggests changes are needed to assure adequate protection. There have been no land use changes that could affect remedy protectiveness, and institutional controls remain relevant and effective.

Based on the answers to Questions A, B, and C, this five-year review assessment concludes that the OU H remedy continues to be protective of human health and the environment. The following Five-Year Review Summary Form, as adapted from *Comprehensive Five-Year Review Guidance* (EPA, June 2001), further summarizes information related to the review including issues, recommendations, and follow-up actions.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Monticello Radioactively Contaminated Properties (also known as Monticello Vicinity Properties [MVP] site).		
EPA ID: UTD980667208		
Region: 8	**State:** Utah	**City/County:** Monticello/San Juan

SITE STATUS	
NPL Status: Deleted	
Multiple OUs? No. OU H is subject to five-year review because it was not remediated to allow unlimited use and unrestricted exposure (UU/UE). OUs A–G are not subject to review because they have been remediated to allow UU/UE.	**Has the site achieved construction completion?** Yes; July 14, 1999

REVIEW STATUS
Lead agency: Other Federal Agency **If "Other Federal Agency" was selected above, enter Agency name:** U.S. Department of Energy
Author name (Federal or State Project Manager): Jalena Dayvault
Author affiliation: U.S. Department of Energy
Review period: July 2007–June 2012; the review was conducted from September 27, 2011, upon the start of the annual site inspection, through June 30, 2012, corresponding with the end of the current five-year period of review.
Date of site inspection: September 27–28, 2011
Type of review: Statutory
Review number: Four
Triggering action date: June 30, 2007 (from third five-year review)
Due date *(five years after triggering action date)*: June 30, 2012, in accordance with the review period of the third MVP five-year review.

Five-Year Review Summary Form (continued)

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:

No issues/recommendations for OU H. Current LTSM practices are effective and will be maintained to ensure remedy protectiveness.

Issues and Recommendations Identified in the Five-Year Review:

OU(s): No issues for OU H.	**Issue Category:** Not applicable			
	Issue: Not applicable			
	Recommendation: Not applicable			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Protectiveness Statement(s)

The remedy at OU H (Monticello City Streets and Utilities, Highways 191 and 666 Rights-of-Way, and property MS–00176–VL) is protective of human health and the environment. Supplemental remediation standards were applied and institutional controls have been implemented to prevent exposure to residual contamination left in place. No issues that would compromise remedy protectiveness are identified.

Sitewide Protectiveness Statement (if applicable)

The remedy for OU H of the Monticello Vicinity Properties NPL site has attained construction-complete status and remains protective of human health and the environment. Institutional controls have been implemented to prevent exposure to residual contamination left in place. Therefore, the MVP remedy is protective of human health and the environment.

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1.0 Introduction

1.1 Purpose

The U.S. Department of Energy (DOE), in consultation with the U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ), conducts five-year reviews to determine whether the remedy at the Monticello Radioactively Contaminated Properties site, otherwise known as the Monticello Vicinity Properties (MVP) site, is protective of human health and the environment. The site is located in Monticello, Utah. The methods, findings, conclusions, and recommended follow-up actions of the review are documented in this five-year review report. This five-year review of the MVP was conducted and is documented based on current guidance provided by EPA.[1]

Eight operable units (OUs) constitute the MVP (OU A to OU H). Construction complete status for all MVP OUs was achieved in July 1999; the MVP was deleted from the National Priorities List (NPL) in February 2000. Only OU H includes properties where contamination was left in place above levels that allow for unlimited use and unrestricted exposure; therefore, five-year review is required only for OU H. OUs A to G were remediated to levels that allow for unlimited use and unrestricted exposure; therefore, five-year review is not required for those OUs (see Table 1). Plate 1 (attached) depicts the locations of the MVP OUs (Plate 1 is attached as it appears in the MVP closeout report,[2] September 1999).

Table 1. Monticello Vicinity Properties OUs and Evaluations

Monticello Vicinity Properties OUs & Evaluations			
EPA OU	**DOE Designation**	**Description**	**Reason**
OU1	OU A	Original properties	UU/UE, review not required
OU2	OU B	Inclusion properties	UU/UE, review not required
OU3	OU C	Disputed properties	UU/UE, review not required
OU4	OU D	Non-rad waste	UU/UE, review not required
OU5	OU E	Hall's ditch properties	UU/UE, review not required
OU6	OU F	Refusal properties	UU/UE, review not required
OU7	OU G	Site boundary property	UU/UE, review not required
OU8	OU H	Supplemental standards	Included in this five-year review

UU/UE = unlimited use and unrestricted exposure

[1] *Comprehensive Five-Year Review Guidance,* U.S. Environmental Protection Agency Office of Emergency and Remedial Response, EPA 540-R-01-007, OSWER No. 9355.7-03B-P, June 2001.

Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," U.S. Environmental Protection Agency OSWER Directive 9355.7-18., September 13, 2011.

Five-Year Review Summary Form. EPA OSWER-9200.2-105, December 9, 2011.

[2] *Close Out Report for Monticello, Utah, Vicinity Properties National Priority List Site, Operable Units A through H,* GJO-99-110-TAR, U.S. Department of Energy, August 1999

1.1.1 Period of Review

This report documents the results of the fourth five-year review for the MVP remedy, covering the period June 2007 through May 2012. The review commenced on September 27, 2011, with the start of the annual site inspection, and ended June 30, 2012, corresponding with the end of the current five-year review period.

1.2 Authority for Conducting MVP Five-Year Reviews

The five-year review is a statutory requirement for the MVP site because, as part of the remedy, contamination remains at the site (at OU H only) above levels that allow for unlimited use and unrestricted exposure. The Comprehensive Environmental Response, Compensation, and Liability Act (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.

EPA interpreted this requirement further in the National Contingency Plan (Title 40 *Code of Federal Regulations* [CFR] Part 300.430[f][4][i]), 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.

The contamination left in place that prevents unlimited use and unrestricted exposure (and that therefore mandates the five-year review) is limited to properties that constitute OU H. These properties are known as Monticello City Streets and Utilities, Highways 191 and 666 Rights-of-Way (Highway 666 was renamed Highway 491 in 2003), and private property MS-00176-VL. Additional information regarding remedial action and institutional controls implemented at these properties is provided in Sections 4.2 and 4.3 and Figure 1 of this report.

1.3 Five-Year Review Team and Schedule

The DOE Office of Legacy Management (LM) conducted the review with the assistance of the LM contractor (S.M. Stoller Corporation) and oversight by EPA and UDEQ. A separate but concurrent five-year review was conducted for the Monticello Mill Tailings Site (MMTS), the companion NPL site in Monticello.

1.3.1 Report Contents

The format of this report is based directly on EPA guidance provided in *Comprehensive Five-Year Review Guidance* (June 2001) as follows:

- Sections 2, 3, and 4 of this report summarize background information leading to the selection and implementation of the MVP remedy.
- Sections 5 and 6 describe relevant activities that were implemented since the previous five-year review and the process of conducting the current five-year review.
- Sections 7 to 10 address the technical assessment of remedy protectiveness for OU H.
- Section 11 concludes the review in stating that the next review is due in June 2017.

2.0 Site Chronology

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

Table 2. MVP Chronology

Event	Date
Vanadium and uranium milling at the Monticello mill resulted in soil contamination of properties in the vicinity of the mill site and in Monticello.	1941–1960
The U.S. Atomic Energy Commission (a predecessor agency of DOE) began radiological surveys of Monticello properties.	1971
Mill site was accepted into the Surplus Facilities Management Program to ensure safe caretaking and decommissioning of government facilities that had been retired from service but still contained radioactive contamination. Monticello Remedial Action Project (MRAP) was established.	1980
Removal actions initiated for first two vicinity properties (completed in 1984).	1983
Remedial activities for vicinity properties were separated from MRAP. MVP was established.	1983
DOE began cleanup of MVP prior to signing the Record of Decision (ROD).	1984
The MVP was placed on the NPL.	**June 10, 1986**
Federal Facility Agreement (FFA) signed.	December 1988
The MMTS was placed on the NPL.	November 21, 1989
MVP ROD signed.	**November 29, 1989**
Mill site Pre-Excavation Final Design Report established an alternate Interim Repository that would be used to store wastes removed from MVP. No Explanation of Significant Difference (ESD) required for this action.	1993
An ESD was prepared to explain the increase of cost of the project based on the increase of included properties.	**April 1995**
OU A to OU H construction completed.	May 1996 to December 1998
OU A Remedial Action Report.	January 1997
First CERCLA 5-Year Review Report.	February 13, 1997
ESD issued to provide the rationale for applying supplemental standards to MVP and MMTS properties in which contamination was left in place.	**February 1999**
OU B to OU H Remedial Action Reports.	July 1999
Cooperative agreement between DOE and City of Monticello signed (agreement for managing residual contamination on properties affected by institutional controls).	June 1999
Memorandum of understanding between DOE and Utah Department of Transportation (UDOT) signed (agreement for managing residual contamination on properties affected by institutional controls).	August 1999

Table 2 (continued) MVP Chronology

Event	Date
OU A to OU H Final Closeout Report.	**September 1999**
Deletion of MVP site from NPL.	**February 28, 2000**
MVP and MMTS transferred to Long-Term Surveillance and Maintenance (LTSM) Program.	October 1, 2001
Second CERCLA 5-Year Review Report.	June 20, 2002
Overlay Zone OL-1 created by City of Monticello, Ordinance 2002-04 (an institutional control that affects land-use at OU H supplemental standards property MS−00176−VL).	**July 2002**
Property deed restrictions placed on designated OU H UDOT properties MS-00892-OT, MS-00895-OT, MS-01020-OT, and MS-01021-OT (institutional control to manage residual contamination on these properties).	**April 2003**
MVP and MMTS transferred to LM.	December 2003
Cooperative agreement between DOE and City of Monticello extended to December 31, 2016.	April 2007
Third CERCLA 5-Year Review Report.	June 20, 2007
LTSM Plan re-issued (consolidated from volumes I–IV, April 2002).	June 2007
Annual site inspections.	September 2007, 2008, 2009, 2010, 2011

Abbreviations:
ESD = Explanation of Significant Difference
FFA = Federal Facility Agreement
LTSM = Long-Term Surveillance and Maintenance
MRAP = Monticello Remedial Action Project
ROD = Record of Decision
UDOT = Utah Department of Transportation

3.0 Background

3.1 Physical Characteristics

The MVP site is located in rural San Juan County, in and near the City of Monticello in southeastern Utah (see Figure 1). The City of Monticello lies on the Great Sage Plain just east of the Abajo Mountains and north of Montezuma Creek. The population of Monticello presently is about 2,000 permanent residents (data provided by the 2000 U.S. Census). The major highway in the Monticello area is U.S. Highway 191, which runs in a north-south direction, connecting Monticello with Moab, Utah, 56 miles to the north and with Blanding, Utah, 22 miles to the south. The City of Monticello is located at an average elevation of 7,000 feet above sea level. The climate is semiarid with four distinct seasons.

3.2 Land and Resource Use

Land use within the MVP includes residential neighborhoods, a central commercial district, municipal offices, churches, parks, and schools. Monticello is the seat of San Juan County and is also the location of U.S. Bureau of Land Management, U.S. Forest Service, and Natural Resources Conservation Service branch offices. Natural resource use in the area includes water provided by the City of Monticello from its origins in the Abajo Mountains as the primary municipal drinking water source. Local groundwater use includes limited drinking water (municipal and private) and limited irrigation from a bedrock aquifer. Some surface water is used for crop irrigation and livestock watering. No mineral or timber extraction exists within the MVP. Much of the land surrounding Monticello is rural open range or ranchland, or is cultivated for dry-land farming.

3.3 History of Contamination

Uranium- and vanadium-ore milling in Monticello began in 1941 with the construction of the Monticello mill on undeveloped land along Montezuma Creek immediately south of the town. The original mill, constructed with government assistance by the Vanadium Corporation of America (VCA), provided vanadium during World War II. VCA 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 are the pulverized remnants of the processed ore and contain potentially hazardous radiological and nonradiological constituents. Tailings were impounded at four locations at the former mill during and after its operation. While the mill operated, some tailings were removed from the mill site by various parties to properties in Monticello for use as fill for open lands; backfill around water, sewer, and electrical utilities; sub-base for driveways, sidewalks, and concrete slabs; backfill against basement foundations; and as sand mix in concrete, plaster, and mortar. The MVP site eventually comprised these affected properties, which were divided into OUs A to H. As much as 135,000 tons of tailings from the Monticello mill may have been used for such purposes until August 1975, when a fence was erected to prevent unauthorized access to the mill site.

Some mill tailings were also dispersed from the mill site by wind and water erosion to contaminate many surrounding and downstream properties (peripheral properties). The MMTS comprises the former mill site (OU I), the peripheral properties (OU II), and contaminated groundwater and surface water (OU III). A five-year review of the MMTS is documented in a companion, concurrent report to this review.

3.4 Remedial Action History

In response to environmental health concerns, the U.S. Atomic Energy Commission first conducted radiological surveys in 1971 to identify the nature and extent of radiological contamination associated with mill tailings originating from the Monticello mill site. These initial surveys identified 98 contaminated properties. Continued surveys ultimately identified

424 contaminated vicinity properties in the residential and commercial area of Monticello and 34 peripheral properties on rural land adjacent to and downstream of the mill site.

Because these properties and the former mill site did not meet the legislative requirements for cleanup under the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), DOE, under the authority of the Atomic Energy Act of 1954, initiated the Surplus Facilities Management Program (SFMP) in 1978 to ensure safe caretaking and decommissioning of government facilities that had been retired from service but still contained radioactive contamination. In 1980, the Monticello project was accepted into the SFMP for remedial action, and the Monticello Remedial Action Project (MRAP) was established to conduct those remedial actions. As owner and past operator of the site, DOE was identified as the potentially responsible party and tasked with funding and performing the remedial actions necessary to ensure protection of human health and the environment into the future.

In 1983, remedial activities for the vicinity properties were separated from MRAP with the establishment of the MVP (vicinity properties) and the MMTS (former mill site and peripheral properties). The first two vicinity property removal actions were initiated in 1983 by EPA at the Randall House (MS-00096-RS, OU A) and the Montgomery Ward catalogue store (MS-00059-CS, OU A) and were completed in 1984. The MVP was listed on the NPL on June 10, 1986, and the remaining properties were remediated pursuant to *MVP Project Declaration for the Record of Decision and Record of Decision Summary* (November 1989), also known as the Record of Decision (ROD). (MMTS was listed on the NPL in November 1989). The selected remedy for cleanup of the MVP site was excavation of tailings, ore, and related byproduct material from vicinity properties; temporary storage on the mill site; and final disposal in the repository constructed and operated under the MMTS remedy. Approximately 152,000 cubic yards of contaminated material was removed from the vicinity properties during the remedial action.

Because mill tailings from the Monticello mill site were used locally for construction of residential buildings, the cleanup activities for the MVP required excavation of contaminated materials and, in some cases, demolition of sidewalks, patios, sheds, and other improvements. To the extent feasible, all excavations, affected structures, and other improvements were reconstructed to the pre-remedial action condition using uncontaminated backfill and construction materials. All removed contaminated material was transferred to the former Monticello mill site and temporarily stored apart from the mill tailings impoundment areas. With concurrence of EPA and UDEQ, the interim storage area differed from the location specified in the MVP ROD but this change did not require an Explanation of Significant Difference.

Attainment of indoor air and outdoor soil cleanup standards or exposure levels was verified by radiologic monitoring at each property. Completion reports were prepared for each property to document the specific actions taken at the property and to certify compliant remediation. Remediation of the MVP site was completed in 1999. The Remedial Action Report for OU A, documenting construction-complete status and attainment of cleanup goals, was signed into effect in January 1997. Remedial Action Reports for OU B to OU H were signed into effect in July 1999. Deletion of the MVP (OUs A to H) from the NPL became effective February 28, 2000.

3.5 Basis for Remedial Action and Cleanup Levels

The basis for remedial action of the MVP was to reduce human exposure to ionizing radiation from byproduct material of the Monticello mill to acceptable levels. The primary ore- and tailings-borne contaminants at the MVP are radionuclides in the uranium decay series, particularly thorium-230, radium-226, radon-222, and daughters of radon-222 (particularly polonium-214 and polonium-218). Significant exposure pathways affecting human health include:

- Inhalation of radon-222 and its daughters, which emit alpha radiation;
- External whole-body exposure to radionuclides (such as radium-226) that emit gamma radiation; and
- Inhalation and ingestion of dust containing thorium-230 and radium-226, which emit alpha and gamma radiation.

