

2015 Annual Inspection Report for the DOE Monticello, Utah, Mill Tailings Site and Monticello Vicinity Properties

December 2015



**U.S. DEPARTMENT OF
ENERGY**

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Appendix

Appendix A Annual Inspection Checklist

Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
GWRA	Groundwater Restricted Area
IC	institutional control
LCRS	Leachate Collection and Removal System
LDS	Leak Detection System
LM	Office of Legacy Management
LMS	Legacy Management Support
LTS&M	long-term surveillance and maintenance
LTS&M Plan	<i>Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites</i>
MMTS	Monticello Mill Tailings Site
MVP	Monticello Vicinity Properties
NPL	National Priorities List
OU	Operable Unit
PRB	permeable reactive barrier
TSF	Temporary Storage Facility
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation

Executive Summary

In accordance with the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (LTS&M Plan), the U.S. Department of Energy (DOE) conducted the required annual Monticello Mill Tailings Site (MMTS) and Monticello Vicinity Properties (MVP) inspection on September 21–23, 2015. These sites, which are part of the Monticello, Utah, Disposal and Processing Sites, are inspected by DOE annually to ensure that the selected remedies remain protective of human health and the environment. Under those remedies, uranium mill tailings–related contamination remains in place at some locations where use is restricted and exposure is limited. Annual inspections (1) verify that DOE LTS&M activities implemented throughout the year are effective and appropriate, (2) confirm that the institutional controls restricting land and groundwater use under the MMTS and MVP remedies remain effective, and (3) identify deficiencies and maintenance items and recommend corrective actions as needed. This report summarizes the results of the 2015 annual inspection.

Repository Findings

The repository site is well maintained and well managed. Most site features and support structures, including field office buildings, access roads, repository runoff/run-on controls, markers and monuments, cover penetrations, and the vegetated repository cover, were in good to excellent condition. Evidence of some movement of surface rock was observed on the repository side slopes. This was probably due to runoff from large thunderstorms and affected areas are not large enough to indicate slope failure or the movement of anything other than surface rock. These areas were photographed and will continue to be monitored. The repository perimeter fence and Pond 4 fence were intact and functional, with no evidence of vandalism. Additional fencing had been added onto the Pond 4 fence to deter animals from accessing the area. No area of the repository cover indicated settling, slumping, fracturing, seepage, ponding, or significant erosion. Site vegetation is healthy and composed primarily of desirable species. Repository cover vegetation is healthy and ecologically diverse, and no significant damage to the cover soils was apparent from recent heavy rainstorms or increases in vole populations. Prairie dogs, previously found on the repository cover, appear to have declined. Animal burrows will continue to be monitored.

City-Owned Property Findings

MMTS site-related drainage and runoff control structures on relevant City-owned properties were in good condition. Inspectors identified no remedy-related repair or maintenance items requiring action by the City of Monticello. Wetlands were ecologically healthy and apparently undisturbed by activities in 2015. No groundwater drilling applications were sought for the City-owned properties, and no drilling activities within the restricted area were noted or reported by onsite personnel. Fire pits and day camp sites discovered during previous annual inspections showed no evidence of additional use.

City Streets and Utility Corridor Findings

No unplanned or unmonitored excavations related to City streets and utility corridors were identified during the 2015 annual inspection. No new erosion of highway shoulders and along the Highway 191 embankment at Montezuma Creek was apparent. All planned excavations had been properly monitored by onsite personnel.

Private Property Findings

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

Records Findings

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

Conclusions and Recommendations

The 2015 annual inspection confirmed that DOE LTS&M activities implemented throughout the year remain effective and appropriate, and institutional controls restricting land and groundwater use as part of the MMTS and MVP remedies remain effective. No corrective actions or non-routine maintenance actions are necessary.

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 21, 22, and 23, 2015. These sites, which are part of the Monticello, Utah, Disposal and Processing Sites, are inspected by DOE annually to ensure that the selected remedies remain protective of human health and the environment. Under those remedies, uranium mill tailings–related contamination remains in place at some locations where use is restricted and exposure is limited. Annual inspections (1) verify that DOE long-term surveillance and maintenance (LTS&M) activities implemented throughout the year are effective and appropriate, (2) confirm that the institutional controls (ICs) restricting land and groundwater use under the MMTS and MVP remedies remain effective, and (3) identify deficiencies and maintenance items and recommend corrective actions as needed. This report summarizes the results of the 2015 annual inspection.

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 were used for construction in the City of Monticello. Drainage of liquids from the impounded tailings contaminated groundwater in the underlying shallow alluvial aquifer, which eventually discharges into Montezuma Creek.

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 the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as implemented through a Federal Facility 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 (which was completed in October 1999) and associated support facilities are known collectively as the repository site (Figure 2). The repository site includes the Temporary Storage Facility (TSF), where newly excavated or operations-generated radiologically contaminated materials are stored before eventual disposal offsite.

In some locations, radiologically contaminated material was left in place in compliance with supplemental standards, as codified at Title 40 *Code of Federal Regulations* 192.21. These locations, referred to as supplemental standards areas (Figures 3 and 4), occur on City-owned and private properties, beneath city streets, and in utility corridors. Land use restrictions are applied to these properties and to the former mill site, although the former mill site is not a supplemental standards area. 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. Land use restrictions and supplemental standards properties are described in more detail in Section 1.3.

Figure 3 identifies the locations of the Monticello properties affected by the remedial actions and subject to annual inspection, as referenced in the following sections of this report. In this report, many of the inspection items refer to a specific property identifier, such as MS-00893. These

identifiers were assigned during remedial actions for the purpose of tracking the scope and progress of remedial actions on individual land holdings.

1.2 Long-Term Surveillance and Maintenance

LTS&M activities, including the annual inspection and reporting, are conducted by onsite personnel (DOE contractor site operations manager and site representative) and offsite personnel (DOE and DOE contractor employees) in accordance with the procedures provided in the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (DOE–LM/1465–2007), also known as the LTS&M Plan.

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 operating and maintaining the disposal cell's leachate management system, inspecting the repository site and all properties affected by land and groundwater controls on a monthly or quarterly basis, and monitoring and managing radiologically contaminated soil encountered at City of Monticello and Utah Department of Transportation (UDOT) excavations in Monticello. Because the surface water and groundwater remedy is still being implemented, activities associated with Operable Unit (OU) III are not LTS&M activities. However, long-term procedures related to OU III are included in the LTS&M Plan, and several items are inspected annually (Section 2.7). OU III groundwater and surface water quality are monitored regularly; the progress of groundwater treatment and annual monitoring results are reported in annual groundwater reports. CERCLA Five-Year Reviews (begun in 1997) are also conducted to monitor and document the protectiveness of the MMTS and MVP remedies.

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-owned 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 2015 annual inspection. Revised in 2009, this checklist format was approved by EPA and UDEQ through Federal Facility Agreement meetings. The revised checklist supersedes Appendix K of the LTS&M Plan. Minor revisions to the checklist have been made as necessary.