For radionuclides in byproduct material (as defined in the Atomic Energy Act), the cleanup standards for uranium mill tailings promulgated in 40 CFR 192 pursuant to UMTRCA were determined relevant and appropriate to the MVP. In accordance with 40 CFR 192.12, these standards require that average radium-226 concentrations in soil not exceed the background level by more than 5 picocuries per gram (pCi/g) in the surface 15 centimeters (cm), or by more than 15 pCi/g in successively deeper 15 cm layers, averaged over 100 square meters. If these cleanup standards are met, the property concerned can be released for unlimited use and unrestricted exposure.

The relevant and appropriate standard for an occupied or habitable building located on the MVP properties requires that average concentration of radon decay products (daughters) in air not exceed 0.02 working level (WL) to the extent practicable and in no case to exceed 0.03 WL, and that exposure rates to gamma radiation not exceed background by more than 20 microroentgens per hour (40 CFR 192). A habitable building can be released for unlimited use and unrestricted exposure if these standards are achieved. A "working level" 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 picocuries per liter of radon in air is equivalent to 0.02 WL.

3.5.1 Ecological Risk

Risk to ecological receptors from exposure to mill tailings at the MVP was not identified in the MVP ROD or in supporting documentation. This was reported in the Monticello Vicinity Properties Equivalency of Documentation, April 1989, which concluded that existing documentation at that time was functionally equivalent to a Remedial Investigation/Feasibility Study. Contamination by mill tailings within the MVP mainly resided in construction materials (for example, concrete, mortar, buried pipe bedding) where no risk to ecological receptors should be expected.

4.0 Remedial Actions

4.1 Remedy Selection and Remedial Action Objectives

The MVP was remediated pursuant to *Monticello Vicinity Properties Project, Declaration for the Record of Decision and Record of Decision Summary*, DOE/ID/12584-58, November 1989. A CERCLA remedial investigation and feasibility study (RI/FS) was not conducted for the MVP; however, as stated in the ROD, EPA and UDEQ agreed that DOE complied with CERCLA by performing the functional equivalent of an RI/FS, upon which the ROD was based.

The selected remedy for cleanup of the MVP site was excavation of tailings, ore, and related byproduct material from vicinity properties; temporary storage on the mill site; and final disposal in the repository constructed and operated under the MMTS remedy. The only other alternative considered in the ROD was "no action".

Remedial action objectives for the MVP were to remove radiologically contaminated material from the properties to achieve the cleanup standards specified in 40 CFR 192.12 and as itemized in Section 3.5 of this report, place the material in the interim repository on the former mill site for eventual disposal in a permanent repository constructed in accordance with the MMTS remedy, and reconstruct and restore the affected properties to pre-remediation conditions. OUs A to G were remediated to cleanup levels (see Section 3.5) that allow unlimited use and unrestricted exposure and so are exempt from five-year review.

As allowed in 40 CFR 192.21 and 192.22, at some locations on the five properties comprising OU H, contamination was left in place that does not allow unrestricted use and unlimited exposure. Supplemental standards were applied to those properties because remediation would:

- Directly produce excessive health and environmental harm compared to the health and environmental benefits, or
- Have an unreasonably high cost relative to the long-term benefits.

Institutional controls were implemented for OU H to ensure proper long-term management and control of the radiologically contaminated material (see Sections 4.2 and 4.3).

4.2 Remedy Implementation

A Federal Facility Agreement (FFA) among DOE, EPA, and UDEQ, pursuant to Section 120 of CERCLA (as amended by the Superfund Amendments and Reauthorization Act of 1986), became effective in December 1988. DOE, EPA, and UDEQ agreed to perform response actions at the MVP site (and MMTS) in accordance with the FFA. DOE is the lead agency that provides the principal staff and resources to plan and implement response actions. EPA and UDEQ share oversight responsibility of activities performed under the FFA, with EPA retaining the lead oversight role.

Remediation of the MVP site was conducted in accordance with the 1989 ROD; it was addressed in eight OUs containing a total of 424 properties. The individual properties are distributed within the MVP boundary indicated in Figure 1 (see Plate 1 for the locations of the MVP OUs and corresponding properties within those OUs). Contaminated material was removed to soil or

interior cleanup standards established in 40 CFR 192.12 (OUs A to G) or to supplemental standards (OU H). Two Explanations of Significant Difference (ESDs) were issued for the MVP: the first, issued in April 1995, explained that the increase in cost of the project was a result of an increase in the number of contaminated properties that would be remediated. The second was issued in February 1999 to clarify the application of supplemental standards to OU H.

4.2.1 Operable Unit H

OU H consists of five properties where supplemental standards have been applied. One property (MS-00176-VL) is a privately owned parcel with piñon/juniper woodlands. Except for an area defined by the landowner where a future residence may be located, this property was remediated to 16 pCi/g Ra-226 based on risk calculations assuming a residential exposure scenario.[3] This "residential envelope" was remediated to the surface cleanup standards listed in 40 CFR 192.[4] The Utah Department of Transportation (UDOT) owns the remaining four properties, which are in the right-of-way associated with the embankment where U.S. Highway 191 crosses Montezuma Creek (see Figure 1 for combined UDOT-owned supplemental standards areas). In addition to the five noted individual properties, supplemental standards have also been applied to streets and utilities in the City of Monticello rights-of-way and other rights-of-way along Highways 191 and 491 (see Figure 1). City streets and utilities and highway rights-of-way areas were not designated with property numbers but are located within the City of Monticello and so are considered within OU H of the MVP site. Institutional controls (see Section 4.3) were implemented as part of the OU H remedy to manage and control contamination as it is encountered during maintenance and construction activities.

The institutional controls associated with OU H were implemented in concurrence with EPA and UDEQ under *Application for Supplemental Standards for Highway 191 Rights-of-Way Within the City of Monticello* (May 1999); *Application for Supplemental Standards for City of Monticello Streets and Utilities* (May 1999); and *Application for Supplemental Standards for DOE ID No. MS-00176-VL* (May 1999). Compliance with the administrative controls over these supplemental standards properties is further ensured through a cooperative agreement between DOE and the City of Monticello, initiated in June 1999 and current through 2016, and in a memorandum of understanding between DOE and UDOT (August 1999).

4.3 MVP Institutional Controls

Institutional controls at the MMVP are applicable only to properties comprising OU H. Those properties, where supplemental standards were applied, are known as City Streets and Utilities, Highways 191 and 666 Rights-of-Way, and residential property MS−00176−VL. Supplemental standards properties and associated institutional controls to ensure remedy protectiveness apply only to OU H of the MVP.

[3] Application for Supplemental Standards for DOE ID No. MS-00176-VL, May 1999; Appendix C-1, Development of Supplemental Standard Alternative Cleanup Levels for Piñon and Juniper Peripheral and Vicinity Properties.
[4] *Remedial Action Report of Monticello, Utah, Vicinity Properties National Priorities List Site Operable Unit H*, June 1999.

4.3.1 Radiological Control at City and UDOT Supplemental Standards Areas

The properties historically known as "City Streets and Utilities" and "Highways 191 and 666 Rights-of-Way" are supplemental standards properties that are managed by controlling residual radioactive material encountered during City or UDOT excavations within Monticello city limits, or in the event of excavation or significant erosion of the Highway 191 embankment at Montezuma Creek. Under a cooperative agreement with the City of Monticello, DOE provided the City with heavy equipment for use in removing and transferring radiologically contaminated material from City and UDOT excavations within Monticello city limits to the temporary storage facility (TSF) located at the DOE repository about 1 mile south of town (see Figure 1).

Institutional controls affecting these properties include radiological surveillance and control by LM contractor personnel at all highway, city-street, and utility excavations in Monticello. Any radiologically contaminated material (Ra-226 ≥ 5 pCi/g above background) encountered in a City excavation is removed and transferred to the TSF. At the option of UDOT, through a memorandum of understanding between DOE and UDOT, radiologically contaminated material may be returned to the UDOT excavation as fill, or transferred by qualified City workers using City equipment to the TSF.

Contaminated material eroded from the Highway 191 embankment at Montezuma Creek, if observed, will be similarly managed. LM contractor representatives manage the TSF and contents through ultimate disposal of the materials at the DOE Grand Junction, Colorado, Disposal Site. Effective implementation and enforcement of the institutional controls affecting the City and UDOT supplemental standards areas is ensured through routine long-term surveillance and maintenance (LTSM) activities (see Section 4.4).

4.3.2 Radiologic Control at Property MS−00176−VL

As part of the supplemental standards application for MS−00176−VL (see Figure 1 for location), this property was assigned a special zoning designation as an institutional control through the Monticello Planning Commission (Zoning Ordinance 2002-4, enacted April 23, 2003). The property deed was annotated to identify the zoning restriction. The designation (Overlay Zone OL-1), enacted July 10, 2002, requires the owner to obtain a special two-part building permit for any future planned construction. The first part allows excavation of the building footprint. The second allows construction of the structure only if the LM contractor representative has signed Part 1 of the permit indicating that a radiological survey has been completed and that neither the footprint area nor spoils pile are radiologically contaminated; or, if radiologically contaminated material was present, the material was removed to the TSF under direction of the LM contractor representative. Effective implementation of the institutional control affecting property MS−00176−VL is ensured through routine LTSM activities (see Section 4.4). The property currently remains as uninhabited land.

4.4 Long-Term Surveillance and Maintenance

LTSM activities at the Monticello sites began October 1, 2001, under the DOE Grand Junction Office LTSM Program. This program provided stewardship to DOE sites that contain low-level radioactive materials and have no ongoing mission. The LTSM Program was tasked with ensuring compliance with applicable regulations, licenses, and agreements and ensuring that

disposal sites remain protective of human health and the environment. LTSM activities were implemented through the LTSM Program in accordance with the *Monticello Long-Term Surveillance and Maintenance Administrative Manual*.

In December 2003, all activities formerly conducted under the LTSM Program, including those for the MVP and MMTS, were transferred to DOE's newly established Office of Legacy Management. Administration of MVP and MMTS, and LTSM activities for these sites, are presently conducted in accordance with *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites,* June 2007 (revision 0). The LM contractor employs full-time staff at the Monticello field office to conduct LTSM activities for the MVP and MMTS. The major components of LTSM activities conducted through the review period (July 2007 through June 2012) are:

- Responding to public and municipal inquiries.
- Routine surveillance of supplemental standards properties for evidence of unauthorized excavation or severe soil erosion.
- Providing radiological control at supplemental standards areas and managing waste material through eventual disposition within LM.
- Documentation, record-keeping, and reporting of LTSM activities.

Each of these activities were implemented during the current review period by full-time employees stationed at the site. The projected LTSM budget for fiscal year 2012 (October 1, 2011, through September 30, 2012), including the MVP and MMTS, is approximately $750,000. Similar annual funding is anticipated through calendar year 2017, when the next five-year review will occur.

4.5 Land Reuse

Properties comprising OUs A to G were remediated to levels that allow unlimited use and unrestricted exposure, and site restoration of properties comprising OU A to OU G allows these properties to be returned to their original uses, which include residential, commercial, and open space. The application of supplemental standards and institutional controls at OU H has allowed the affected properties to be returned to their original use, primarily as public roads and utility corridors.

5.0 Progress Since the Last Five-Year Review

Progress associated with the MVP remedy since the previous five-year review consists of implementing routine surveillance and radiological control for properties comprising OU H as specified in the LTSM Plan. Routine surveillance and radiological control for properties comprising OUs A to G are not required. The status of the OU H properties has been reported quarterly and annually to EPA and UDEQ for the review period. There are no other activities pertinent to the implementation and monitoring of the MVP remedy that requires progress evaluation in this review.

Construction and maintenance activities at MVP supplemental standards properties (OU H) generated approximately 200 cubic yards of radiologically contaminated material during the past 5 years. The material was managed according to LTSM procedures and ultimately disposed at the Grand Junction disposal site. Dates that the contaminated material was transferred from the TSF to the disposal site were April/May 2007 (76 cubic yards), September 2008 (72 cubic yards), and June 2010 (52 cubic yards). Transfer of contaminated material was not required in 2009 or 2011.

6.0 Five-Year Review Process

6.1 Site Inspection

Comprehensive site inspections of the MVP (and MMTS) are conducted annually to ensure that the remedies remain protective of human health and the environment. The site inspections accomplish this by confirming that LTSM activities are properly implemented, that site conditions and possible changes in site conditions are acceptable, and that institutional controls are effective. In 2006, DOE, EPA, and UDEQ agreed that the annual site inspection in the year preceding the five-year review could serve as the CERCLA five-year review site inspection for the MVP and MMTS.

The 2011 annual site inspection was conducted on September 27 and 28, 2011, by LM and LM contractor personnel. Results and details of the inspection are reported in the *2011 Annual Inspection of the Monticello Mill Tailings (USDOE) and Monticello Radioactively Contaminated Properties Sites*, November 2011 (see Attachment 1). Relevant MVP site inspection observations are summarized in Table 2.

Table 3. 2011 MVP Annual Inspection Observations

Observation
LTSM radiological safeguards for City and UDOT excavations in Monticello are effective. No unmonitored excavations, planned or unplanned, were observed.
LTSM radiological safeguards for MS–00176–VL are effective. No deficiencies were noted. Erosion or construction in affected areas was not noted.
No excessive erosion of Highway 191 embankment at Montezuma Creek (supplemental standards apply).
Onsite record-keeping/documentation of LTSM activities is adequate.
Communications between LM onsite employees and City and UDOT officials are adequate and effective.

6.2 Community Notification

Announcements were published in two local weekly newspapers, the *San Juan Record* and the *Blue Mountain Panorama*, on November 30 and December 1, 2011, respectively, describing the CERCLA five-year review process and objectives, and informing the public on how to contact DOE and onsite LM contractor representatives for additional information or to provide comments. Copies of the announcements are provided in Attachment 2. DOE received no public comment regarding the MVP remedy other than that solicited in interviews with stakeholders (see Section 6.3). In June or July 2012, DOE will place the final outcome of the five-year review,

as determined in Sections 7.0 to 10.0 of this report, in these same newspapers, along with DOE contact information and the locations where copies of the final reports can be viewed.

6.3 Interviews

As part of the five-year reviews for the MMTS and MVP, a community relations specialist for 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 January 2012 in Monticello and by telephone. Interviewees and their relation to the sites are listed below.

Steve Young, Victims of Mill Tailings Exposure
Kedric Somerville, peripheral property owner
John and Charlotte Johnson, peripheral property owner
Jackie and Pete Steele and their daughter, Stacey, peripheral property owner
Chet Johnson, Utah Department of Transportation, Monticello office
Barbara Pipkin, Victims of Mill Tailings Exposure
Doug Allen, Mayor of Monticello
Kelly Pehrson, Monticello City Manager
Pete Steele, peripheral property owner

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 institutional controls 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 of this report. 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 the opposite concern.
- Representatives of the City of Monticello and UDOT expressed no concern in their ability to comply with institutional controls that restrict land use and groundwater use.
- Interviewees were in general not aware of specific institutional controls affecting their properties.
- 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.
- 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.

6.4 Document and Data Review

Project documents and data were reviewed as part of the five-year review process to form the basis of the technical assessment of remedy protectiveness presented in Section 7.0. Documents and data were reviewed to compare actual site conditions to the protectiveness requirements set forth in the decision, design, and implementation phases of the project.

Documents and data reviewed in this five-year review were:

- *Monticello Vicinity Properties Project, Declaration for the Record of Decision and Record of Decision Summary,* November 1989.
- Application for Supplemental Standards for Highway 191 Rights-of-Way Within the City of Monticello (May 1999).
- Application for Supplemental Standards for City of Monticello Streets and Utilities (May 1999).
- Application for Supplemental Standards for DOE ID No. MS-00176-VL (May 1999).
- City of Monticello Ordinance 2002-04 creating Overlay Zone OL-1.
- Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites, June 2007 (revision 0).
- U.S. Environmental Protection Agency Region VIII Hazardous Waste Management Division Five-Year Review (Type Ia), Monticello Vicinity Properties Site (San Juan County, Utah), February 1997 (first MVP five-year review).
- Second Five-Year Review Report for Monticello Radioactively Contaminated Properties, City of Monticello, San Juan County, Utah, June 2002.
- Third Five-Year Review Report for Monticello Radioactively Contaminated Properties, City of Monticello, San Juan County, Utah, June 2007.
- Annotated deeds for the supplemental standards properties.
- Memorandum of understanding between DOE and UDOT (signed in 1999).
- Cooperative agreement between DOE and City of Monticello (extended to 2016 in April 2007).
- Field books and associated drawings in which Monticello onsite LM contractor representatives record/document MVP LTSM activities:
  - — TSF record book
  - — City-Owned Properties record book
  - — Public Roads and Utilities record book
  - — Private Property Restricted Areas record book
  - — Radiological as-built drawings (mapped locations of radiological contamination encountered; continuous field updates and annual computer database updates)
- MMTS/MVP annual inspection reports since 2007.

- 40 CFR 192 for cleanup standards (40 CFR 192 is currently under review by EPA to determine if revisions are necessary).
- Monticello Site Management Plan (updated annually to address MVP and MMTS project status; primary input is FFA quarterly reports that document current activities and findings of routine LTSM activities).

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?

The answer to Question A is "yes." The MVP remedy is functioning as intended by the decision documents, and there have been no breaches in the remedy that would compromise protecting human health and the environment. The remedy for all operable units was implemented and completed in accordance with the following decision documents: *Monticello Vicinity Properties Project, Declaration for the Record of Decision and Record of Decision Summary*, November 1989; *Application for Supplemental Standards for Highway 191 Rights-of-Way Within the City of Monticello*, May 1999; *Application for Supplemental Standards for City of Monticello Streets and Utilities*, May 1999; and *Application for Supplemental Standards for DOE ID No. MS-00176-VL*, May 1999.

The MVP remedy included removal of all radiological contamination to meet the appropriate cleanup standards at the affected properties that constitute OU A to OU G. Contaminated material was placed for interim storage at the former mill site and final placement in the permanent repository. Affected properties were reconstructed following removal actions.

As allowed in 40 CFR 192.21 and 192.22, supplemental standards were approved for certain properties (those composing OU H) allowing some of the low-level radioactively contaminated soil to remain in place. Most of this material is in utility corridors beneath streets and highways in Monticello and in the embankment where Highway 191 crosses Montezuma Creek and therefore is isolated from potential exposure to humans or dispersal to the environment. Contamination left in place at the remaining supplemental standards property (private property MS−00176-VL) is surficial windblown material interspersed among mature piñon and juniper trees. This property remains uninhabited and mostly in a native condition.

Institutional controls have been applied that direct radiological control measures on the supplemental standards properties to minimize future exposure to and dispersal of the contamination. The final component of the MVP remedy was implemented with the enactment of Zoning Ordinance 2002-04 in 2002 to complete the remedy for supplemental standards property MS−00176-VL.

EPA and UDEQ certified the successful implementation of the MVP remedy through approval of Remedial Action Reports (see Table 2). Remedial Action Reports are retained in the administrative record for the MVP, which is maintained in hard copy and electronic formats at

the LM office in Grand Junction, Colorado, and at the Federal Records Center in Morgantown, West Virginia.

Routine LTSM activities ensure compliance with the institutional controls and ensure that any radiologically contaminated material from the supplemental standards properties, if encountered during construction activities or through severe erosion, is properly identified and managed by LM. LTSM activities associated with the MVP are directed under the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites*, June 2007 (revision 0), as concurred to by DOE, EPA, and UDEQ. EPA and UDEQ are apprised of MVP conditions in FFA quarterly reports and in annual site inspection reports.

7.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Still Valid?

The answer to Question B is "yes." The exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy remain valid. These remedy components were developed pursuant to UMTRCA and quantified in 40 CFR 192. Numerical standards in 40 CFR 192 were reviewed and determined to have not been modified or amended since the previous five-year review. EPA is currently reviewing 40 CFR 192. DOE will monitor the progress of this review and assess the implications to the MVP during the next five-year review period.

The primary purpose of the remedial action for the MVP, as specified in the ROD, was to limit exposure to radioactive material to levels protective of human health and the environment. These levels are specified as the standards for radium, radon and radon daughters, and gamma exposure rates in 40 CFR 192. These cleanup levels have not changed since the ROD was signed. There have been no changes in physical conditions or in the use of the site that would reduce the protectiveness of the remedy.

Exposure and land-use scenario assumptions for property MS-00176-VL have not changed. Land-use has not changed and institutional controls are effectively implemented. Exposure assumptions regarding residual contamination beneath city-street and utility corridors remain valid. This contamination is effectively isolated from an exposure pathway. When exposed during construction activities, the contamination is effectively managed in accordance with LTSM protocols.

The remedial action objective to eliminate the potential for exposure of the local population to elevated levels of radon gas and gamma radiation has been accomplished through source removal and implementation of institutional controls.

7.3 Question C: Has Any Other Information Come to Light That Could Call into Question the Protectiveness of the Remedy?

The answer to Question C is "no." No other information has become available to dispute the protectiveness of the MVP remedy. No anomalous conditions suggesting failure of the remedies were found during the site inspection, document and data review, or interviews for the

MVP OUs. LTSM activities related to the MVP remain relevant and are appropriately implemented. LTSM monitoring and radiological surveying has not identified contamination inconsistent with what is known or expected. Review of the LTSM Plan confirmed that adequate controls and procedures are in place.

7.4 Technical Assessment Summary

The remedy for MVP is functioning as intended by the ROD. There have been no changes in site conditions that would adversely affect the protectiveness of the remedy. Cleanup standards for OU A to OU G have been attained and the standards have not changed. At OU H, where contamination was left in place, the implemented institutional controls and LTSM safeguards remain relevant, adequate, and effective.

8.0 Issues

This review did not identify any issue or site condition that would potentially compromise the protectiveness of the MVP remedy. Significant construction activities are anticipated for the next several years associated with City and UDOT infrastructure upgrades on properties comprising OU H. Adequate LTSM controls and safeguards are in place, and DOE will maintain those practices at the affected properties to ensure protectiveness of the MVP remedy during those activities.

9.0 Recommendations and Follow-up Actions

There were no issues or recommendations identified in the previous five-year review that warranted follow-up action. In the current review, no recommendations or follow-up actions are identified for the MVP remedy. The remedy continues to function as intended. The remedy was implemented in accordance with MVP decision documents, and there are no changes to cleanup standards, exposure assumptions, toxicity data, or land use that would compromise the remedy.

DOE maintains an onsite presence that ensures the required monitoring, surveillance, and maintenance activities are duly implemented. The quarterly and annual inspections did not identify any condition requiring follow-up actions. DOE will monitor the progress and findings of the current EPA review of 40 CFR 192.

10.0 Protectiveness Statements

10.1 Protectiveness Statements for Individual MVP Operable Units

Operable Units A to G
The remedy at OUs A to G removed contamination to levels that allow unlimited use and unrestricted exposure. Five-year reviews of OUs A to G are not required.

Operable Unit H—Supplemental Standards Properties
The remedy at OU H (supplemental standards properties including Monticello City Streets and Utilities, Highways 191 and 666 Rights-of-Way, and MS–00176–VL) is protective of human health and the environment.

OU H construction was completed in accordance with the appropriate applications for supplemental standards and as documented in the MVP close out report, August 1999. Contaminated material was left in place, and supplemental standards were applied to these properties in accordance with the allowances of 40 CFR 192.21 and 192.22.

Institutional controls are implemented for OU H to restrict land use and to direct radiological control measures at the areas where contamination was left in place. Routine long-term surveillance and monitoring is conducted to ensure that the institutional controls remain effective. There are no technical, administrative, or land-use changes that would compromise remedy protectiveness.

10.2 Comprehensive Protectiveness Statement for MVP

The remedy at OU H (supplemental standards properties including Monticello City Streets and Utilities, Highways 191 and 666 Rights-of-Way, and MS–00176–VL) is protective of human health and the environment. Therefore, the MVP site remedy is protective of human health and the environment.

11.0 Next Review

The next five-year review for the MVP will be completed by June 20, 2017.

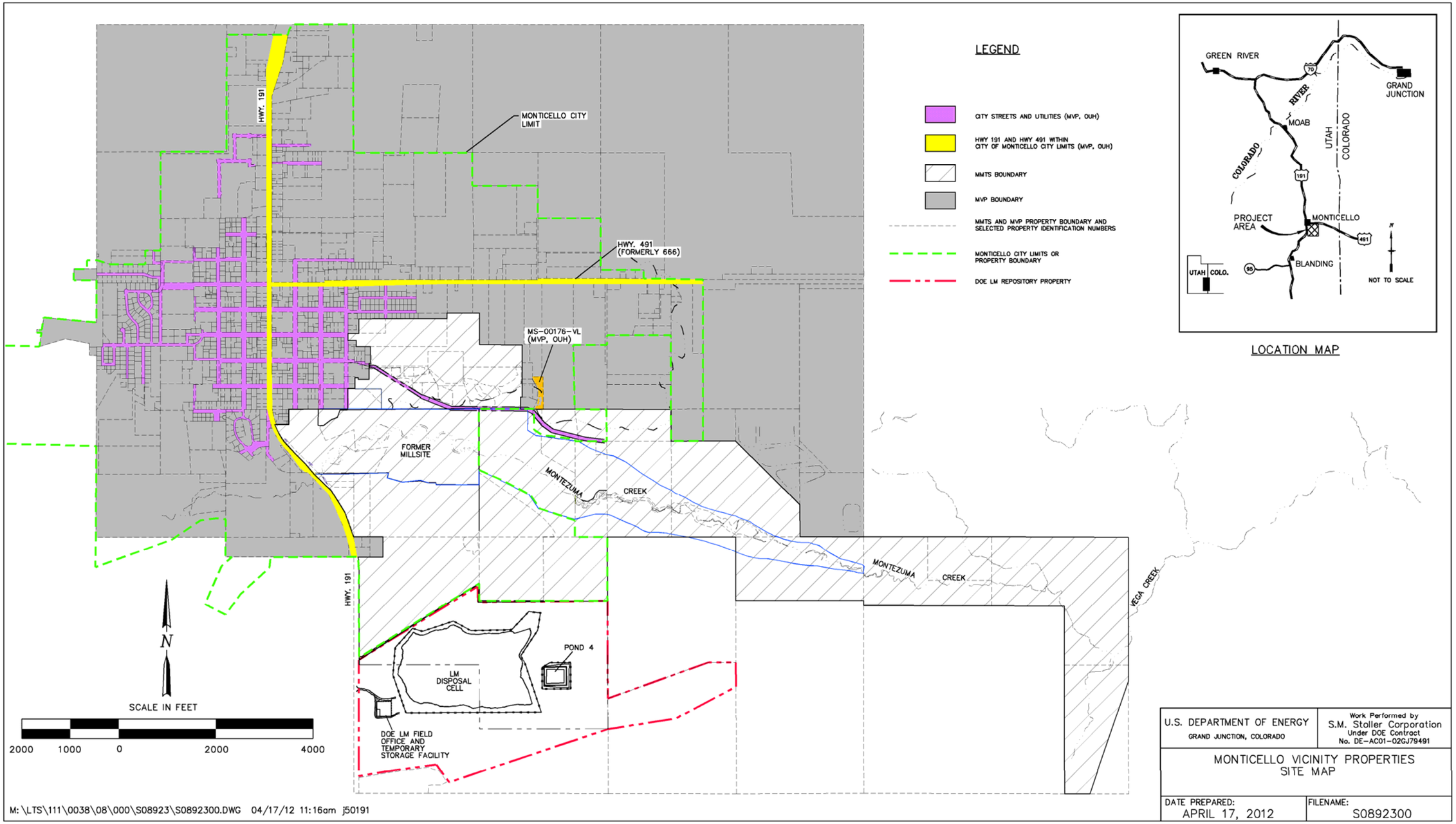

Figure 1. Monticello, Utah, MVP and MMTS Site Map

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Attachment 1

2011 MMTS and MVP Annual Inspection Report

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2011 Annual Inspection of the DOE Monticello, Utah, Mill Tailings Site and Monticello Vicinity Properties

November 2011

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2011 Annual Inspection of the DOE Monticello, Utah, Mill Tailings Site and Monticello Vicinity Properties

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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 27 and 28, 2011. DOE inspects these sites annually to ensure that the selected remedies remain protective of human health and the environment. Under those remedies, contamination remains in place at some locations where use is restricted and exposure is limited. Annual inspections (1) verify that DOE long-term surveillance and maintenance (LTS&M) activities implemented throughout the year are effective and appropriate, (2) confirm that the institutional controls restricting land and water use under the MMTS and MVP remedies remain effective, and (3) identify deficiencies and recommend corrective actions as needed. This report summarizes the results of the 2011 annual inspection.

Repository Findings

The repository is well maintained and well managed. No remedy-related maintenance items were identified. Most site features and support structures were in good to excellent condition. The repository perimeter fence was in good condition, although several areas were identified that require minor repairs, including a broken gate in the northeast corner of the site near perimeter sign P18. Minor repairs are also required in the Pond 4 fence and interior wildlife fence. "No Hunting" signs at perimeter gates have become illegible and will be replaced. Two tumbleweed accumulations along the perimeter fence were large enough to require removal. No new erosion or gullies were apparent at the repository site. A deep gully along the western boundary continues to fill in with sediment over time. Increasing numbers of vole burrows were found across the site. Site vegetation was healthy and composed primarily of desirable species. Several patches of noxious weeds were found onsite and herbicide treatment is planned in October 2011. The vegetation on the repository cover remained ecologically healthy and diverse.

City Property Findings

No violations of institutional controls restricting land and water use were evident during the 2011 annual inspection. Drainage and runoff control structures were in good condition. There were no remedy-related repair or maintenance items requiring action by the City of Monticello. Construction on Properties MP–00211 and MP–00181, on the western portion of the former mill site, has been properly monitored for radiological control by on-site LTS&M personnel. The construction work includes placing fill materials from off-site, and it involves no soil excavation below the fill. Bicycle/walking trails had been graded recently. No areas of new erosion were identified.

City Streets and Utility Corridor Findings

No unplanned or unmonitored excavations were evident during the 2011 annual inspection. No new erosion of highway shoulders and along the Highway 191 embankment at Montezuma Creek was apparent. On-site representatives confirmed that construction projects involving City and State infrastructure upgrades were appropriately monitored for radiological control.

Private Property Findings

No violation of any land or water use restriction was evident during the 2011 annual inspection. In 2008, a land use change occurred on Property MP–00990 when water from Montezuma Creek was diverted to a pond for irrigation, but which does not affect original site risk assumptions. No other land use changes on restricted properties were apparent. No well drilling occurred in 2011 in or near the Groundwater Restricted Area.

Records Findings

No major deficiencies were noted in radiological as-built drawings, site record books, or surveillance checklists. Some excavations, appropriately recorded in the record book(s), did not appear on maps because the excavations were located outside the map boundaries. LTS&M documents were available electronically from the field office. The Information Repository and Operable Unit III Administrative Record were present and in good condition. Updating the Information Repository is planned for November 2011. Deed restrictions were verified at the San Juan County Recorder's Office, including those associated with the sale of properties. Annotations were in place for properties sold or divided, and deed restrictions were attached.

1.0 Introduction

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 27 and 28, 2011. DOE inspects these sites annually to ensure that the selected remedies remain protective of human health and the environment. Under those remedies, contamination remains in place at some locations where use is restricted and exposure is limited. Annual inspections (1) verify that DOE long-term surveillance and maintenance (LTS&M) activities implemented throughout the year are effective and appropriate, (2) confirm that the institutional controls restricting land and water use under the MMTS and MVP remedies remain effective, and (3) identify deficiencies and recommend corrective actions as needed. This report summarizes the results of the 2011 annual inspection to identify site conditions that may compromise remedy protectiveness and therefore warrant corrective action by DOE. Results of this annual inspection will also be incorporated into the compulsory five-year reviews of the MMTS and MVP, due in June 2012, as mandated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

1.1 Monticello Site Background Information

Between the early 1940s and 1960, uranium and vanadium ore was intermittently processed at the mill and ore-buying station in Monticello, Utah. Mill tailings with low-level radioactivity were impounded at the former mill, and some were dispersed over time to nearby properties by wind and water or used for construction in Monticello. Drainage of liquids from the impounded tailings contaminated groundwater in the underlying shallow alluvial aquifer.

The MVP and MMTS projects were placed on the National Priorities List (NPL) in 1986 and 1989, respectively, to address mill-related contamination. Figure 1 shows the locations of the Monticello NPL sites. DOE, in accordance with CERCLA, as implemented through a Federal Facilities Agreement, completed remediation of soil contamination at the MMTS and MVP in August 1999. Radiologically contaminated materials were placed in an engineered disposal cell about 1 mile south of the former mill site. The disposal cell, completed in October 1999, and associated support facilities are known collectively as the repository site (see Figure 2). The repository site includes a temporary storage facility (TSF), where newly excavated radiologically contaminated materials are stored before eventual disposal off site.

In some locations, radiologically contaminated material was left in place in compliance with supplemental standards, as codified at Title 40 *Code of Federal Regulations* Part 192.21. These locations, referred to as supplemental standards areas (see Figures 3 and 4), occur on City and private property, beneath City streets, and in utility corridors. Land use restrictions are applied to these properties and to the former mill site. Restrictions are also applied to properties overlying contaminated groundwater. The former mill site property and several adjacent properties that include supplemental standards areas were transferred to the City of Monticello in 2000 for use as a public park. City and private properties are described in more detail in Section 1.3.