Recordkeeping and Administrative Review

Recordkeeping by onsite personnel is reviewed to ensure proper documentation of day-to-day activities, and findings are recorded in Section II of the Annual Inspection Checklist. Onsite record books, surveillance checklists, and radiological as-built drawings are verified. Radiological as-built drawings, in addition to onsite record books, document the location and findings of radiological control measures provided by onsite personnel during municipal and State of Utah construction activities in Monticello.

The inspection confirms that deed annotations applicable to restricted properties remain accurately filed and accessible at the county courthouse, updated copies of relevant LTS&M

documents are available to the onsite personnel, and workers accessing the TSF are appropriately trained or escorted. The inspection also verifies that the Monticello copy of the Information Repository and OU III Administrative Record documents are complete and current. The MMTS and MVP Administrative Record documents were archived in accordance with CERCLA guidelines in 2008, and copies of these document collections housed in Grand Junction, Colorado, were decommissioned in 2012.

DOE Repository Site

The repository site is inspected for the integrity of constructed features and support facilities (e.g., signs, buildings, fences, and 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. The repository site inspection also includes evaluating the management and operation of the TSF and the disposal cell leachate management system, which consists of the repository Leachate Collection and Removal System (LCRS), the repository Leak Detection System (LDS), and Pond 4, an engineered pond for evaporation of disposal cell leachate. Pond 4 was constructed with its own LCRS and LDS, and it also collects and evaporates groundwater from the OU III groundwater remedy optimization system, which became operational in 2015.

City-Owned and Private Properties

City-owned and private properties related to MMTS and MVP are inspected annually to confirm that ICs, as described in the LTS&M Plan, remain effective and to document changes in 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 groundwater use restrictions apply to the following City-owned and private properties (Figure 3):

- City-owned properties transferred from DOE: MP-00181, MP-00391, MS-00893, MP-01040 (North Portion), MP-01041, MP-01042, and MP-01077. 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 from the property.
- Former mill site (a subset of the City-owned properties): MP-00181 and MS-00893. In addition to the restrictions cited above, damage to wetlands is prohibited in these areas.
- 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 where supplemental standards have been applied have restrictive easements to prohibit soil removal or the construction of habitable structures.
- 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-01033, and MP-01084. Drilling for and

appropriation of groundwater from the alluvial aquifer for domestic use is prohibited on these properties. This IC is administered by the Utah Division of Water Rights (Office of the State Engineer) through the well permitting and water right processes.

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

City Streets and Utility Corridors

Radiologically contaminated soil remains in some places beneath city streets and utility corridors in Monticello, in the Highway 191 embankment over Montezuma Creek, and in 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 onsite personnel monitor excavations in supplemental standards areas for radiologically contaminated material, and the City transports any such material to the TSF under direction of the onsite personnel. Onsite personnel also monitor excavations of Highways 191 and 491 within city limits. 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 onsite personnel, haul the material to the TSF. During the annual inspection, the supplemental standards areas 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.

1.4 2015 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 of the DOE Legacy Management Support (LMS) contractor conducted the physical site inspection on September 21, 22, and 23, 2015. J. Nguyen of DOE and F. Smith and D. Dille of LMS also participated in portions of the inspection. EPA and UDEQ representatives were unable to attend. M. Stilson, Regional Engineer with the Utah Division of Water Rights, was contacted in conjunction with the inspection.

Monday, September 21, 2015

Due to inclement weather predictions, the order of the annual inspection was modified in 2015. Inspection team members convened at the Monticello field office to review the inspection procedure, inspection checklist, and health and safety documents. Inspectors completed an inspection of City-owned supplemental standards areas (MP-01040, MP-01041, MP-01042, and MP-01077), the wildlife fence around the disposal cell, cover penetrations, runoff and run-on controls, and the route of the transmission pipeline for the groundwater remedy optimization project, which runs mainly along the historical haul route corridor.

Tuesday, September 22, 2015

Field inspection of the repository site, including the disposal cell features, disposal cell cover vegetation, site markers and monuments, boundary markers, the TSF, front gate, field office facilities, and the repository perimeter fence and signs occurred on September 22. The former millsite properties (portions of MP-00181, MP-00391, and MS-00893), private property MS-00176, and the Highway 191 embankment at Montezuma Creek were also inspected. Institutional controls at the Montezuma Creek Soil and Sediment Properties were verified with the onsite personnel. Inspectors also verified property deed restrictions at the San Juan County Recorder's Office.

Wednesday, September 23, 2015

On September 23, the team inspected Pond 4, city streets and utilities, construction areas of City-owned property MP-00181, and City-owned property MP-00211. The recordkeeping and administrative review also occurred, including a review of radiological as-built drawings, site records, record books, and surveillance checklists.

Additional Inspection-Related Activities

In 2015, areas associated with OU III were inspected in conjunction with maintenance and sampling activities at the OU III groundwater wells and surface water locations. Structures associated with the groundwater remedy optimization project were regularly inspected and maintained in conjunction with that project. Institutional controls in the Groundwater Management Area were verified by phone with M. Stilson of the Utah Division of Water Rights on September 18, 2015.

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, runoff/run-on controls, Pond 4, the repository cover, and cover penetrations (manholes, settlement monuments, and structures associated with the embedded lysimeter). Results of the 2015 repository site 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 and are well maintained (Photo 1). Site access signs displaying contact information were current and visible. The site's paved access road was in very good condition.

The TSF is a restricted-access, gravel-surfaced area enclosed by an 8-foot-high chain-link fence. It is inspected quarterly by site personnel, and inspection results are presented in quarterly reports to EPA and UDEQ. During the 2015 annual inspection, the TSF fence was appropriately posted with access control signs, and there was no evidence of vandalism or trespassing (Photo 2). Inspectors did not enter the TSF during the inspection, but onsite personnel reported less than 5 cubic yards of low-level radiologically contaminated materials within the bin. No materials were added to the bin during 2015, but some approximately 22 cubic yards of

materials, mostly empty sand bags and minor debris removed from Pond 4, had been transferred to super sacks. The area containing the super sacks was appropriately posted. The TSF yard was well maintained. The lay-down area for potential mixed waste was in good working order, but no mixed waste was stored in the TSF. Clamshell containers, used for materials with activity below release levels, were in good condition.

2.1.2 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 onsite personnel are not present.

Perimeter Fence

The perimeter fence was in good condition and was functionally intact. No evidence of vandalism or areas of excessive tumbleweed buildup was present.

Location-Reference Signs

Most perimeter signs were legible and in relatively good condition (Photo 3). Perimeter signs P5, P15, and P20 were damaged but legible and will continue to be monitored.

Boundary Markers

All six boundary markers were located during the inspection, and all markers were in good condition (Photo 4).

Erosion and Gullies

Most drainages around the site perimeter were well vegetated and were not significantly affected by recent heavy rainstorms (Photo 5). Erosion controls and revegetated areas related to the groundwater remedy optimization project were generally in very good condition, and no areas of major erosion were noted. The deep gully on the west edge of the disposal site north of the entrance gate (between perimeter signs E and P2) continued to fill in with sediment in most places (Photo 6). The gully still does not threaten the integrity of site features and will continue to be monitored.