In the following summary of the annual site inspection, many of the inspection items refer to a specific property identification, such as MP-00177. These identifications were assigned during remedial actions for the purpose of tracking the scope and progress of remedial actions on individual land holdings. Figure 3 identifies the locations of the Monticello properties affected by

the remedial actions and that are subject to annual inspection, as referenced in the following sections of this report.

1.2 Long-Term Surveillance and Maintenance

The DOE Office of Legacy Management (LM) administers the long-term stewardship of the Monticello NPL sites to ensure that the selected remedies continue to be protective of human health and the environment. The U.S. Environmental Protection Agency (EPA) Region 8 and the Utah Department of Environmental Quality (UDEQ) provide oversight. Annual inspections are one component of LTS&M at Monticello. Other primary components include routinely inspecting, operating, and maintaining the on-site permanent disposal cell and leachate management system; routinely inspecting all properties affected by land and water use controls to ensure compliance with the controls; and monitoring and managing radiologically contaminated soil encountered at City and Utah Department of Transportation (UDOT) excavations in Monticello. Activities associated with Operable Unit III, including groundwater treatment, are not LTS&M activities. In association with Operable Unit III, groundwater and surface water quality are monitored and results are reported annually. CERCLA 5-year reviews (begun in 1997) are also conducted to monitor and document the protectiveness of the MMTS and MVP remedies.

LTS&M activities, including the annual inspection and reporting, are conducted by on-site and off-site personnel in accordance with the procedures provided in the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (LTS&M Plan).

1.3 Annual Site Inspection Scope

Annual inspections of the MMTS and MVP focus on four general topics: Recordkeeping and Administrative Review, DOE Repository Site, City and Private Properties, and City Streets and Utility Corridors. The Annual Inspection Checklist records the items inspected; Appendix A includes the completed checklist for the 2011 annual inspection. Revised in 2009, this checklist format was approved by EPA and UDEQ through Federal Facilities Agreement meetings. The checklist supersedes Appendix K of the LTS&M Plan.

Recordkeeping and Administrative Review

Recordkeeping by the on-site LM contractor staff is reviewed for proper documentation of day-to-day activities and recorded in Section II of the Annual Inspection Checklist. On-site record books, surveillance checklists, and radiological as-built maps are verified (radiological as-built maps, in addition to on-site record books, document the location and findings of radiological control measures provided by on-site LM contractor staff during municipal construction activities conducted in Monticello).

The inspection also confirms that deed annotations applicable to the supplemental standards areas remain accurately filed at the County Courthouse; that the Information Repository and Operable Unit III (OU III) Administrative Record documents are complete and current; that updated copies of relevant LTS&M documents are available to the on-site staff; and that workers accessing the TSF are appropriately trained or escorted. The inspection no longer includes a review of the MMTS and MVP Administrative Record because these files were sent to the Federal Records Center in Denver, Colorado, per CERCLA guidelines, in 2008.

DOE Repository Site

The repository site is inspected for the integrity of constructed features and support facilities (e.g., signs, buildings, fences, gates) and the integrity of the disposal cell cover, including the health of the plant community. Observations are recorded in Section III of the Annual Inspection Checklist. Areas needing maintenance or repair are noted, as are areas of soil erosion or siltation. The repository site inspection also includes the management and operation of the TSF and the management and operation of the disposal cell leachate collection system including Pond 4 (an engineered pond for evaporation of disposal cell leachate). Because control of noxious weeds on Federal properties is required by law, infestations of noxious weeds are also identified during the inspection.

City and Private Properties

City and private properties are inspected annually to confirm that institutional controls, as described in the LTS&M Plan, remain effective, and to document any change in site conditions that may affect the protectiveness of the remedies. Properties are inspected for evidence of violations of applicable restrictions, and findings are recorded in Sections IV, V, VI, VII, and VIII-C of the Annual Inspection Checklist.

Land and water use restrictions apply to the following City and private properties (see Figure 3 for locations):

- City-owned properties transferred from DOE: MP-00181, MP-00391, MS-00893, MP-01040 (north), MP-01041, MP-01042, and MP-01077. All of these properties are restricted to recreational day use. Overnight camping and the building of habitable structures are prohibited.
- Piñon/Juniper properties supplemental standards areas (a subset of the City-owned properties): MP-00391, MP-01041, and MP-01077. These properties have an added restriction of no soil removal.
- Former mill site (a subset of the City-owned properties): MP-00181 and MS-00893. In addition to other restrictions, damage to wetlands is prohibited in these areas.
- Groundwater Management Area (also known as the Groundwater Restricted Area [GWRA]; includes both City-owned and private properties): MP-00179, MP-00181, MP-00211, MS-00893, MP-00947, MP-00951, MP-00990, MG-01026, MG-01027, MG-01029, MG-01030, MG-01033, MP-01077, MP-01083, and MP-01084. Domestic use of groundwater from the alluvial aquifer is prohibited on these properties. This institutional control is administered by the State Engineer's Office through the well permitting process.
- Montezuma Creek Soil and Sediment Properties (also known as the Montezuma Creek Restrictive Easement Area; privately owned): MP-00951, MP-00990, MG-01026, MG-01027, MG-01029, MG-01030, MG-01033, and MP-01084. Portions of these properties have restrictive easements to prohibit soil removal or the construction of habitable structures.
- Properties MP-00211 (City-owned but not transferred from DOE) and MS-00176 (privately owned). Special zoning ordinances, which require radiological scanning for certain ground-disturbing activities, affect these properties.

Surface components of the OU III groundwater treatment system and inactive monitoring well surface completions, located on private property MP-00179, are also inspected annually. Inspectors also note any evidence of standing water, saturated soil, surface disturbance, or stressed vegetation in the area of the groundwater treatment system.

City Streets and Utility Corridors

During the annual inspection, City streets, utility corridors, and Highway 191 and 491 rights-of-way are inspected for evidence of unmonitored excavations or soil movement. Results are recorded in Sections VIII-A and VIII-B of the Annual Inspection Checklist.

Radiologically contaminated soil remains in some places beneath streets and utility corridors in Monticello, in the Highway 191 embankment over Montezuma Creek, and UDOT rights-of-way along Highways 191 and 491. Supplemental standards have been applied to these areas. Through a cooperative agreement with the City, the on-site LM contractor staff monitors all excavations in these areas for radiologically contaminated material, and the City transports any such material to the TSF under direction of the on-site staff. On-site staff also monitors all excavations of Highways 191 and 491. Through a Memorandum of Understanding between UDOT and DOE, UDOT has the option of returning contaminated material to the excavation as backfill or having City workers, under the direction of on-site staff, haul the material to the TSF.

1.4 2011 Annual Site Inspection Participants and Schedule

Inspection team members and affiliations are listed on page 1 of the Annual Inspection Checklist (Appendix A). L. Sheader and P. Wetherstein conducted the physical site inspection on September 27 and 28, 2011. J. Dayvault and J. Nguyen of DOE participated in portions of the inspection. M. Stilson, of the Utah Department of Natural Resources Division of Water Rights, was also contacted on October 6, 2011, to verify that no prohibited well permits were sought within restricted areas.

Tuesday, September 27, 2011
Inspection team members convened at the Monticello field office in the morning, and P. Wetherstein reviewed health and safety documents with the inspection team. In the afternoon, L. Sheader and P. Wetherstein inspected repository features, including Pond 4, the repository cover, cover penetrations, wildlife fence, drain ditches and toe trenches, and the field office. City-owned properties also were inspected. J. Dayvault and J. Nguyen accompanied the inspectors for portions of the inspection.

Wednesday, September 28, 2011
The repository perimeter fence, perimeter signs, and boundary markers were inspected in the morning along with privately owned property MS-00176 and City-owned property MP-00211. In the afternoon, the administrative and records inspection was conducted, the TSF was inspected, and institutional controls at the Montezuma Creek Soil and Sediment Properties and Groundwater Management Area were verified.

2.0 Site Inspection Results

2.1 DOE Repository Site and Disposal Cell

The repository site consists of the access area (support buildings and the TSF), the repository perimeter, run-on and runoff drainage controls, Pond 4, the disposal cell cover, and cover penetrations (manholes, settlement monuments, and structures associated with the embedded lysimeter). Results of the repository inspection are summarized below and in Appendix A, Section III.

2.1.1 Access Area

The Monticello field office buildings and associated structures were in excellent condition. Site access signs displaying contact information were current and visible. Infestations of two noxious weed species (Russian knapweed [*Acroptilon repens*] and spotted knapweed [*Centaurea diffusa*]) were identified and flagged prior to the annual inspection near the field office buildings and entrance gate; herbicide treatment in October 2011 is planned. The site's paved access road was in good condition, with vegetation mowed along the margins.

2.1.2 Temporary Storage Facility

The TSF is a restricted-access, gravel-surfaced area enclosed by an 8-foot-high chain link fence. The fence was appropriately posted with access control signs, and there was no evidence of vandalism or trespassing. Within the fence, the TSF bin and lay-down area for potential mixed waste were in good working order. At the time of the inspection, the bin contained about 6 cubic yards of low-level radiologically contaminated soil and debris derived from city street and utility excavations. There was no mixed waste stored in the TSF.

2.1.3 Repository Perimeter

A barbed-wire stock fence, containing several gates, marks the repository site boundary and discourages human trespass and livestock entry. Forty numbered location-reference signs (E and P1–P39) are fixed to the fence or on separate posts nearby. The site entrance gate is locked at night and at other times when on-site personnel are not present.

Perimeter Fence

The perimeter fence along the south edge of the repository site was rebuilt in November 2010. Repaired sections of the fence were in very good condition. Other sections of fence were in need of minor repair, as some wires were broken or slack. One gate at the northeast corner of the site near P18 was broken and was found partially open during the inspection. No evidence of vandalism was present.

Location-Reference Signs

All perimeter signs were legible and in good condition, although perimeter signs P12 and P15 (Photo 1) were scratched. "No Hunting" signs, posted at all gates along the perimeter fence, were weathered and largely illegible. "No Hunting" signs may be particularly important along the eastern site boundary, where land use changes are likely to occur with the recent sale of the property. No evidence of bullet holes or other vandalism was present.

Boundary Markers
All six boundary markers were located and were in good condition.

Erosion and Gullies
No new erosion was apparent during the 2011 inspection. Previous inspection reports describe a gully between perimeter signs E and P2, which threatened portions of the fence line along the west boundary of the site. Because sources of water to the gully have been rerouted or repaired by UDOT, no action was taken by DOE to fill the gully or to move the perimeter fence. As in 2010, the gully was still present in 2011. Deposition has continued, slowly filling in washout areas (Photo 2). This process will likely continue to fill the gully over time.

Perimeter Vegetation
Vegetation between the perimeter fence and the wildlife fence (inner fence) is healthy and composed primarily of desirable species. One large patch of spotted knapweed was located in the southeastern portion of the site and will be treated with herbicide in October 2011. A small patch of mullein (*Verbascum thapsus*), which can be locally invasive, was found near perimeter sign P30 and also will be treated to prevent its spread. Field bindweed (*Convolvulus arvensis*), a Category C noxious weed species, also was present in places; because it is not spreading, it does not require control. Two areas of tumbleweed accumulation—near perimeter signs P15 and P18—were identified during the inspection.

Maintenance Item: Treat infestations of noxious weeds near the access area, front gate, and perimeter fence with herbicide.

Maintenance Item: Repair weather-damaged sections of the perimeter fence.

Maintenance Item: Repair the stock gate at the northeast corner of the site near perimeter sign P18.

Maintenance Item: Replace "No Hunting" signs at all gates in the perimeter fence with sturdy metal signs.

Maintenance Item: Remove tumbleweed accumulations near perimeter signs P15 and P18.

2.1.4 Repository Run-on and Runoff Controls

Engineered rock-lined drainage controls that collect and direct runoff from the disposal cell are the West Drain Ditch, South Drain Ditch, East Toe Trench, and North Toe Trench. These features are designed to prevent gully erosion of the disposal cell. Some areas of siltation, the result of natural processes where rock channels are filled in slowly over time, were observed within the ditches and trenches. All ditches and trenches are in good condition and do not contain excessive vegetation.

West Drain Ditch
In 2002, eroded areas in the West Drain Ditch channel immediately north of the inner fence were repaired, and the channel was lined with rock all the way to North Draw. Erosion was also observed in a small gully connected to the West Drain Ditch during the 2008 inspection. No evidence of additional erosion in either area was apparent in 2011 (Photos 3 and 4). One small

elm tree has become established in the West Drain Ditch, and it will continue to be monitored. If the tree has the potential to block flow, it will be removed.

South Drain Ditch
Stabilized erosion rills were present on the South Drain Ditch's north side in places and had not changed. Shrubs were observed in portions of the South Drain Ditch but do not block potential flow.

East Toe Trench and North Toe Trench
Some rock at the surface of the East Toe Trench and North Toe Trench has degraded in the past, but no new degradation was noted. Erosion or bypass of these trenches is not evident. Soils and vegetation have accumulated in the drainage downgradient of the East Toe Trench, but flows are not impeded. Soils and vegetation have also accumulated in the drainage downgradient of the North Toe Trench; no new erosion was noted in this area.

2.1.5 Pond 4

Pond 4 is a lined solar evaporation pond that collects water pumped from the disposal cell leachate collection and recovery system (LCRS). Pond 4 also collects a small amount of precipitation. Pond 4 is constructed with an LCRS and leak detection system (LDS). In the past, when Pond 4 was used to store construction water or during times of increased precipitation, the pond's LCRS infrequently collected water. The Pond 4 LDS has never collected water. An 8-foot-high security fence surrounds Pond 4, and a rope barrier surrounds the pond within the security fence. Locked chain link gates are present at the northeast and southwest corners of the security fence, and a locked vehicle access gate is in the west fence. Water rescue equipment is stored in weatherproof metal cabinets on the berm near the northeast corner of Pond 4 and near the vehicle entrance gate.

Gate, Fence, Entrance, and Perimeter Signs
All gates were in good working condition. Warning signs on the perimeter fence were easily visible and legible. The following warning signs were posted on the perimeter fence: "Danger Do Not Enter," "Controlled Area, Enter at Designated Access Only," "Contaminated Water, Do Not Discharge," and a sign posting current contact information, which included a "No Trespassing" warning. There was no evidence of vandalism or trespass, but damage to the security fence from snowmelt was apparent. Most damaged sections have been repaired by on-site personnel, but two additional holes, large enough to allow human or animal access, were discovered during the inspection (Photo 5). These holes require repair.

Pond Perimeter and Berm
The pond's rope barrier was intact, and warning signs—"Contamination Area" postings and notices that life jackets are required—were visible and legible. Animal burrows, primarily made by voles, were visible on and below the pond berm on all sides (Photo 6). No large burrows, which might threaten the berm's integrity, were found. Animal burrows will continue to be monitored during routine Pond 4 inspections. Vegetation on the slopes of the berm was well established and primarily composed of non-weedy species.

Lifesaving Equipment
The cabinets containing the water rescue equipment were highly visible, adequately labeled, and in good condition. The contents of the cabinets (throw buoys, rope, rope ladders, personal flotation devices) were easily accessible and in good condition.

Pond 4 LCRS/LDS Control Cabinet
The LCRS/LDS control cabinet was in good condition. No evidence of insects or rodent damage was present, and the cabinet remained weatherproof. Operation of the Pond 4 LCRS and LDS is reported under Section 2.1.6, "Cover Penetrations."

Liner, Anchors, and Pond Interior
Although no visible evidence of holes in the pond liner was observed, repairs to known holes in the pond liner are planned in October 2011. Liner anchors, consisting of sand-filled polyethylene pipe installed in 2007, were in good condition. Less than 1 foot of water was standing in the northeast corner of the pond. The pond contained silt and vegetation, including saltcedar (*Tamarisk ramosissima*, a noxious species), but this vegetation was later removed during liner repairs (Photo 7).

Maintenance Item: Repair holes in the security fence around Pond 4.

2.1.6 Disposal Cell Cover

The repository cover inspection includes the disposal cell cover and other features within the inner wildlife fence, including roads, riprap areas, and site monuments. The wildlife fence is a 6-foot-high wire-mesh fence that contains a vehicle access gate on the west end, a Pond 4 access gate on the east end, and five narrow gate apertures that allow wildlife to pass through.

Roads, Wildlife Fence, Site Monuments, and Raptor Perches
The unpaved road surrounding the disposal cell and the road to Pond 4 was recently graded and in very good condition (Photo 8). One hole was discovered in the wildlife fence in its northeast section (Photo 9). The hole, probably caused by snow damage, may present a hazard to wildlife and will be repaired. Other sections of the wildlife fence and gates, open at the time of the inspection, were in acceptable condition and showed no evidence of vandalism. Both site monuments, one at the west access gate through the wildlife fence (Photo 10) and one at the apex of the repository, were present and intact. Six raptor perches, installed near the disposal cell cover in 2007, were in good condition.