Perimeter Vegetation

Vegetation between the perimeter fence and the wildlife fence (inner fence) was healthy and composed primarily of desirable species. Several small populations of noxious weeds were treated with herbicide on September 28, 2015. As in 2013, prairie dog activity, which disturbed vegetation along the site perimeter, was observed in the eastern portion of the site, but recent declines in the populations of prairie dogs onsite have been observed.

2.1.3 Repository Runoff/Run-On 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 occur within the ditches and trenches, particularly in the North and East Toe Trenches. Movement of materials into the trenches is the result of expected, natural processes.

South Drain Ditch and West Drain Ditch

The South Drain Ditch and West Drain Ditch were in very good condition with no evidence of new erosion (Photo 7 and Photo 8). Shrubs observed in portions of the ditches do not block potential flow. Burrows from small rodents occurred in places along the margin of the South Drain Ditch but do not threaten its integrity.

East Toe Trench and North Toe Trench

The East Toe Trench and North Toe Trench were in good condition. Erosion or bypass of these trenches was not evident. Soils and vegetation in the trenches are not expected to impede flows. Beginning in 2013, inspectors observed increased siltation and small amounts of surface riprap that had moved from the repository side slope into both trenches due to heavy rainfall events. Additional material movement was observed in 2015, but does not impair the functioning of the trenches (Photo 9 and Photo 10). To ensure that any material movement does not threaten the integrity of the disposal cell, monitoring of the toe trenches will continue.

2.1.4 Pond 4

Pond 4 is a lined, solar-evaporation pond that collects disposal cell leachate, effluent from the OU III groundwater remedy optimization system, and a small amount of precipitation. An 8-foot-high security fence surrounds Pond 4, and a rope barrier surrounds the restricted area of the pond within the security fence. Locked gates are present at the northeast and southwest corners of the fence, and a locked vehicle access gate is in the west fence. Water rescue equipment is available in cabinets and on hooks located around the pond. The Pond 4 area is also inspected monthly by site personnel; the results of these inspections are presented in quarterly reports to EPA and UDEQ.

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 and gates: “Danger Do Not Enter,” “Controlled Area, Enter at Designated Access Only,” “Contaminated Water, Do Not Discharge,” and “No Trespassing.” On the vehicle access gate there is also a sign posted with contact information. There was no evidence of vandalism or trespass, and all gates were found to be locked at the time of the inspection. Additional fencing was installed in 2015 to reduce access by small animals (Photo 11).

Pond Perimeter and Berm

The pond’s rope barrier was intact and in good condition. Animal burrows made by voles and other small rodents were visible on and below the pond’s berm on all sides (Photo 12). No large burrows that might threaten the berm’s integrity were found. Animal burrows will continue to be monitored. Vegetation on the slopes of the berm was well established.

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, and personal flotation devices) were easily accessible, and onsite personnel reported them to be in good condition. Rings have been installed on hooks around the pond, and all were present. After the annual inspection, a rescue/work skiff was procured for the site.

Pond 4 LCRS/LDS Control Cabinet

The weatherproof LCRS/LDS control cabinet was in good condition, with no evidence of insect or rodent damage. Operation of the Pond 4 LCRS and LDS is described in Section 2.1.6, “Cover Penetrations.”

Liner and Pond Interior

No visible evidence of holes or other damage to the pond liner was observed. Approximately 5 feet of water was in the pond at the time of the inspection (Photo 13), due in large part to operating the groundwater remedy optimization project.

2.1.5 Repository Cover

The repository cover inspection includes the disposal cell cover and other features (except for drainage features) within the inner wildlife fence, including roads, riprap slopes, and site monuments. (Drainage features are described in Section 2.1.3, “Repository Runoff/Run-On Controls.”) The wildlife fence is a 6-foot-high wire-mesh fence that contains a vehicle access gate on the west end, a vehicle access gate on the east end, and five narrow gate apertures that allow wildlife to pass through. The repository is also inspected monthly by site personnel; the results of these inspections are presented in quarterly reports to EPA and UDEQ.

Roads, Wildlife Fence, Site Monuments, and Raptor Perches

The gravel road surrounding the disposal cell and the road to Pond 4 were in excellent condition. The wildlife fence and gate apertures were functional and showed no evidence of vandalism. Damaged sections of the wildlife fence were apparent, but the fence remains functional, and repairs are not required. All gates in the wildlife fence were open. Both site monuments—one at the west access gate inside the wildlife fence and one at the apex of the disposal cell (Photo 14)—were present and intact. Six raptor perches, installed near the disposal cell cover in 2007, were also in good condition, although a supporting beam on one perch is detached.

Vegetation

Desirable plants remained well established on the cover, and no significant barren or eroded areas were identified. No damage to vegetation or soils from large, recent rainstorms was apparent, and no species of phreatophyte shrubs were growing on the cover. As in recent years, there were a large number of healthy, desirable sagebrush (*Artemisia tridentata*) seedlings. Small quantities of field bindweed, a List C noxious species, were growing on the cover, but control is unnecessary.

The Repository Cover Vegetation Index, developed in 2009 for use during annual inspections (pages A-12 and A-13 in Appendix A), indicated that the cover vegetation remains healthy. The vegetation condition score, used to detect trends in the health of the vegetation community, was 3.9 in 2015, similar to the score in 2014. Dominant species identified on the cover in 2015 included sagebrush, western wheatgrass (*Pascopyrum smithii*), crested wheatgrass (*Agropyron cristatum*), and intermediate wheatgrass (*Thinopyrum intermedium*). Two of these species are native, and none are weedy.

Vegetation on the repository’s soil-covered side slopes, rock slopes, and outlying areas, similar in composition to that on the repository cover, was also healthy.

Burrowing Animals

Evidence of small burrowing animals has been observed on the repository cover for years. Raptors and other predators have kept these populations at low to moderate levels since a vole outbreak occurred in 2006. In 2013, prairie dog burrows were found on the repository cover for the first time. The burrows appeared to be abandoned in 2015 although vole burrows appeared to be more numerous. Because the repository cover was engineered to withstand prairie dog and small rodent activity, populations are not a concern, but burrows will continue to be monitored. Inspectors and onsite personnel will look for evidence of gray-colored soils being cast to the surface, as this would indicate excavation into the biointrusion layer. No such soils have been observed on the surface to date.

Stability

No area of the cover indicated settling, slumping, fracturing, seepage, ponding, or significant erosion. Some evidence of rock movement on the north disposal cell side slope was observed for the first time in 2015. Three observances were noted: (1) rock has moved, causing horizontal features on one portion of the side slope (Photo 15); (2) rock has moved downward and built up above the North Toe Trench in places (Photo 16); and (3) a channel-shaped feature has developed on the side slope (Photo 17). The location of these features is indicated by the respective photo locations on Figure 2. The movement of rock was probably due to runoff from large thunderstorms and affected areas are not large enough to indicate slope failure or the movement of anything other than surface rock. The side slopes will continue to be monitored, and affected areas will be compared to photographs taken annually.

The steep, rock-lined slopes showed no evidence of rock degradation, settling, or slumping. As reported in Section 2.1.3, a small amount of soils continued to move into the East and North Toe Trenches. Soils were placed upslope on the surface over rock rip-rap, and movement of these soils into the trenches is not a significant concern.

2.1.6 Cover Penetrations

Cover penetrations include five manholes (Manholes 1 and 3 enclose equipment for the repository LCRS and LDS), 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 (Figure 2).

Manholes and Video Ports

The manholes are restricted areas and were not entered during the annual inspection, but the interiors were observed without entering them and were in good condition (Photo 18). All five manhole covers were secure and operable. Manhole 4 will continue to be monitored, as soils have eroded on its uphill side, and rocks have been displaced to the top of the structure. Appropriate safety warnings and entry procedures were posted on all of the manholes, 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 were locked and secure.

Settlement Plates

Nine settlement plates, 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

(Photo 19). Elevation surveys are performed on the settlement plates every 5 years in preparation for CERCLA Five-Year Reviews. Data from the most recent elevation surveys in 2011 indicated no evidence of settlement.

Embedded Lysimeter

External features of the embedded lysimeter were inspected. Along cover penetrations, no seepage was evident. 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, which relays data to the LM SOARS (System Operation and Analysis at Remote Sites) system for data management and evaluation. Onsite personnel routinely monitor infrastructure and leachate production in accordance with specifications in the LTS&M Plan. Interviews with onsite operations personnel indicate that the repository and Pond 4 LCRS and LDS monitoring and pumping systems are functioning as intended. Leachate production rates are presented in quarterly reports to EPA and UDEQ.

2.2 City-Owned Properties

City-owned properties MP-00181, MP-00391, MS-00893, MP-01040 (North Portion), 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 the “City-Owned and Private Properties” subsection in Section 1.3. Construction of the groundwater remedy optimization project has affected several of the City-owned properties. Property MP-00211 (Photo 20) was always City-owned and is subject only to zoning restrictions on excavation and construction.

Results of the 2015 annual inspection of City-owned properties 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 (between 2000 and 2007, they were City-owned but outside city limits). Hunting with firearms is not allowed within city limits, but bow hunting on the City-owned properties was authorized in 2009. Walking and mountain bike trails are used throughout the properties.

Overnight camping is not allowed on these properties. One area on Property MP-01077 previously determined to be a day camp is routinely monitored by onsite personnel, and no evidence of recent use was observed. A fire pit previously identified on MP-01040 (North Portion) was no longer apparent and will no longer be monitored. A fire pit discovered in 2012 on MP-01041 showed no evidence of additional use (Photo 21).

Construction of Habitable Structures

Construction of habitable structures is prohibited on these properties. No evidence of any such construction was observed during the 2015 inspection.

Supplemental Standards Areas on Piñon/Juniper Properties

No evidence of new soil removal was noted on any of the Piñon/Juniper properties supplemental standards areas. The supplemental standards areas are physically delineated by four-strand wire fences. The City of Monticello breached sections of these fences to accommodate mountain bike trails, and other sections of the fence have degenerated due to age. The bike trails and areas of eroded soils are routinely scanned after heavy storms (as defined in the LTS&M Plan). Radiation levels have not been above background. Survey records are available at the Monticello field office.

Soil Movement, Drainage, and Runoff Controls

All riprap-armored structures, dams, check dams, berms, and runoff control drainages (Figure 4) were intact and functional. Photo 22 shows a section of the City's mountain bike trails, and Photo 23 shows a portion of the access road near Deer Draw Dam. Both photographs illustrate the well-vegetated and intact soils that characterize the City-owned properties.

Wetlands

Wetlands on the former mill site (Photo 24, Photo 25, and Photo 26) were constructed according to EPA-specific criteria, and these wetlands are protected by cooperative agreement. Under this agreement, the City of Monticello 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. Three constructed marsh wetlands (Wetlands 1–3, Figure 4) on the City-owned properties were ecologically healthy, and no evidence of damage by human activity or natural causes was apparent.

Groundwater Use

No evidence of water-well drilling on City-owned properties with groundwater restrictions was observed during routine inspections or during the 2015 annual inspection. No applications to appropriate water or to drill were filed with the Utah Division of Water Rights for these areas (Section 2.6), and no drilling activities within the restricted area were noted or reported by onsite personnel.

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

Section VIII of Appendix A presents results of the 2015 annual inspection of UDOT rights-of-way and city streets and utility corridors. No unmonitored or unplanned excavations were identified. Onsite personnel were aware of all planned excavations, and excavations were monitored in accordance with the LTS&M Plan. Photo 27 shows an area of work in city streets with deeper excavations, and Photo 28 shows the Highway 191 embankment at Montezuma Creek in 2015.

2.4 Private Property MS-00176-VL

A city of Monticello zoning ordinance requires that a special building permit, based on radiological scanning results, be obtained before a habitable structure is constructed on this property. During the 2015 annual inspection, there was no evidence of erosion, soil removal, or construction of habitable structures (Appendix A, Section VIII-C). Storm water runoff has deposited sediment from this property along the road (Photo 29), and this sediment was scanned by onsite personnel. The sediment did not scan above background.

2.5 Properties in the Montezuma Creek Restrictive Easement Area

Properties in the Montezuma Creek Restrictive Easement Area were inspected on a regular basis by onsite personnel, and no evidence of significant erosion or soil removal from the restricted areas of these properties was noted (Appendix A, Section V).

In 2006, a new residence was constructed on Property MP-00990 outside the supplemental standards area. A portion of Property MP-00990 is also cultivated in the easement area in compliance with the land use restriction. No land use changes were noted in 2015.

2.6 Groundwater Restricted Area

On September 18, 2015, M. Stilson of the Utah Division of Water Rights confirmed that there were no applications to appropriate water from the shallow alluvial aquifer in the GWRA. There were also no applications or approvals to drill into or through the shallow alluvial aquifer (Appendix A, Section VI). Onsite personnel also verified during routine surveillance that no wells were drilled in the alluvial aquifer for domestic use within the GWRA.

2.7 Operable Unit III

Groundwater Remedy Optimization System

In 2014, facilities related to the groundwater remedy optimization system were installed on privately owned Property MP-00179, city-owned Properties MP-01077 and MP-01041, and the DOE-owned disposal site. Facilities include extraction wells, monitoring wells, utility vaults, a groundwater transfer building, and a water transmission pipeline. Areas disturbed by the project were successfully revegetated in 2015 (Photo 30). The facilities are regularly inspected and maintained by onsite personnel.

Permeable Reactive Barrier (PRB) and Ex Situ Treatment System

A groundwater treatment system comprising the PRB and ex situ treatment cells is on Property MP-00179. With the operation of the groundwater remedy optimization system, the treatment cells have been deactivated. The aboveground infrastructure associated with the ex situ system remains intact. The PRB is a subsurface installation that cannot be inspected visually.

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 2015. At the time of the 2015 annual inspection, no maintenance needs were identified.

2.8 Administrative and Records Inspection

The following documents and records, recorded by the onsite personnel, were inspected for completeness and accuracy of information (Appendix A, Section II):

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

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

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

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

- LTS&M Plan (including site-specific emergency response information), the *Safety and Health 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 onsite personnel and unescorted employees from the City of Monticello accessing the TSF).