Vegetation
Desirable plants remained well established on the cover, and no significant barren areas, eroded areas, or phreatophyte shrubs were identified (Photo 11). Some dead sagebrush (*Artemisia tridentata*) and rabbitbrush (*Ericameria nauseosa*) plants—killed from a 2006 vole infestation—were still scattered across the cover. As in 2010, a large number of healthy, desirable shrub seedlings were apparent. Small quantities of field bindweed were found on the cover; because it is not spreading, control is not necessary.

The Repository Cover Vegetation Index, developed in 2009 for use during annual inspections (pages A-11 and A-12 in Appendix A), indicates that the cover vegetation remains healthy. A vegetation condition score of 3.67 out of 5.00 was assigned to the cover. An average score is considered to be 3.00. The vegetation condition score is used to detect trends in the health of the

vegetation community; no significant upward or downward trends were apparent. Dominant species identified on the cover in 2011 include sagebrush, western wheatgrass (*Pascopyrum smithii*), crested wheatgrass (*Agropyron cristatum*), intermediate wheatgrass (*Thinopyrum intermedium*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and smooth brome (*Bromus inermis*). None of these species are weedy.

Vegetation on the repository's soil-covered side slopes and outlying areas is also in good condition. Plants also have established on portions of the rock riprap armoring (Photo 12), mainly rabbitbrush, yarrow (*Achillea millefolium*), and grass species with occasional patches of oak brush (*Quercus gambelii*). Because none of this vegetation overlies tailings or threatens the integrity of the side slopes, it is not of concern.

Burrowing

More active burrows (Photo 13) were observed during the 2011 inspection than in 2010, indicating that vole populations may be cyclically increasing at the site. However, the increased presence of raptors and recent decreases in standing dead vegetation due to heavy snowfall are expected to prevent widespread damage to the cover shrubs in 2011. There is no evidence that burrows penetrate beneath the cover's biointrusion layer.

Stability

No area of the cover indicated settling, slumping, fracturing, seepage, ponding, or significant erosion. The steep, rock-lined slopes showed no evidence of rock movement or degradation, settling, slumping, or erosion (Photo 14).

Maintenance Item: Repair the hole in the wildlife fence in its northeast section.

2.1.7 Cover Penetrations

Cover penetrations include five manholes, two video ports, nine settlement monuments, and structures associated with a large lysimeter, which measures water flow, embedded in the eastern portion of the disposal cell (see Figure 2).

Manholes and Video Ports

Manholes 1 and 3 enclose equipment for the disposal cell LCRS and LDS. They were not entered during the annual inspection, but the exteriors were in good condition. On-site personnel reported that equipment in Manholes 1 and 3 remained in good condition. All five manhole covers were secure and operable, appropriate safety warnings and entry procedures were posted, the exterior pump access ports were undamaged, telemetry surface installations were in good condition, and no leakage or drainage was evident. Covers of the inoperable video ports on MH–1 and MH–2 were locked and secure.

Settlement Monuments

Nine settlement monuments, identified by the letters A through I, are on the disposal cell. The outer protective casings (12-inch PVC pipe) and the inner plates were intact and undamaged. Data from elevation surveys of the settlement monuments in 2006 indicate no evidence of settlement. Settlement monument elevations are planned in conjunction with the upcoming CERCLA five-year review.

Embedded Lysimeter
External features of the embedded lysimeter were inspected, and no drainage or seepage was detected at the outlet or along cover penetrations. Instrumentation installations were in good condition.

Operation of Repository and Pond 4 LCRS and LDS
Monitoring of leachate production is performed automatically via the repository telemetry system. Upgraded in 2007, the telemetry system relays data to the LM Systems Operation and Analysis at Remote Sites (SOARS) system, for off-site viewing, evaluation, and management. On-site personnel routinely monitor leachate production in accordance with specifications in the LTS&M plan. Leachate production rates are presented in quarterly reports to DOE, EPA, and UDEQ. Annual inspection of the repository telemetry system is conducted through interviews with the on-site staff and through reviews of the quarterly reports. The Repository and Pond 4 LCRS and LDS are operating properly with no anomalous readings or conditions.

2.2 City-Owned Properties

City-owned properties MP-00181, MP-00391, MS-00893, MP-01040 (north), MP-01041, MP-01042, and MP-01077 were transferred from DOE to the City of Monticello in 2000. Specific restrictions on these properties are summarized in Section 1.3 (City and Private Properties). Photos 15 through 17 show the wetlands, creek, and southern slope of the former mill site during the 2011 inspection.

Property MP-00211 was always City-owned and is subject only to zoning restrictions on excavation and construction.

Results of the 2011 annual inspection are summarized below and in Section IV of Appendix A.

Recreational Use
The City-owned properties transferred from DOE are accessible to the public. In 2007, these properties were annexed by the City of Monticello. Hunting with firearms is not allowed within city limits, but bow hunting was authorized in 2009. Walking and mountain bike trails are used throughout the properties. During the annual inspection, the City had recently re-graded the surface of the walking trails (Photo 18).

Overnight camping is not allowed on these properties. No evidence of past or present overnight camping was observed during the 2011 inspection.

Construction of Habitable Structures
Construction of habitable structures is prohibited on these properties. The construction of any habitable structures was not observed during the 2011 inspection.

Supplemental Standards Areas on Piñon/Juniper Properties
No evidence of new soil removal by human activity or natural processes was noted on any of the Piñon/Juniper properties supplemental standards areas. The supplemental standards areas are physically delineated by four-strand wire fence. The City of Monticello breached sections of this fence to accommodate mountain bike trails, and other sections of the fence have degenerated due

to age. Past radiological scans of the bike trails indicated no concerns, and survey records are available at the Monticello field office. DOE will continue to monitor these areas regularly.

Soil Movement, Drainage, and Runoff Controls

Construction on properties MP-00211 and MP-00181, on the western portion of the former mill site, was apparent at the time of the inspection. The construction work includes the placement of fill materials from off-site, and it involves no soil excavation below the fill (Photo 19).

All riprap-armored structures, dams, check dams, berms, and runoff control drainages (see Figure 4) are intact and functional. One structure, Deer Draw Dam, is shown in Photo 20. No major erosion issues or evidence of recent erosion were noted during the 2011 inspection.

Wetlands

Wetlands on the former mill site were constructed according to EPA-specific criteria, and these wetlands are protected by cooperative agreement. Under this agreement, the City will not disturb these areas without prior approval from appropriate State and federal agencies and is not responsible for repairing damage to these areas by natural causes. Montezuma Creek and three constructed marsh wetlands on the City-owned properties are ecologically healthy, and no evidence of damage by human activity or natural causes was observed during the 2011 inspection.

Groundwater Use

No evidence of groundwater use or water-well drilling on City-owned properties with groundwater restrictions was observed during the 2011 inspection or through the year. No applications to drill were filed with the Utah Department of Natural Resources Division of Water Rights for these areas (see Section 2.6 below).

2.3 City Streets and Utility Corridors, and UDOT Rights-of-Way

Results of the 2011 annual inspection of City streets and utility corridors, and UDOT rights-of-way are found in Appendix A, Section VIII. No unmonitored or unplanned excavations were identified. On-site LM contractor personnel were aware of all planned excavations, which include natural gas pipeline upgrades, improvements to the state's Port-of-Entry facility east of Monticello, construction of a gasoline station/convenience store along Highway 491, excavations associated with the construction of a new outdoor school at 4th and Main, construction of a sewer line adjacent to Highway 191 north of the city limits, and City street resurfacing. Excavations related to natural gas pipeline upgrades have been completed south of Main Street, and no new excavations are planned in this area in the near future. Natural gas pipeline upgrades north of Main Street are planned for 2012. Along the shoulders of Highway 191 and 491 or at the Highway 191 embankment at Montezuma Creek, no new erosion was evident.

2.4 Private Property MS–00176–VL

Before a habitable structure is constructed on this property, Monticello zoning ordinance requires that a special building permit, based on radiological scanning results, be obtained. There is no evidence of erosion, soil removal, or construction of habitable structures (see Appendix A, Section VIII-C). A portion of this property was sold in 2006. The portion that was sold does not

have supplemental standards areas, but the new owner did not remove the land use restriction annotated to the deed.

2.5 Properties in the Montezuma Creek Restrictive Easement Area

There was no evidence of significant erosion or soil removal from the restricted areas of these properties during the 2011 inspection (see Appendix A, Section V).

In 2006, a new residence was constructed on property MP-00990 outside the supplemental standards area. At that time, on-site personnel helped the landowner delineate the restricted area of this property. Portions of this property and Property MG-01033, including the residence, were sold in 2010 to a new landowner. No land use changes are apparent.

A portion of property MP-00990 is cultivated in the easement area in compliance with the land use restriction. In 2008, the landowner changed the land use by diverting water from Montezuma Creek near monitoring well 92-09 to an irrigation pond to apply to cultivated areas. DOE evaluated this land use change and found no significant associated risk.

2.6 Groundwater Restricted Area

There has been no evidence of well-drilling activity in or near the GWRA (Appendix A, Section VI). On October 6, 2011, M. Stilson of the State Engineer's Office confirmed the lack of well-drilling activity and indicated that there were no applications filed in the past year for shallow or deep water wells in or near the Monticello GWRA.

2.7 Operable Unit III

Permeable Reactive Barrier (PRB) and Auxiliary Treatment System
A groundwater treatment system comprising the PRB and treatment cells is on property MP-00179 (private property) east of the former mill site. Features of these systems are inspected each year to ensure that the current land use, ranching, is not adversely affected. Due to access restrictions, this property was not inspected during the annual inspection. However, in October, 2011, groundwater was sampled and a change-out of treatment cell media was performed on the property. No anomalies were reported during these activities.

Water Quality Monitoring Well Inspection
OU III water quality is monitored at an established network of active groundwater monitoring wells and surface water monitoring sites. Active wells are inspected during sampling in April and October of each year, and field personnel noted no deficiencies during routine well inspections in 2011.

2.8 Administrative and Records Inspection

The following documents and records, recorded by the on-site staff, were inspected for completeness and accuracy of information (see Appendix A, Section II):

- Radiological as-built drawings (residential and utility maps that document the location and results of radiological control provided by on-site LM contractor personnel).

- Site record books, which include the repository, the TSF, City-owned properties, private property restricted areas, and public roads and utilities.
- Surveillance checklists, which include meteorological monitoring data; TSF access/security logs; and monthly, quarterly, and Pond 4 surveillance checklists. Pond 4 and repository LCRS and LDS monitoring records are maintained electronically.

The following categories of documents and records were inspected to ensure that pertinent information for implementing LTS&M activities is readily available to the on-site staff and the general public:

- LTS&M Plan (including site-specific emergency response information), the *Health and Safety Manual* (LMS/POL/S04321), and the *Quality Assurance Manual* (LMS/POL/S04320). These documents are available electronically.
- Information Repository and OU III Administrative Record.
- LTS&M Training Records (applicable to on-site and unescorted City employees accessing the TSF).

Deed restrictions (verified in the San Juan County Recorder's Office) were inspected to ensure that administrative controls remain in effect with the City and County.

No major deficiencies were noted in any of the above administrative categories. However, the Information Repository collection was not updated in April 2011; an update is scheduled for November 2011. LTS&M documents were available electronically from the field office. Although the most current version of the LTS&M Plan was available, portions of the plan require update. The Information Repository and Operable Unit III Administrative Record were present and in good condition. Deed restrictions were verified at the San Juan County Recorder's Office, including those associated with the sale of properties. Annotations were in place for properties sold or divided, and deed restrictions were attached. The site record books were correct and complete. Minor errors in the TSF record book were corrected by on-site personnel during the inspection. Some excavations, appropriately recorded in the record book(s), did not appear on maps because the excavations were located outside the map boundaries.

3.0 Conclusions and Recommendations

The 2011 annual inspection confirmed that DOE LTS&M activities implemented throughout the year remain effective and appropriate, and institutional controls restricting land and water use as part of the MMTS and MVP remedies remain effective. No corrective actions are necessary.

The following maintenance issues were identified during the 2011 annual inspection and are scheduled to be resolved between April and June 2012, or sooner if possible:

- Treat infestations of noxious weeds near the access area, front gate, and perimeter fence with herbicide.
- Replace weather-damaged sections of the perimeter fence.
- Repair the stock gate at the northeast corner of the site near perimeter sign P18.

- Replace “No Hunting” signs at all gates in the perimeter fence. Replace with sturdy metal signs.
- Remove tumbleweed accumulations near perimeter signs P15 and P18.
- Repair holes in the security fence around Pond 4.
- Repair the hole in the wildlife fence in its northeast section.

4.0 Photograph Log and Photographs

Photographs were taken to document findings of the 2011 annual inspection. The location and orientation of the photographs included below are identified in Figures 2, 3, and 4. A Field Photograph Log associated with all photographs taken during the 2011 annual inspection is included as Appendix A, Section IX.

1. Perimeter sign P15, scratched but legible.

2. Gully along western perimeter fence.

3. Rock-lined drainage between the West Drain Ditch and North Draw.

4. Stabilized erosion area near the West Drain Ditch.

5. One of two holes discovered in the Pond 4 security fence.

6. Animal burrows on and below the Pond 4 berm.

7. Pond 4 showing siltation, vegetation, and standing water.

8. Repository cover and recently graded perimeter road.

9. Hole in northeast section of wildlife fence.

10. Site Monument at west access gate through wildlife fence.

11. Vegetated disposal cell cover, view to the west from center monument.

12. Vegetation on rock side slope of repository.

13. Animal burrow on repository cover.

14. Rock side slope of repository and North Toe Trench.

15. Wetland 1 at former mill site, view to the south.

16. Wetland 2 at former mill site, view to the south.

17. Wetland 3 and Montezuma Creek at former mill site, view to the southeast.

18. Recently graded bike path at former mill site.

19. Fill materials at City-Owned Property MP–00211.

20. Runoff/drainage control structure, Deer Draw Dam.

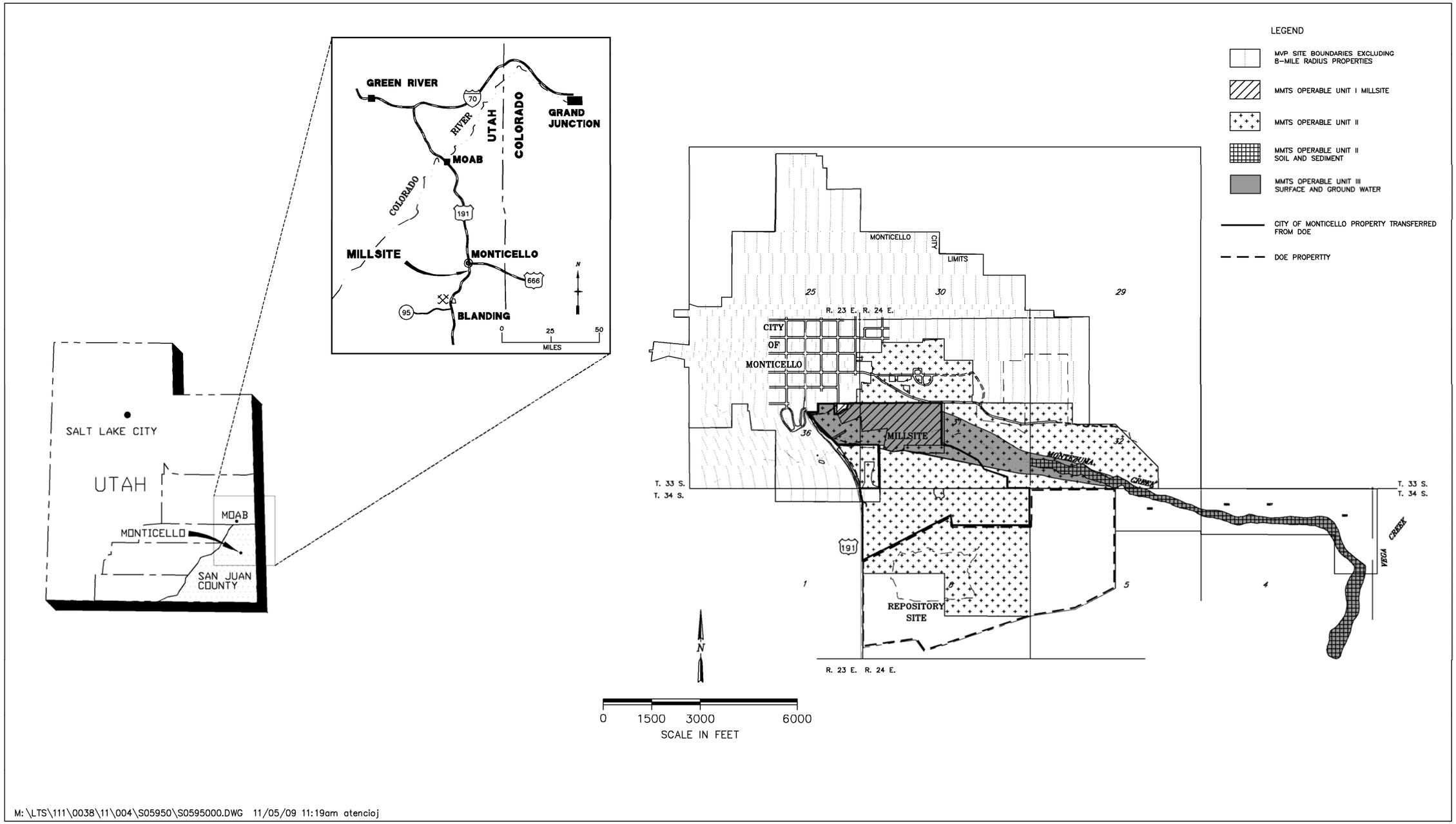

Figure 1. Location and Features of Monticello MMTS and MVP Sites

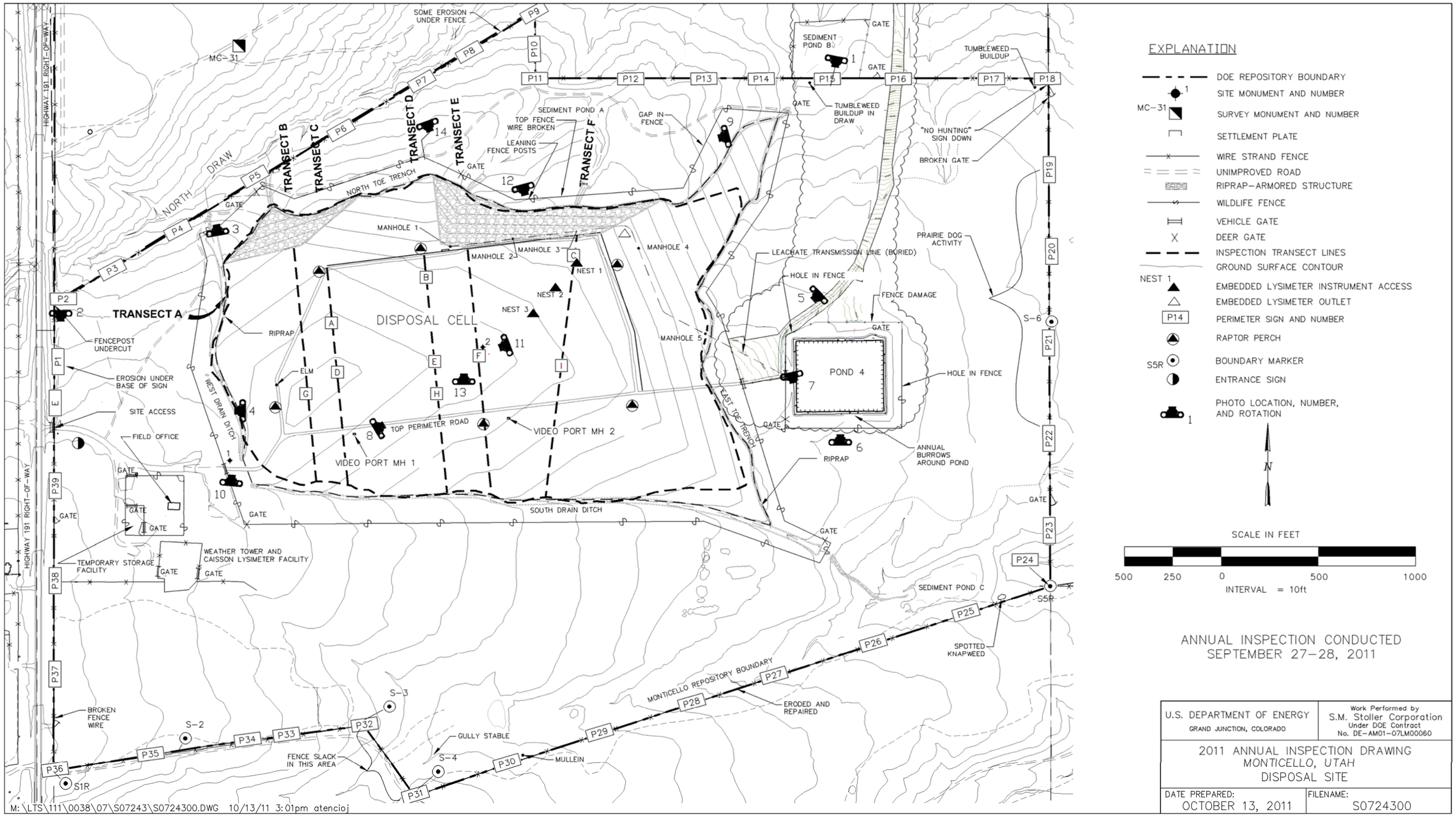

Figure 2. Monticello, Utah, Repository Site

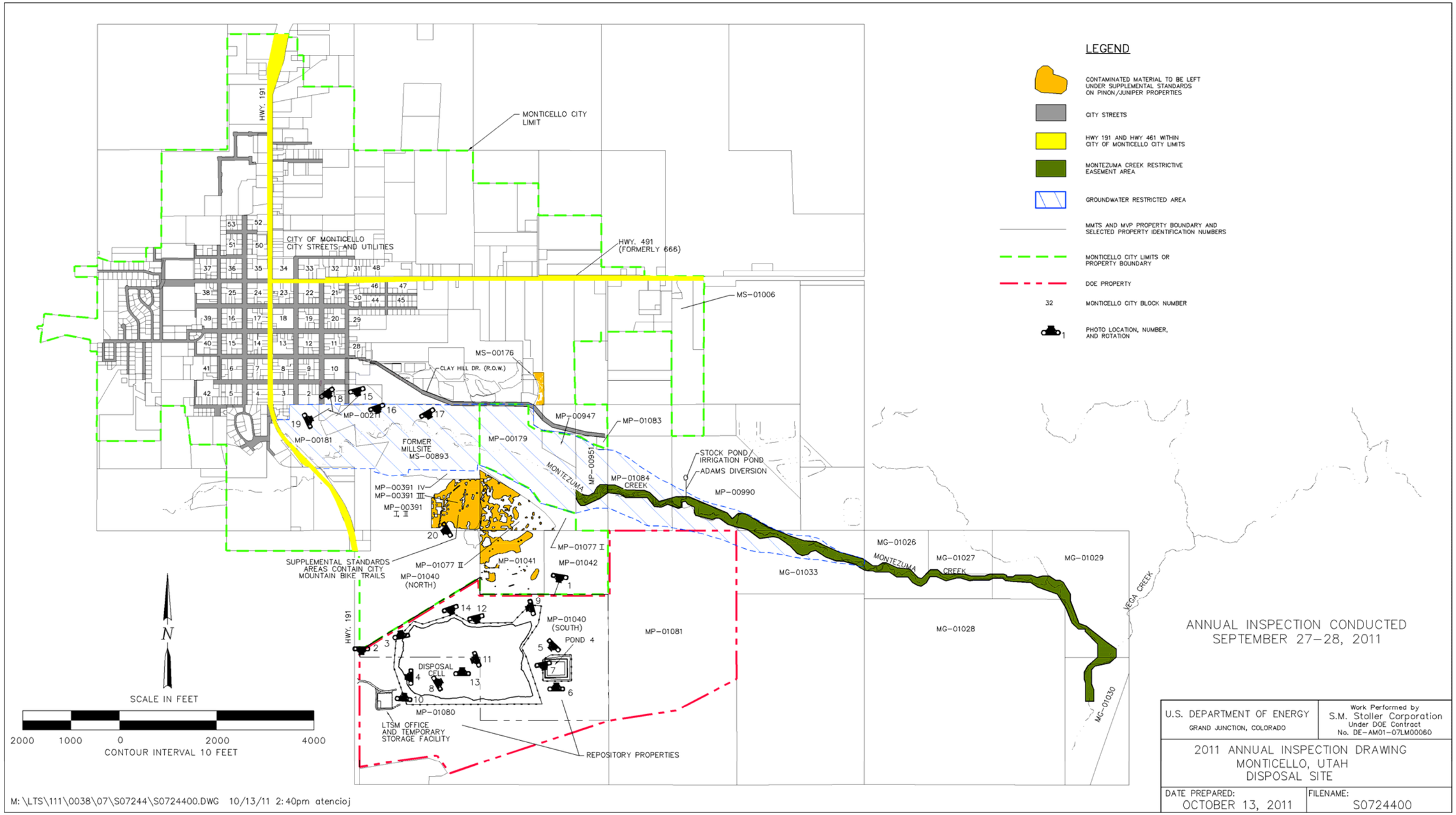

Figure 3. MMTS and MVP Supplemental Standards and Groundwater Restricted Areas

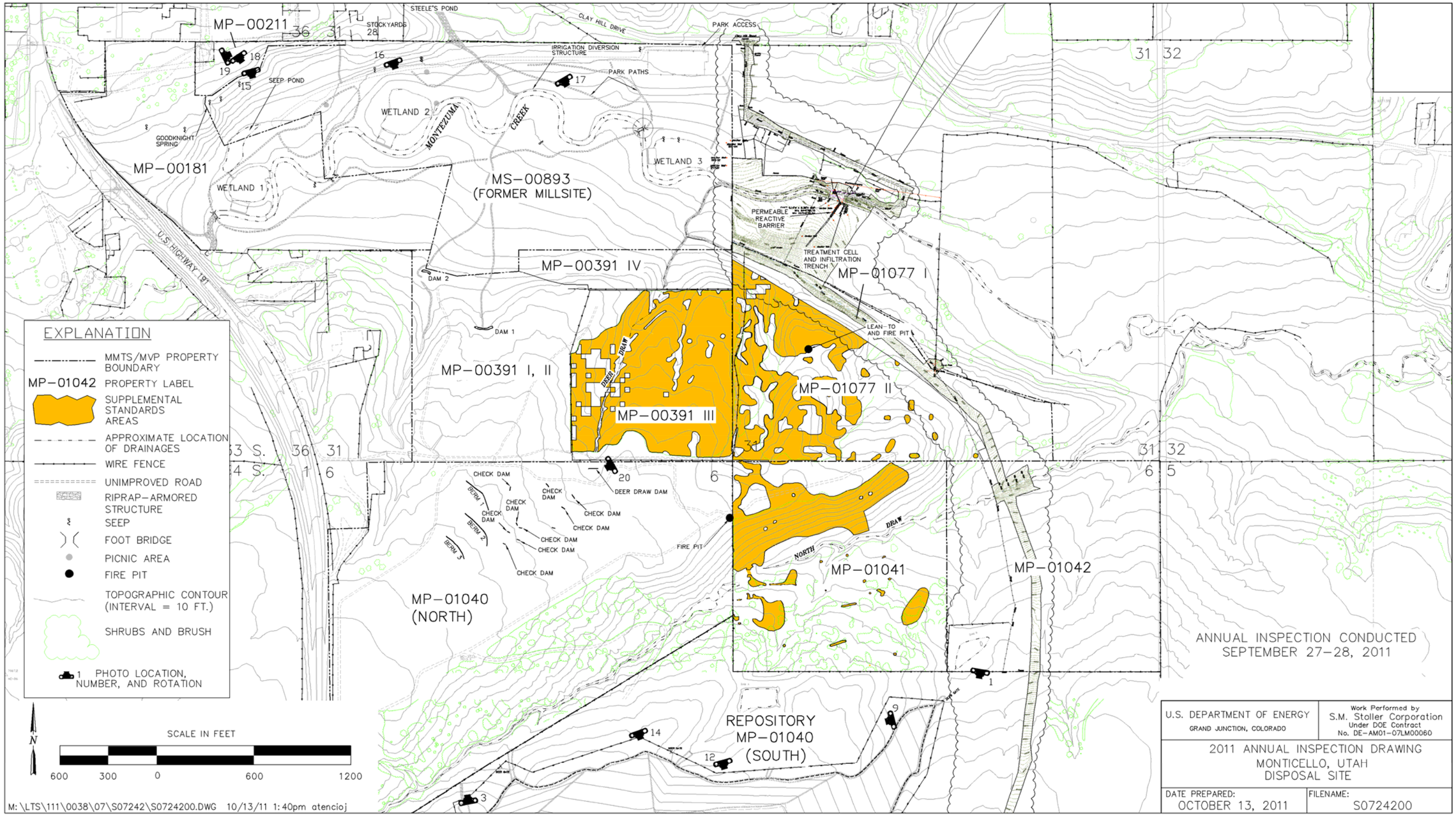

Figure 4. Monticello, Utah, Former Mill Site and Surrounding Area

Appendix A

MMTS & MVP Annual Inspection Checklist

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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	☒	☐
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: 9/27/11–9/28/11

Inspection Team Members

Name	Affiliation	Phone Number	E-mail
Linda Sheader	S.M. Stoller Corp. (Plant Ecologist and curator of Information Repository records and the OU III Administrative Record)	970-248-6711	Linda.Sheader@lm.doe.gov
Paul Wetherstein	S.M. Stoller Corp. (Environmental Compliance)	970-248-6645	Paul.Wetherstein@lm.doe.gov
Jalena Dayvault	U.S. Department of Energy (Site Manager)	970-248-6016	Jalena.Dayvault@lm.doe.gov
Jason Nguyen	U.S. Department of Energy	970-248-6707	Jason.Nguyen@lm.doe.gov

Note: attach additional sheets as needed for any of the following sections.

I. Interviews		
Name of Individual Interviewed	**Affiliation**	**Date Interviewed**
Todd Moon	On-Site LM Representative	September 28, 2011

Notes:
Property 1081 has transferred to a new owner; land use may change to hunting (guest ranch). A very small portion of the property may have groundwater restrictions in place. (Note: no deed restrictions were ever in place for 1081; verified by LS at county recorder's office).

Todd Moon and Montana Carr visited pinyon-juniper properties and inspected day camp area found last year. The lean-to has collapsed, and no new activity was evident.

The City has a grant to gravel the pathways at the former mill site; recently graded. (Note: City Streets and Utilities activities are recorded under Section VIII-A of the checklist.)

Name of Individual Interviewed	**Affiliation**	**Date Interviewed**
	City of Monticello	

Notes:
Individuals from the City of Monticello were not interviewed during the 2011 inspection.

Name of Individual Interviewed	**Affiliation**	**Date Interviewed**
Mark Stilson	State Engineer	October 6, 2011

Notes:
P. Wetherstein contacted M. Stilson by phone to verify that no well drilling permits were issued in restricted areas. No well drilling permits were requested or issued in restricted areas in 2011 for shallow or deep water wells.

Name of Individual Interviewed	**Affiliation**	**Date Interviewed**
Training Department (J. Blanck)	S.M. Stoller	e-mail 9/29/11

Notes:
Training confirmed that rad-related training requirements are up-to-date for T. Moon and M. Carr. No other unescorted personnel entered the TSF since the 2010 inspection.

II. Administrative and Records Inspection

	Readily Available		Current	
1. General LTS&M Documents	**Y**	**N**	**Y**	**N**
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.)*				
On-site employees			☒	☐
City workers *(unescorted workers must have current training)*			☒	☐
3. Public Records *(verify records are present and in order)*				
OU III Administrative Record	☒	☐	☒	☐
Information Repository (Monticello)	☒	☐	☐	☒
Information Repository (Grand Junction)	☒	☐	☐	☒
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:

Update for the Information Repository is overdue; scheduled for October. M. Carr current on Rad Worker II (6/29/11); T. Moon current on Rad Control Tech (7/1/11). Record book entries are not all recorded on as-built maps in some areas north and east of the city; these areas lie beyond the map boundary.

5. Radiological As-Built Drawings		
Drawing updated annually	☒ *satisfactory*	☐ *unsatisfactory*
Documentation/recordkeeping requirements met	☒ *satisfactory*	☐ *unsatisfactory*
Radiological scan information recorded	☒ *satisfactory*	☐ *unsatisfactory*

	Readily Available		Current	
6. Surveillance Checklists and Records				
(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:

TSF record book had complete logs, but some entries were not recorded in the entry log. This was corrected. Met data and some quarterly checklists filed out of order; this was also corrected.