No major deficiencies were noted in the above administrative categories. LTS&M documents were available electronically from the field office. 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 Information Repository (updated in April 2014) and Operable Unit III Administrative Record (updated in October 2012) were present and in good condition. The Grand Junction copies of the records collections were decommissioned in 2012. The site record books were correct and complete with only minor errors. Corrections began during the 2015 annual inspection.

3.0 Conclusions and Recommendations

The 2015 annual inspection confirmed that DOE LTS&M activities implemented throughout the year remain effective and appropriate, and ICs restricting land and groundwater use as part of the MMTS and MVP remedies remain effective. No corrective actions or non-routine maintenance actions are necessary.

4.0 Photographs

Photographs were taken to document findings of the 2015 annual inspection. The location and orientation of the photographs included below are identified in Figure 2, Figure 3, and Figure 4. A Field Photograph Log associated with all photographs taken during the annual inspection is included as Appendix A, Section IX.



Photo 1. Field Office Facility and Parking Lot



Photo 2. Gate, Postings, and Equipment in TSF



Photo 3. Perimeter Sign P1



Photo 4. Boundary Marker S-3



Photo 5. Erosion Rill Above Perimeter Sign P6; No Significant New Erosion



Photo 6. Erosion Rill Near Perimeter Sign P1



Photo 7. South Drain Ditch



Photo 8. West Drain Ditch



Photo 9. East Toe Trench Showing Vegetation and Material Movement



Photo 10. North Toe Trench Showing Vegetation and Material Movement



Photo 11. Pond 4 Fence Showing New Fencing Added in 2015



Photo 12. Pond 4 Berm Showing Animal Burrows



Photo 13. Pond 4



Photo 14. Site Monument 2



Photo 15. Horizontal Line Features in Side Slope of Repository



Photo 16. Rock Accumulation Above the North Toe Trench



Photo 17. Channel-Shaped Area on Side Slope of Repository



Photo 18. Manhole 1 Showing Interior Equipment



Photo 19. Interior Structures Within Settlement Plate I



Photo 20. No Activity on Property MP-00211



Photo 21. Campsite in Supplemental Standards Area on City-Owned Property MP-01041, No Signs of Recent Use



Photo 22. Mountain Bike Trail on City-Owned Property MP-01077



Photo 23. Deer Draw Dam Area on City-Owned Property MP-01040



Photo 24. Wetland 1 at the Former Millsite



Photo 25. Wetland 2 at the Former Millsite



Photo 26. Wetland 3 at the Former Millsite



Photo 27. City Streets and Utilities Area of Deeper Excavation



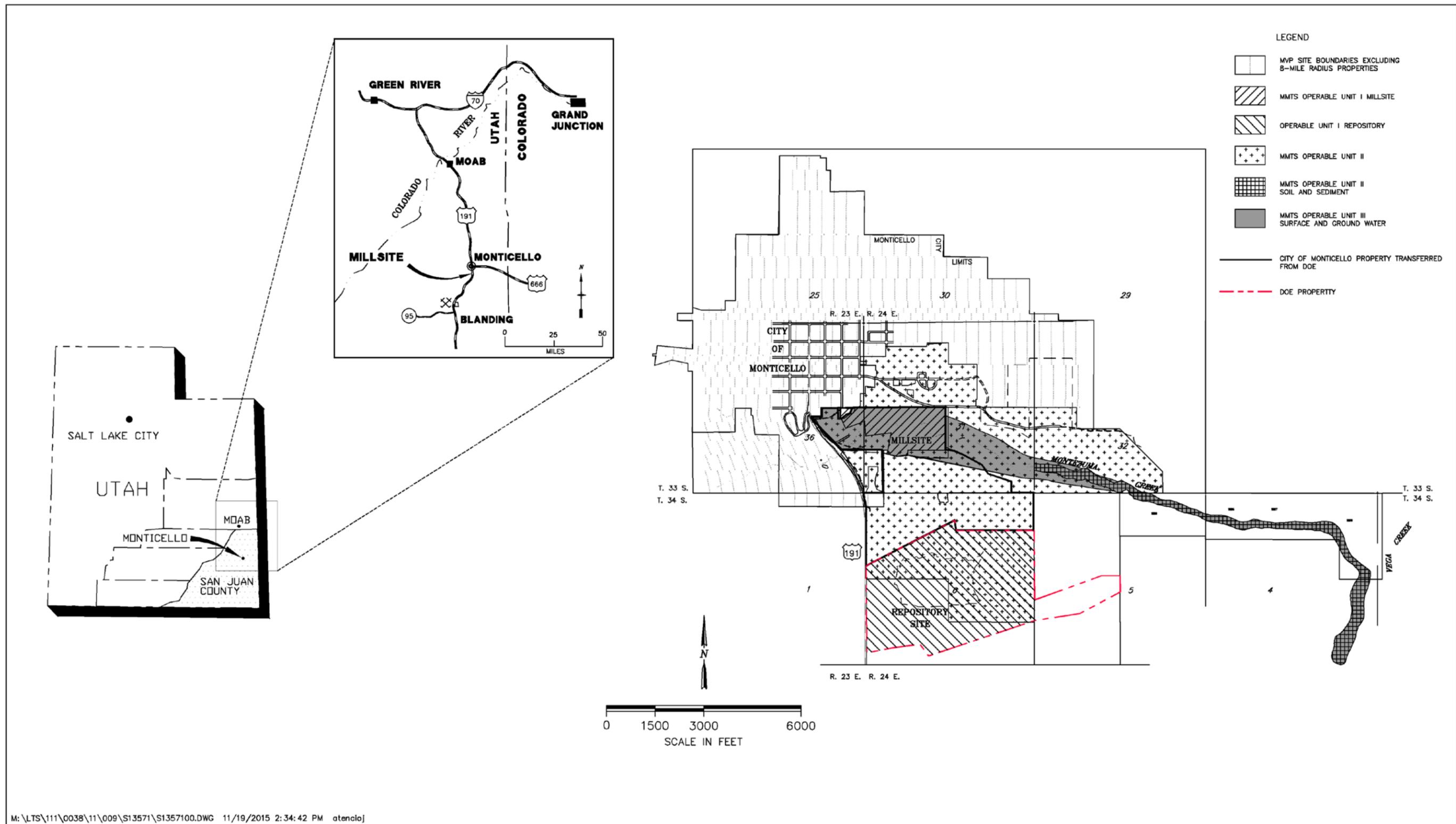
Photo 28. Highway 191 Embankment Showing No New Erosion



Photo 29. Private Property MS-00176; Drainage Ditch Scanned After Major Runoff Events