7. Agreements *(Note: verify inclusion in Information Repository)*		
DOE/City Cooperative Agreement	☒	☐
DOE/UDOT Memorandum of Understanding	☒	☐
8. Zoning Restriction—Overlay Zone OL-1		
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 — **IC Annotations in Place**

DOE ID	Parcel	Document	Book	Page	Y	N
MP−00181−OT	A33230367201& 33S23E367204	E061691	B788	100−113	×	☐
	A34240063004		electronic record		×	☐
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	×	☐
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.

Montezuma Creek Soil and Sediment Properties

DOE ID	Parcel	Document	Book	Page		
MP−00990−CS	33S24E324800	E063343	B793	831−852	×	☐
	33S24E328400		B921	474-476	×	☐
	33S24E324802		electronic record		×	☐
MG−01033−VL	34S24E050000	E063343	B793	831−852	×	☐
MS−01026−VL	34S24E043000	E063343	B793	831−852	×	☐
MS−01027−VL	34S24E042400	E063343	B793	831−852	×	☐
MG−01030−VL	34S24E047200	E063255	B793	526−538	×	☐
MG−01029−VL	34S24E040000	E063219	B793	390−404	×	☐
	34S24E040001		electronic record		×	☐
MP−00951−VL	33S24E317200	E063926	B796	188−202	×	☐
	33S24E317204		electronic record		×	☐
MP−01084−VL	33S24E326000	E063926	B796	188−202	×	☐

Note: Correction to warranty deed for MP−01084−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	×	☐
MS−01020−OT	A33230369001	E068706	B814	537−538	×	☐

Notes for deed restriction inspection:

New records added to above table to reflect properties sold or divided. Oil and gas leases are in effect for Properties MP-00951-VL and MP-01084-VL.

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) 6			
	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:

Drums and secondary containment stored in shed; on-site personnel reported condition. Noxious weed, Russian knapweed, found along fence and in fenced lot; treatment planned in October 2011.

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: P12, P15 (scratched but legible)
Signs requiring replacement: none

3. South Boundary Markers ☒ All six markers located ☐ Marker(s) _____ not located

4. Erosion/Gullying ☒ Not evident ☐ Evident

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):
Minor repairs needed for outer fencing and gates, especially broken gate near P18. No new erosion. Noxious weeds found – spotted knapweed near entrance gate and between P24 and P25; field bindweed does not require control; will spray mullein near P30.

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

1. Settlement ☒ Not evident ☐ Evident

2. Material Degradation ☒ Not evident ☐ Evident

3. Erosion/gullies ☒ Not evident ☐ Evident

4. Siltation ☒ Not evident ☐ Evident

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)*:
No changes observed since 2010. Elm tree in West Drain Ditch not currently obstructing flow, but should probably be removed in future. Shrubs in ditches not obstructing flow.

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

3. Safety Equipment
Pond barrier rope intact ☒ Yes ☐ No
Personal floatation device 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 ☒ Intact ☐ Not intact

7. Siltation and Vegetation in Pond 4 ☐ Not evident ☒ Evident

8. Pond 4 Water Level Estimated water depth is < 1 ft.

9. Vandalism ☒ Not evident ☐ Evident

Notes for condition of Pond 4 features:

Security fence was damaged in many places by drifting and melting snow. Most broken areas repaired in spring 2011 by on-site personnel. Two additional holes have developed in the fence that could allow human or animal access and require repair. The pond liner is scheduled to be repaired. Animal burrows, chiefly from voles, occur on and below the pond berm on all sides. These burrows are shallow and do not threaten the integrity of the berm.

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.	**Rip-Rap 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:

Hole in northeast portion of wildlife fence requires repair; location noted on map. An increased number of animal burrows, mostly by voles, found on cover. Burrows along surface water exclosure for lysimeter may affect functioning of exclosure.

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:

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 5-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 on-site 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 < 1000 LCRS 2 < 1000 LDS 1 0
LDS 2 0 Pond 4 LCRS 1 0 Pond 4 LDS 1 0

Notes for cover penetrations inspection and operation of LCRS/LDS:
Information summarized from quarterly reports. No anomalies reported.

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):
Supplemental standards fence was cut in several places to access mountain bike trails. No significant new erosion or gullies observed in 2011. Construction continues on Properties MP–00211 and MP–00181, but no excavation is involved. City has graded paths and will probably gravel the surface. Supplemental standards areas were inspected by on-site personnel in early September 2011; no new disturbance was found.

B. City-Owned Property MP−00211

	Yes	No	N/A
Evidence of excavation or construction	☒	☐	
If yes, confirm the following with on-site 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:
Construction in filled areas only

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 these 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:

* *confirm with on-site 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, MG−00951, MG−01084, MG−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:

* *confirm with on-site 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):

Inactive wells were not inspected during annual inspection due to restricted land access. Inspected by well sampling crew in October 2011. No anomalies found.

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:

Structures not inspected during annual inspection due to land access. Structures maintained by Environmental Sciences personnel. No problems reported.

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 on-site LM representative	☒	☐
Radiological material is properly controlled and managed	☒	☐
The utility locator service is contacted regularly by the on-site LM representative	☒	☐

Notes for city streets and utilities inspection:

Gas lines south of Main Street finished; no new excavations are planned. In 2012, construction will begin north of Main Street. Street excavations related to a new Maverick gas station on Highway 491 are underway. Excavations related to upgrades at the Port-of-Entry on 491 east of city are also ongoing; no rad-contaminated soils returned to excavations. Excavations related to sewer line north of Monticello along 191 are ongoing. City is resurfacing streets, including milling, but activities do not penetrate to underlying soils. Excavations related to new Outdoor school at 4th and Main also ongoing. All construction areas are monitored.

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 on-site LM representative	☒	☐
Radiological material is properly controlled and managed	☒	☐
The local UDOT official is contacted periodically by the on-site LM representative	☒	☐

Notes for UDOT highways inspection:

See above.

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:

C. Property MS−00176 *(Note: observations and activities for MS−00176−VL are recorded by the on-site 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 on-site LM representative.

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

Notes for Property MS–00176 inspection:

IX. Photo Log *(attach additional pages as necessary)*		
Photo No.	**Feature Photographed**	**Description** (include photo location on map)
Note: numbers in parentheses indicate the photo number used in this report		
1	Pond 4	Entrance signs
2 (6)	Pond 4	Animal burrows on south berm and below
3	Pond 4	Close-up of animal burrow on southeast berm
4	Pond 4	Hole in east fence
5 (5)	Pond 4	Hole in north fence
6 (7)	Pond 4	Water, silt and vegetation (including *Tamarix*) in pond
7 (10)	Repository Cover	Monument at west access gate through wildlife fence
8	Repository Cover	Cell top from southwest corner, looking northeast
9 (8)	Repository Cover	Cell top from access road, south central portion
10 (13)	Repository Cover	Animal burrow on cover
11 (11)	Repository Cover	Cover vegetation, view west from monument
12	Repository Cover	Burrows on lysimeter surface runoff structure
13	Repository Cover	Drainage below East and North Toe Trenches
14 (9)	Repository Cover	Gap in wildlife fence at northeast area
15 (12)	Repository Cover	Cell side slope showing vegetation
16 (14)	Repository Cover	Cell north side slope
17	Repository Cover	West Drain Ditch, view north-northwest
18 (4)	Repository Cover	Former erosion area near West Drain Ditch
19	City-Owned Properties	Wetland 2
20 (16)	City-Owned Properties	Wetland 2 and hillside (south side of mill site)
21 (17)	City-Owned Properties	View toward Wetland 3 and south hillside
22	Repository Perimeter	Gully along west fence, filling in
23	Repository Perimeter	Gully with rock fill near P1
24 (2)	Repository Perimeter	Posts in gully, filling in over time
25	Repository Perimeter	Posts in gully
26	Repository Perimeter	Northwest site perimeter fence
27 (3)	Repository Perimeter	Drainage from West Drain Ditch offsite to North Draw
28	Repository Perimeter	Drainage near P7 showing no new erosion
29	Repository Perimeter	Sign P12, scratched but legible
30 (1)	Repository Perimeter	Sign P15, scratched but legible
31	Repository Perimeter	East perimeter fence, view to the north
32	Repository Perimeter	Draw near Sign P27 showing no new erosion
33	Repository Perimeter	Stable gully between P31 and P32
34 (20)	City-Owned Properties	Deer Draw Dam
35 (19)	City-Owned Properties	Stockpiled materials (MP–00211)
36	City-Owned Properties	Stockpiled materials
37	City-Owned Properties	Fill material
38 (18)	City-Owned Properties	Newly graded bike/walking path on former mill site
39 (15)	City-Owned Properties	Wetland 1

Repository Cover Vegetation Index
Monticello, Utah

Date inspected: __9/27/11___ Inspected by: __L. Sheader, J. Dayvault, J. Nguyen_____

Dominant species present on the repository cover at time of inspection (Note: dominant species make up an estimated 10% or more of the vegetative cover):

Species Name	Growth Form			Life Cycle		Vegetation Type		
	Shrub	Grass	Other	Annual	Perennial	Native	Weedy	Other
Artemisia tridentata	x				x	x		
Pascopyrum smithii		x			x	x		
Agropyron cristatum		x			x			x
Pseudoroegneria spicata		x			x	x		
Bromus inermis		x			x			x
Thinopyrum intermedium		x			x			x

Less common species present on repository cover: _*Medicago sativa*, *Helianthus annuus*, *Machaeranthera* sp., *Bromus tectorum*, *Tragopon dubius*, *Gutierrezia sarothrae*, *Elymus trachycaulus*, *Astragalus cicer*, *Salsola tragus*, *Viguiera multiflora*, *Sphaeralcea coccinea*, *Sphaeralcea parviflora*, *Sphaeralcea grossulariifolia*, *Sisymbrium altissimum*, *Lactuca serriola*, *Krascheninnikovia lanata*,

Noxious weed species present (record locations on map or GPS): _*Convolvulus arvensis* (scattered in small populations in places on cover; not spreading)

Additional notes: _

Vegetation Condition Score (see reverse): _3.67__

Notes:
(Has the composition of vegetation changed, including plant diversity? If so, how? Describe any evidence of vegetation disturbance or relevant climate factors. If the vegetation score is less than 3.0, provide explanation and/or recommendation(s).)

Many sagebrush seedlings observed; some fresh vole burrows; several old burrows from larger animals. Vegetative cover condition score has fluctuated slightly down from 2010 but remains high. Cover in very good condition.

Condition of Vegetative Cover (indicate number in each row that best represents current conditions):

Indicator	1	2	3	4	5
Composition of Plant Cover (estimated visually)	Annual weeds dominant; non-weedy perennial species <20% of total cover	Annual weeds abundant and expanding; non-weedy perennial species 20–40% of total cover	Annual weeds present and expanding; non-weedy perennial species 40–60% of total cover	Some weeds present; non-weedy perennial species 60–80% of total cover	No obvious weeds; non-weedy perennial species exceeding 80% of total cover
Total Plant Cover (visual estimate)	Canopy cover less than 30%	Canopy cover 30–50%	Canopy cover 50–70%	Canopy cover 70–90%	Canopy cover over 90%
Bare Soil	Mostly bare soil	Large areas of bare soil	Moderate areas of bare soil	Few areas of bare soil	No obvious areas of bare soil
Diversity of Dominant Species	One species dominant across site	2–3 species dominant across site, one or both of which are weedy; species occur in patches	2–3 species dominant across site, both of which are non-weedy; species evenly distributed with some monoculture patches	More than 3 species dominant across site, at least 2 of which are non-weedy perennials; few patches of monocultures	More than 4 non-weedy perennial species dominant across site; few to no patches of monocultures
Diversity of Trace Species	0–1 non-weedy trace species observed on cover	2 non-weedy trace species observed	3–4 non-weedy trace species observed	5–6 non-weedy trace species observed	7 or more non-weedy trace species observed
Plant Residue	No plant residue on soil surface	1–10% of soil surface covered with plant residue	10–20% of soil surface covered with plant residue	20–30% of soil surface covered with plant residue	30–70% plant residue on soil surface
Standing dead vegetation (visual estimate)	Standing dead >25%	Standing dead 15–25%	Standing dead 5–15%	Standing dead <5%	No obvious standing dead
Erosion	Sheet erosion visible; rills/gullies present OR blowouts or dunes forming	Sheet erosion visible; some small rills present OR soil swept from on site causing burial or abrasion of vegetation	Sheet erosion not obvious; no visible rills or rills stabilized OR soil swept from off site causing burial or abrasion	No obvious sheet erosion; rills not present or fully stabilized OR some soil deposition from off site without burial or abrasion	No visible signs of current or past sheet or wind erosion.
Disturbance	Evidence of mass disturbance to several species of vegetation (fire, animal damage, etc.)	Evidence of some disturbance to several species of vegetation OR major disturbance to one species	Evidence of minor disturbance to one or two species of vegetation; localized to individual patches	Evidence of minor damage to individual plants only; disturbance not sitewide	No evidence of disturbance to any plant species or individual plants
Total each column	0	1	1	5	2

Add up all columns for total condition score:

0 (Column 1) × 1 = 0
2 (Column 2) × 2 = 4
1 (Column 3) × 3 = 3
4 (Column 4) × 4 = 16
\+ 2 (Column 5) × 5 = 10
33 Total

Divide total by 9 to calculate vegetative cover condition score = 3.67

Attachment 2

2012 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 the fourth Five-Year Review of the remediation remedies for the Monticello Mill Tailings Site (MMTS) and the Monticello Vicinity Properties (MVP) in Monticello, Utah, being conducted under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The purpose of the review is to ensure the CERCLA remedies remain protective of human health and the environment.

The 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 ground water 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.

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 November 2011 and conclude in June 2012. 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 2007, are available at **www.lm.doe.gov/Monticello/5yr_mmts2007.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

2012 CERCLA Five-Year Review Interviews

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2012 Monticello Five-Year Review
Interviews for Five-Year CERCLA Review

As part of the five-year reviews for the MMTS and MVP, a public affairs specialist (Judy Miller) of the DOE LM contractor (S.M. Stoller Corporation [Stoller]) interviewed local property owners and stakeholders to gather information about the site's effect on the community. The interviews were conducted during January 2012 in Monticello and by telephone.

Interviewees and their relation to the sites are listed below.

Steve Young, Victims of Mill Tailings Exposure (VMTE)
Kedric Somerville, peripheral property owner
John and Charlotte Johnson, peripheral property owner
Jackie and Pete Steele and their daughter Stacey, peripheral property owner
Chet Johnson, Utah Department of Transportation, Monticello office
Barbara Pipkin, Victims of Mill Tailings Exposure
Doug Allen, Mayor of Monticello
Kelly Pehrson, Monticello City Manager

Results of the interviews are presented below as provided by the Stoller public affairs specialist.

Steve Young, Victims of Mill Tailings Exposure
Date of Interview: January 23, 2012
Location: Telephone

Question: 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)?

Response: I haven't really had any dealings with management of the site. I'm discouraged with what they're doing as far as following through on the concerns I have with the community. As far as the management, I haven't had any dealings with DOE. I don't think they care about the people of the community. I don't know who's overseeing it anymore.

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

Response: I don't have any property around the site.

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

Response: Yes. I'm definitely concerned about the past. I don't know what the safety level is now or not.

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

Response: There's concern in the community about if it was cleaned-up right and if it's safe now. I know when we did all the tree planting down there everyone's concern was that this is terrible soil; is it safe?

Question: 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?

Response: No.

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

Response: On the soil I would say so. I'm not sure on the groundwater, what's being done on it.

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

Response: There are probably concerns and I think it's mainly trust-level. I don't think they trust the DOE. I think that's just the history of DOE and Monticello. What they say and what they do is not the same.

Question: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (Todd Moon, Montana Carr) regarding site operations?

Response: I don't have any involvement.

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

Response: DOE should be more involved in making the area a park instead of just a covered wasteland. So people can go down there and enjoy the paths. DOE should have a part of that. The site should be developed more as a park.

Question: How do you keep informed about site activities?

Response: I usually ask the City or I hear things through word-of-mouth in the community. I also get the LM Program Update. That helps.

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

Response: My son, Reed Young. He has property near the site and he has concerns.

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

Response: Yes.

Question: Any other comments?

Response: My concerns are health issues and DOE walking away from them. It's their responsibility to help with health issues and find a solution. Because they're real.

Kedric Somerville, peripheral property owner
Date of Interview: January 25, 2012
Location: Monticello DOE Office

Question: 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)?

Response: I don't really have any objections to anything. It's being managed just fine. I think it's very good.

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

Response: No.

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

Response: No.

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

Response: I don't know of any. Sometimes information leaks out but I haven't heard anything negative.

Question: 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?

Response: No. Once in a while there's some activity with motorcycles and wheelers. There was a situation once when two City employees got out there and we reported it. That sort of thing comes along occasionally. I used to monitor that because at one time the City asked me to but I don't continue.