Photo 30. View of the OU III Water Transmission Pipeline Access Road



M:\LTS\111\0038\11\009\S13571\S1357100.DWG 11/19/2015 2:34:42 PM atencloj

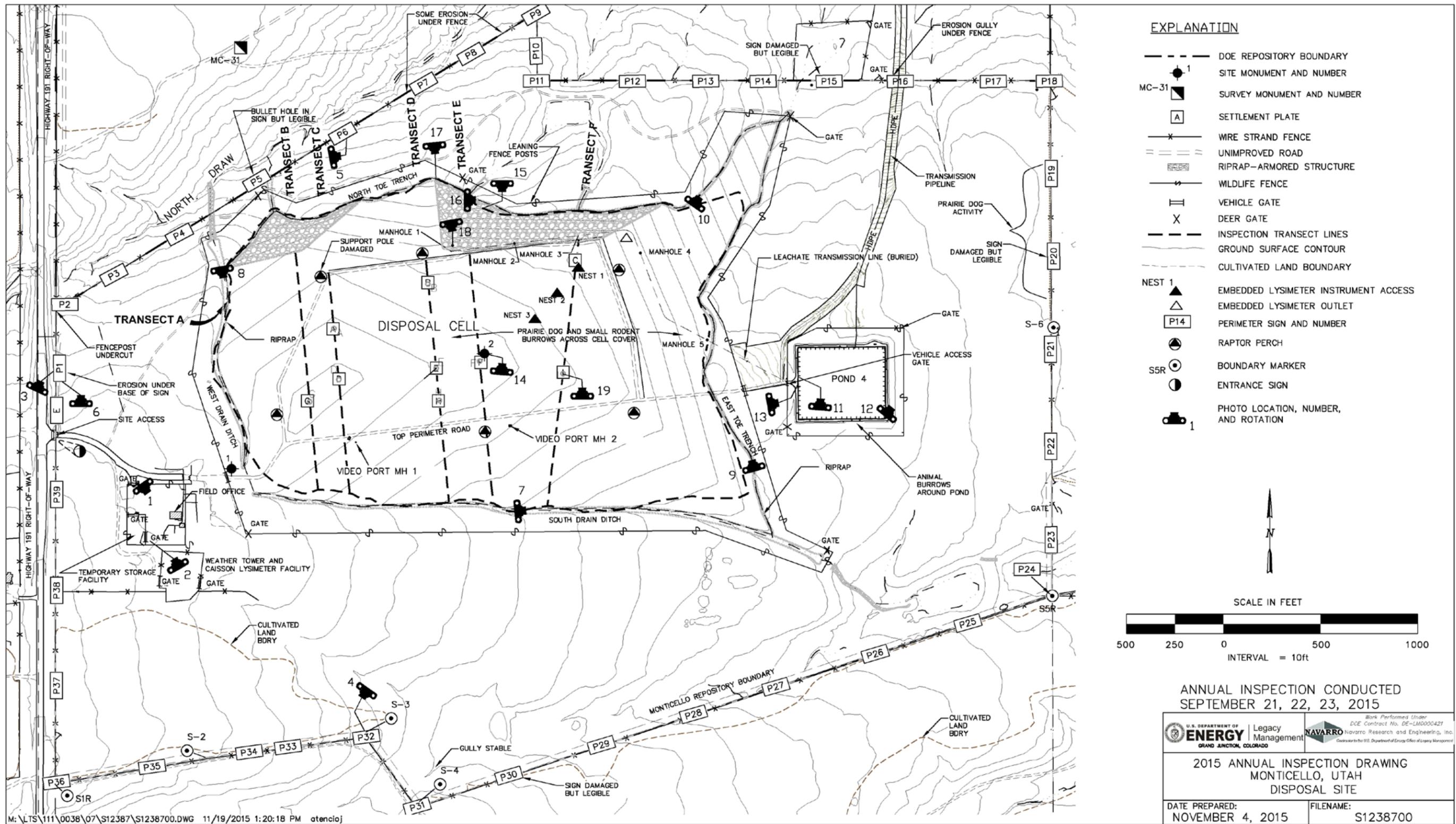


Figure 2. Monticello, Utah, Repository Site

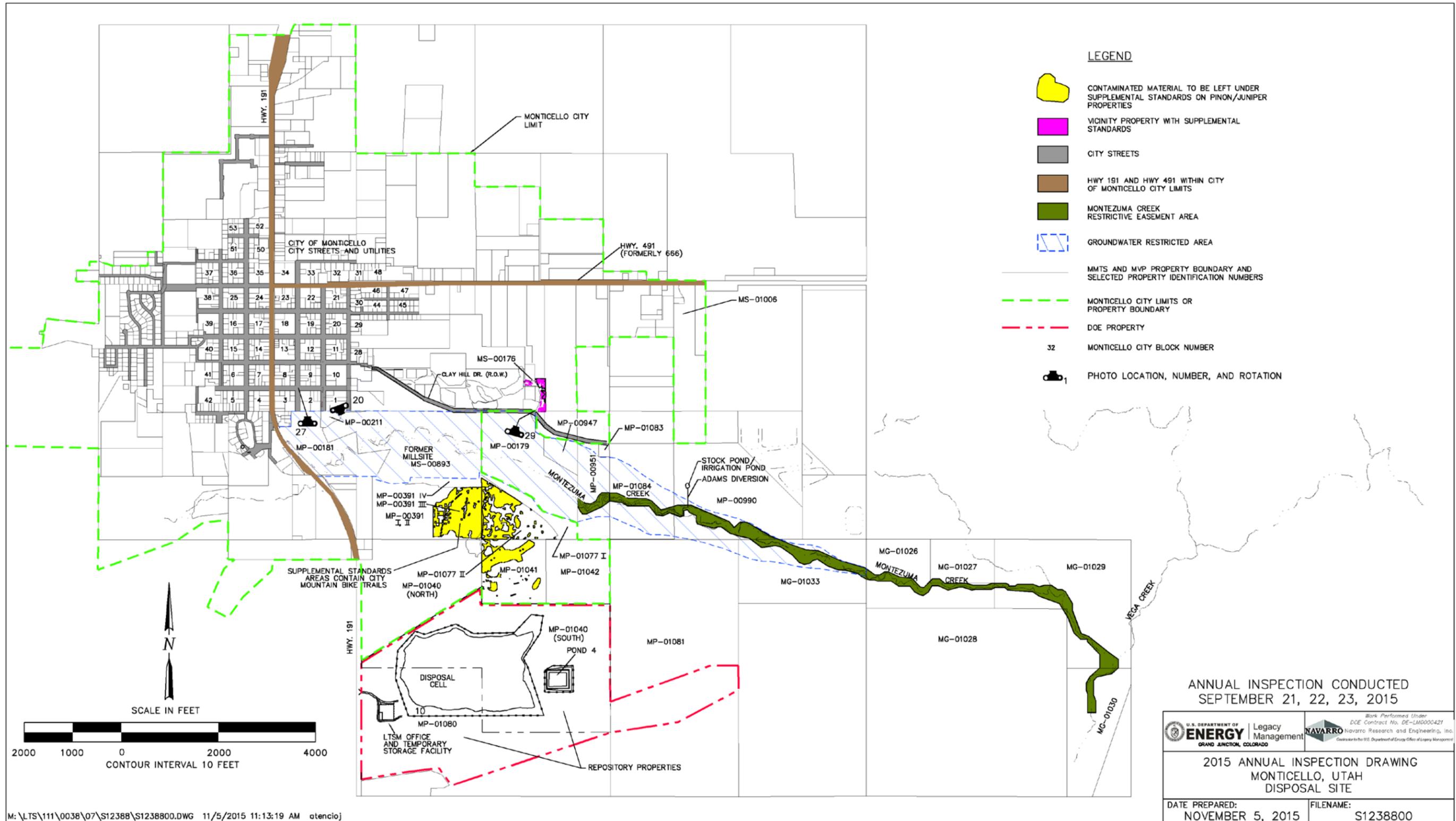


Figure 3. MMTS and MVP Supplemental Standards and Groundwater Restricted Areas

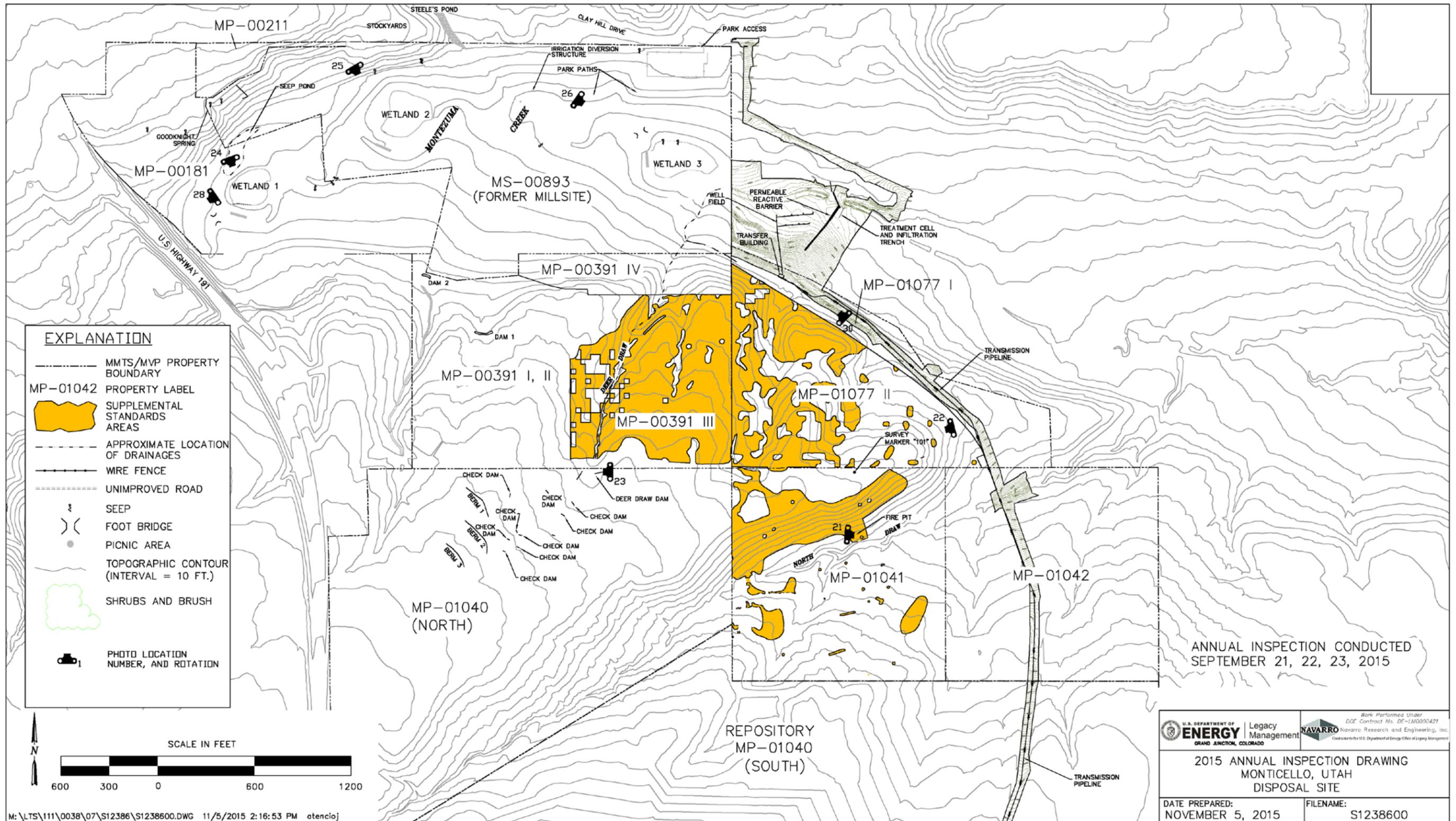


Figure 4. Monticello, Utah, Former Mill Site and Surrounding Area

Appendix A

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

Date(s) of Annual Inspection: 9/21/15 - 9/23/15

Inspection Team Members

Name	Affiliation	Phone Number	E-mail
Linda Sheader	Navarro Research and Engineering Inc. (ecologist and curator of site records)	(970) 248-6711	Linda.Sheader@lm.doe.gov
Paul Wetherstein	Navarro Research and Engineering Inc. (Environmental Compliance)	(970) 248-6645	Paul.Wetherstein@lm.doe.gov
Jason Nguyen	U.S. Department of Energy (site manager)	(970) 248-6707	Jason.Nguyen@lm.doe.gov
Fred Smith	Navarro Research and Engineering Inc. (site operations manager)	(435) 587-3115	Fred.Smith@lm.doe.gov
David Dille	Navarro Research and Engineering Inc. (site representative)	(435) 587-2902	David.Dille@lm.doe.gov

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

I. Interviews		
Name of Individual Interviewed	Affiliation	Date Interviewed
F. Smith and D. Dille	Onsite LM Representatives	September 23, 2015
Notes: <i>The onsite LM representatives accompanied inspectors on portions of the inspection. Notes are included in individual checklist sections, below.</i>		
Name of Individual Interviewed	Affiliation	Date Interviewed
	City of Monticello	
Notes: <i>Individuals from the City of Monticello were not interviewed during the 2015 inspection.</i>		
Name of Individual Interviewed	Affiliation	Date Interviewed
Marc Stilson	State Engineer	September 18, 2015
Notes: <i>Mr. Stilson, Southeast Regional Engineer with the Utah State Engineer's office (i.e., Utah Division of Water Rights), confirmed that in FY 2015:</i> <ul style="list-style-type: none"> • <i>There were no applications or approvals to drill into or through the shallow alluvial aquifer in the Groundwater Restricted Area (GWRA).</i> • <i>There were no applications or approvals to appropriate water from the shallow alluvial aquifer in the GWRA, other than the U.S. Department of Energy's June 2015 application to temporarily appropriate water from the shallow alluvial aquifer beneath the Kedric Somerville property.</i> • <i>There were no change applications to divert water from the shallow alluvial aquifer in the GWRA.</i> • <i>To the best of his knowledge, no additional or different parties located downstream from the MMTS have been using water from the shallow alluvial aquifer in the GWRA for non-domestic purposes, such as for irrigation or livestock watering.</i> 		
Name of Individual Interviewed	Affiliation	Date Interviewed
Notes: <i>No additional individuals were interviewed during the 2015 inspection.</i>		