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

Response: Yes.

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

Response: I don't think so.

Question: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (Todd Moon, Montana Carr) regarding site operations?

Response: I don't think there have been any problems at all. They've been very good about informing me about site activities. Excellent.

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

Response: Hunting on the mill site has been a real sore issue but there's been a lot of progress made with the City finally taking some responsibility. They established a plan allowing archery on the mill site and no firearms, which was a good decision. I still don't think they have the mill

site properly signed. They have some small signs prohibiting ATV use and a little sign with icons so small that you can't see them. I've talked to the City and DOE about it. A sign that's big enough for people to read should be posted at both entrances to show people what they can and can't do on the mill site. Nobody knows what they can and can't do because it's not posted.

Question: How do you keep informed about site activities?

Response: If it involves me, they contact me by phone and let me know the day and time and if they want me to be available. I receive the LM Program Update. I read it to see if there's anything about the Monticello site.

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

Response: Tim Young. He bought the property from Rye and Diane Nielson.

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

Response: Yes.

Question: Any other comments?

Response: I have a question about reimbursement for electricity. I will ask DOE. I think everything's going really well.

John and Charlotte Johnson, peripheral property owner
Date of Interview: January 25, 2012
Location: Their home

Question: 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)?

Response: I don't think they've been doing a lot. No different than five years ago. I don't like how they sold parcel 1081.

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

Response: We're aware of the restrictions. We're restricted from building on the property next to the mill site. The restrictions are effective in meeting their intended objective.

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

Response: No.

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

Response: No.

Question: 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?

Response: No. Not so far.

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

Response: Yes.

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

Response: No. I think everyone's forgotten it's even there.

Question: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (Todd Moon, Montana Carr) regarding site operations?

Response: They're doing all right as far as I know.

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

Response: No. Seems to be going okay.

Question: How do you keep informed about site activities?

Response: They send us the LM Program Update. You can take us off that mailing list. They let us know what's going on at the Monticello office. If I want something I go up there and talk to them. I can't get anyone from Grand Junction to return my calls but we haven't called in a while. The onsite personnel do a good job.

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

Response: No.

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

Response: DOE – yes. UDEQ – no. EPA – no.

Question: Any other comments?

Response: No. They ought to allow grazing around the buffer zone.

Jackie and Pete Steele and their daughter Stacey, peripheral property owner
Date of Interview: January 25, 2012
Location: Monticello DOE Office

Question: 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)?

Response: I don't think it's changed too much over the years. We don't have a positive feeling about DOE. The DOE insisted on cleaning up their property. We didn't agree with their assessment of the property. The follow-up with supplemental standards has been lax. They only cleaned up certain hot areas. I don't think DOE was consistent on cleanup. I don't think they did a good job of cleaning up the town. For the current management, the supplemental standards property has been left alone and the property adjacent to the mill site has been left alone. As far as the mill site itself, I believe it was turned over to the City and so I doubt that the DOE has any management of it except I do believe the City was supposed to follow certain regulations on erosion and that is not being followed. DOE has double standards. We must adhere to DOE regulations but they don't adhere to their own.

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

Response: We are aware of it verbally but it may not be attached to the deed. The restrictions are not effective because we're not supposed to build in the bottom of the property and we know there are certain restrictions on that land. However, someone else grew alfalfa there.

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

Response: Yes. I don't think it was adequate. I think that everything on the bottom of that creek is still as hot as it was before. In all fairness, I need to tell you that I worked on the cleanup. I was on the assessment team and the verification team and I was working in the creek and when I was working down there that was the whole reason I quit. I tried to be a whistle blower and nothing came of it. There is still contamination down there. When they did the creek, they just took out the hottest of the hottest and the worst of the worst.

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

Response: No. Except there are concerns about the ongoing cleanup.

Question: 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?

Response: Yes. The alfalfa field down by the creek and they built a house down there. At the mill site, there's a lack of erosion control and vegetation and trees.

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

Response: No, because there's still contamination in and around Monticello. At the mill site there's maybe groundwater contamination.

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

Response: Yes. The City isn't doing erosion control. The City is not following supplemental standards.

Question: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (Todd Moon, Montana Carr) regarding site operations?

Response: We don't have any involvement.

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

Response: No.

Question: How do you keep informed about site activities?

Response: We live right next to the site. Newspaper.

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

Response: Doug and Colleen Eldridge and Clay Pehrson.

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

Response: Yes.

Question: Any other comments?

Response: No.

Chet Johnson, Utah Department of Transportation, Monticello office
Date of Interview: January 26, 2012
Location: UDOT Monticello Office

Question: 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)?

Response: I think it's good.

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

Response: No.

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

Response: No.

Question: 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?

Response: I have not.

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

Response: I do.

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

Response: I don't know of any.

Question: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (Todd Moon, Montana Carr) regarding site operations?

Response: There's plenty. They're good.

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

Response: Keep on the way things are. I think they're good.

Question: How do you keep informed about site activities?

Response: Personal contact with Todd and Montana.

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

Response: No.

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

Response: Yes.

Question: Any other comments?

Response: Working well down there. No issues that I've heard of.

Question: Are there specific problems in complying with the terms of the memorandum of understanding?

Response: No.

Question: Do you have any concerns regarding possible mill tailings contamination in UDOT rights-of-way on Highways 191 and 491?

Response: No concerns at all.

Barbara Pipkin, Victims of Mill Tailings Exposure
Date of Interview: January 26, 2012
Location: Her home

Question: 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)?

Response: They've seemed to do a good job post-cleanup. I'm disappointed that the DOE site manager didn't know much about the history of Monticello and the mission of VMTE. Two years ago VMTE planted the first trees down there and I was appalled at the condition of the soil that was used to cover the site. It was boulders and rocks. It wasn't topsoil. After we planted trees at the mill site, we lost two trees and the Rotary Club lost quite a few.

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

Response: No.

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

Response: I guess I am. People ask us all the time is it clean, is the community safe and we tell them it's probably safer than downtown Salt Lake City, but it's always a factor in the back of your mind. The thyroid issues in the community are rampant.

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

Response: I have had people call me. There's always concern in the community and we really try hard to stress that it's safe. I also got a call from a local realtor who said we, VMTE, are ruining her business by calling attention to issues created by the mill. Everything we do publicly, we say the mill site's safe. But still in the community's eyes, they're wondering. We put up a display in the Visitor's Center with instructions on how to get to the mill site, and it was taken down because people thought it was negative publicity.

Question: 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?

Response: Kids are climbing the hills with motorized vehicles.

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

Response: I can't comment on groundwater because I don't know how thorough that is. We understand that they're still monitoring the groundwater. The soil, yes, I'm sure that was put in a safe place and they've done all they can do to protect us from it.

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

Response: I don't think so.

Question: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (Todd Moon, Montana Carr) regarding site operations?

Response: I don't know. I've never spoken to them.

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

Response: Not that the DOE has anything to do with. We have good communication with the City and they're good at addressing our concerns.

Question: How do you keep informed about site activities?

Response: For anything that has to do with DOE, we get the LM Program Update newsletter. Other than that, it's a small town.

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

Response: Mike and Julie Bailey. They live right on the edge of the mill site.

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

Response: DOE - Yes. UDEQ - Yes. EPA – No, not since Paul left.

Question: Any other comments?

Response: I don't think so.

Doug Allen, Mayor of Monticello
Date of Interview: January 26, 2012
Location: His office

Question: 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)?

Response: I think they did a good job.

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

Response: I'm aware of them. There are certain things you can't build on the site. Meeting their objectives? I think so. I think there's still some confusion. At the Four Corners School, we found they were less restrictive than we thought.

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

Response: Not really. There's some in the community who still may have concerns. One of our council members has expressed concerns.

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

Response: Just slightly. I think there's still concern that they're still monitoring levels of contamination in the stream and the blackbird study. There is some real concern that it still could be hazardous. Not a great deal, though. Most people think that it's safe and cleaned up. There is some real concern amongst realtors. They'll tell you that when people find out that we had a Superfund site, some people don't want to move here. It does lose business. There's a riff in the community between people helping with the cancer studies and others. There's probably more controversy over that than anything. The VMTE feel it's been cleaned up and they're always touting that it's safe now.

Question: 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?

Response: No.

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

Response: Yes.

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

Response: No.

Question: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (Todd Moon, Montana Carr) regarding site operations?

Response: Yes. I think we have a relationship with them and the City group.

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

Response: No. I think we're doing fine as far as managing it. We're planting more trees in May. We planted 80 trees last year and hope to do almost that many this year.

Question: How do you keep informed about site activities?

Response: Mostly through City manager and the Public Works crew. I get the LM Program Update and occasionally look at it.

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

Response: Nate Langston, Public Works Supervisor.

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

Response: Yes.

Question: Any other comments?

Response: No.

Question: Does DOE maintain adequate communication and support in controlling residual radioactive contamination at utility excavations and other supplemental standards properties?

Response: I believe so. I think we work well and call before we dig.

Question: Are there any plans to change the recreational use of the former mill site?

Response: Not at this time.

Question: Have there been communications or activities (site visits, inspections, reporting activities, etc.) conducted by the City of Monticello regarding the mill site? If so, please give purpose and results.

Response: Tree planting and we redid the paths last year.

Question: Are there specific problems in complying with the terms of the cooperative agreement?

Response: Not that I'm aware of.

Question: Are there general or specific community concerns regarding the conduct of long-term surveillance and maintenance activities at the MVP supplemental standards properties? If so, please give details.

Response: The blackbird study. We brought that up to DOE saying that we should get the same amount of money for our cancer study.

Question: Have there been any complaints, violations, or other incidents related to the Monticello Mill Tailings Site requiring an official response from your office? If so, please give details of the events and results of the responses.

Response: There was correspondence about the irrigation pipeline that blew just above the site about three years ago.

Question: What documents/procedures do you rely on to implement your activities/responsibilities?

Response: Site plan.

Question: What additional assistance would be helpful?

Response: To direct Congress to fund our cancer study.

Kelly Pehrson, Monticello City Manager
Date of Interview: January 31, 2012
Location: Telephone

Question: 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)?

Response: Overall, really good. I've never had any issues. I don't remember a lot when they cleaned it up but since I've been in this position they've always been in contact with me and kept me up-to-date on everything. The local DOE people are helpful to us.

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

Response: No, I don't. We were looking to build a City shop down in that area and we were told we could not but I don't know the reasoning. I just know not much building can happen on that property. So, I do not know what the restrictions are on it.

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

Response: No. Not at all.

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

Response: No.

Question: 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?

Response: I know that we've had issues with people riding four-wheelers down on the site. We've put up signage but it's hard to keep four-wheelers out of there.

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

Response: Yes. Yes.

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

Response: Our concern is having the DOE help us on those who have cancer. We have a Victims of Mill Tailings Exposure committee who obtained grant money in the past for cancer screening for people who lived here when the mill site was here and that money will run out in September. Screening has helped find many cases of cancer and we have tried many options with DOE and legislators to help us find more funding.

Question: Is there adequate communication, response, involvement, and cooperation with DOE onsite personnel (Todd Moon, Montana Carr) regarding site operations?

Response: Yes. I think it's almost daily with our Public Works staff.

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

Response: No.

Question: How do you keep informed about site activities?

Response: I get a lot of mail and also from local staff.

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

Response: No.

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

Response: Yes.

Question: Any other comments?

Response: No.

Question: Does DOE maintain adequate communication and support in controlling residual radioactive contamination at utility excavations and other supplemental standards properties?

Response: Yes. With all the projects that I've done here since I've been here, they've always been onsite studying the soil as we bring it up.

Question: Are there any plans to change the recreational use of the former mill site?

Response: No. We've talked about ideas like Frisbee golf but we've never moved forward on that.

Question: Have there been communications or activities (site visits, inspections, reporting activities, etc.) conducted by the City of Monticello regarding the mill site? If so, please give purpose and results.

Response: No, not since I've been here. We had a big tree planting project that we did last year where the Rotary club and the VMTE got together. The planted about 100 to 150 trees last year and we put a water system down there. We plan to do that every year.

Question: Are there specific problems in complying with the terms of the cooperative agreement?

Response: No.

Question: Are there general or specific community concerns regarding the conduct of long-term surveillance and maintenance activities at the MVP supplemental standards properties? If so, please give details.

Response: No. I've never heard anything.

Question: Have there been any complaints, violations, or other incidents related to the Monticello Mill Tailings Site requiring an official response from your office? If so, please give details of the events and results of the responses.

Response: No.

Question: What documents/procedures do you rely on to implement your activities/responsibilities?

Response: I've never had to document anything. I've never had a problem to document.

Question: What additional assistance would be helpful?

Response: None.

Plate 1

Monticello Vicinity Properties Site Close Out Report

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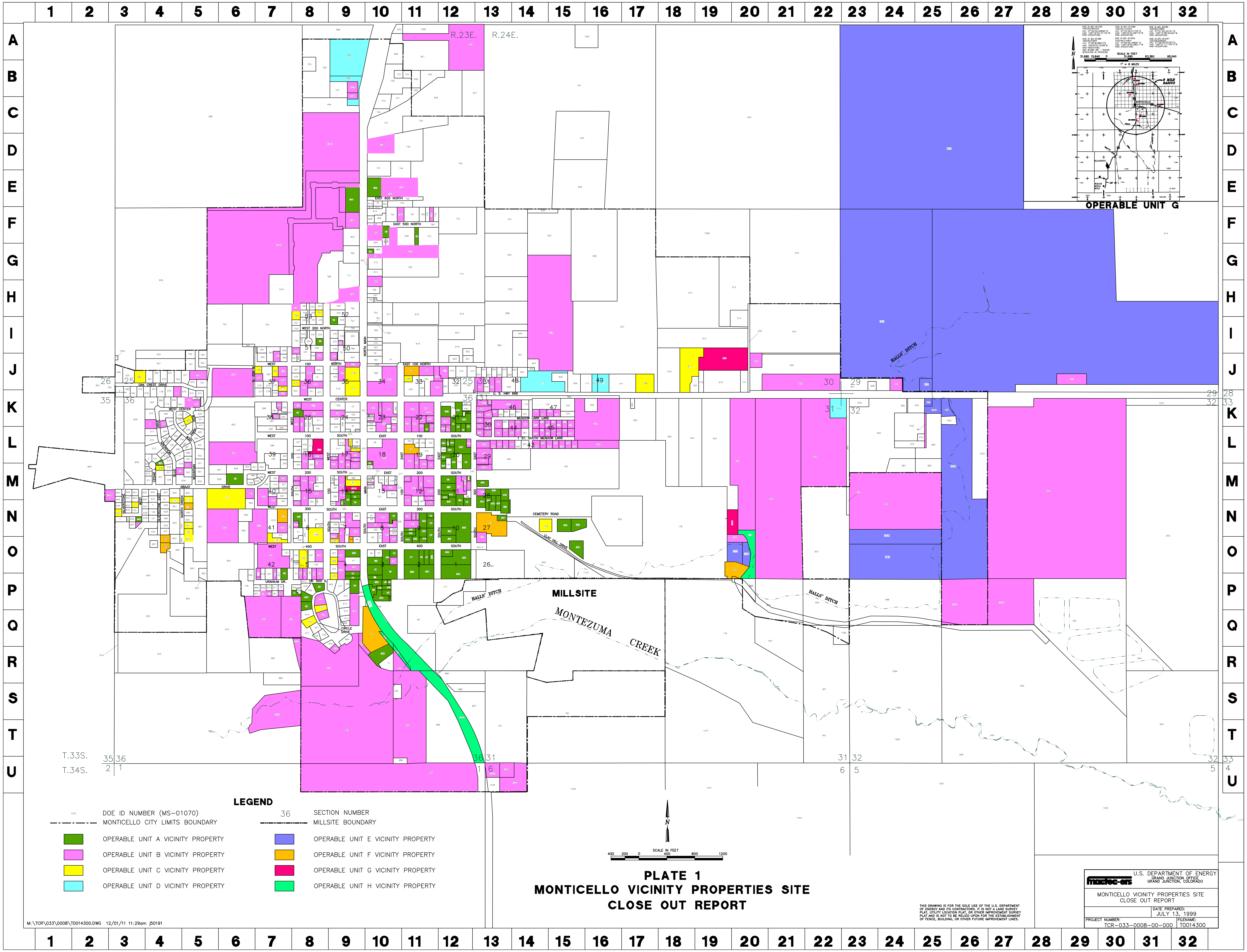

PLATE 1
MONTICELLO VICINITY PROPERTIES SITE
CLOSE OUT REPORT

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U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION OFFICE
GRAND JUNCTION, COLORADO

MONTICELLO VICINITY PROPERTIES SITE
CLOSE OUT REPORT

DATE PREPARED: JULY 13, 1999

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