II. Administrative and Records Inspection

	Readily Available		Current	
	Y	N	Y	N
1. General LTS&M Documents				
Ready access from field office to online manuals (Long-Term Surveillance and Maintenance Plan, Health and Safety Manual, QA Manual)	X	<input type="checkbox"/>	X	<input type="checkbox"/>
2. LTS&M Training Records (ID names in TSF log; verify with Training dept.)				
Onsite employees (verified via past-due training list online)			X	<input type="checkbox"/>
City workers (unescorted workers must have current training)		N/A 2015	<input type="checkbox"/>	<input type="checkbox"/>
3. Public Records (verify records are present and in order)				
OU III Administrative Record no update necessary	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Information Repository (Monticello) updated 2/2014	X	<input type="checkbox"/>	<input type="checkbox"/>	X
Information Repository (Grand Junction) n/a - extra GJ copy decommissioned in 2012				
4. Record Books (Note: Inspection guidelines are listed inside covers of record books; LTS&M Plan Appendix B contains record book management and entry protocol.)				
Record book entries/documentation	X	satisfactory	<input type="checkbox"/>	unsatisfactory
Repository Site Record Book	X	<input type="checkbox"/>	X	<input type="checkbox"/>
TSF Record Book (see LTS&M Plan Section 3.4)	X	<input type="checkbox"/>	X	<input type="checkbox"/>
City-owned properties (see LTS&M Plan Section 4.4)	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Private Property Restricted Areas (see LTS&M Sec. 4.4)	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Public Roads and Utilities Record Book	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Documentation/recordkeeping requirements met	X	satisfactory	<input type="checkbox"/>	unsatisfactory
Information readily traced to updated drawings	X	satisfactory	<input type="checkbox"/>	unsatisfactory
Rad scan info for eroded/excavated material	X	satisfactory	<input type="checkbox"/>	unsatisfactory
Entries include TSF transfers	<input type="checkbox"/>	satisfactory	<input type="checkbox"/>	unsatisfactory
Entries include info on stockpiled material and follow-up scan results	<input type="checkbox"/>	satisfactory	<input type="checkbox"/>	unsatisfactory
Hwy 191/491 entries include information on scan Results and material returned to excavation	X	satisfactory	<input type="checkbox"/>	unsatisfactory
Storm event surveys documented	<input type="checkbox"/>	satisfactory	<input type="checkbox"/>	unsatisfactory

Notes for Record Books Inspection:

The Information Repository update is planned in late 2015. The TSF record book is combined with access logs in a 3-ring binder. In July 2015, notification that excavation of Woodland Way was planned, but no activity had occurred as of the time of inspection. Routine and post-storm inspections were recorded properly. Monthly inspection checklists from late 2014 were not available (already sent to Records Management). No qualifying storm events occurred in 2015. New Public Roads and Utilities book started 8/10/15; signature page was added during 2015 inspection. Entries in Public Roads and Utilities Record Book were spot checked for adequacy. With some exceptions, documentation in the record book and corresponding information on the radiological as-built drawings were satisfactory. Minor instances were found where (1) some of the radiological information in the record book did not match the radiological information on the as-built drawings, (2) dates were missing, or (3) initials of entry author were missing. Inspectors informed Monticello site staff about these deficiencies during the annual inspection. The deficiencies were primarily attributable to the inexperience of a new worker that started at the Monticello site during FY 2015. Monticello site staff started to correct the deficiencies before the annual inspection was completed.

5. Radiological As-Built Drawings				
Drawing updated annually	X	satisfactory	<input type="checkbox"/>	unsatisfactory
Documentation/recordkeeping requirements met	X	satisfactory	<input type="checkbox"/>	unsatisfactory
Radiological scan information recorded	X	satisfactory	<input type="checkbox"/>	unsatisfactory
6. Surveillance Checklists and Records				
	Readily Available		Current	
<i>(Note: Repository and Pond 4 LCRS and LDS monitoring records are sent electronically on a regular basis.)</i>				
TSF Access/Security Logs	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Meteorological Monitoring Data, Monthly and Quarterly Repository Surveillance Checklists, and Monthly Pond 4 Surveillance Checklists	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Notes for checklist and records inspection: monitoring data are electronic; historic records are available on shelf. Late 2014 data not reviewed—already sent to Records Management				

7. Agreements (Note: verify inclusion in Information Repository.)

DOE/City Cooperative Agreement (in file IR074; agreement expires on 12/31/16) **x**
 DOE/UDOT Memorandum of Understanding (in file IR021; does not expire) **x**

8. Zoning Restriction—Overlay Zone OL-1 (in file IR044; do not expire)

Restriction is verified as current through City for property MP-00211-VL **x**
 Restriction is verified as current through City for property MP-00176-VL **x**

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
Electronic Record	A34240063004	applies to properties listed in notes			x	<input type="checkbox"/>
MP-00181-OT	A33230367201	E061691	B788	100-113	x	<input type="checkbox"/>
	33S23E367204					
MP-00391-VL	33S24E316001	E061691	B788	100-113	x	<input type="checkbox"/>
MS-00893-OT	33S24E315400	E061691	B788	100-113	x	<input type="checkbox"/>
MP-01040-VL (N)	34S24E061200	E061691	B788	100-113	x	<input type="checkbox"/>
	34S24E061201			electronic record	x	<input type="checkbox"/>
MP-01041-VL	34S24E060600	E061691	B788	100-113	x	<input type="checkbox"/>
MP-01042-VL	34S24E060000	E061691	B788	100-113	x	<input type="checkbox"/>
MP-01077-VL	33S24E318400	E061691	B788	100-113	x	<input type="checkbox"/>

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

Properties Sold by DOE to Private Parties

DOE ID	Parcel	Document	Book	Page	Y	N
MP-01081-VL	34S24E053000	114283	933	105-111	x	<input type="checkbox"/>

Montezuma Creek Soil and Sediment Properties

DOE ID	Parcel	Document	Book	Page	Y	N
MP-00990-CS	33S24E324800	E063343	B793	831-852	x	<input type="checkbox"/>
	33S24E328400		B921	474-476	x	<input type="checkbox"/>
	33S24E324802			electronic record	x	<input type="checkbox"/>
	A33240324802	E063926		electronic record	x	<input type="checkbox"/>
MG-01033-VL	34S24E050000	E063343	B793	831-852	x	<input type="checkbox"/>
	34S24E050601			electronic record	x	<input type="checkbox"/>
MG-01026-VL	34S24E043000	E063343	B793	831-852	x	<input type="checkbox"/>
MG-01027-VL	34S24E042400	E063343	B793	831-852	x	<input type="checkbox"/>
MG-01030-VL	34S24E047200	E063255	B793	526-538	x	<input type="checkbox"/>
MG-01029-VL	34S24E040000	E063219	B793	390-404	x	<input type="checkbox"/>
	34S24E040001			electronic record	x	<input type="checkbox"/>
MP-00951-VL	33S24E317200	E063926	B796	188-202	x	<input type="checkbox"/>
	33S24E317204	E063926		electronic record	x	<input type="checkbox"/>
	33S24E317207	E063926		electronic record	x	<input type="checkbox"/>
	A33240317206	E063926		electronic record	x	<input type="checkbox"/>
MP-01084-VL	33S24E326000	E063926	B796	188-202	x	<input type="checkbox"/>

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

Utah Department of Transportation Properties

DOE ID	Parcel	Document	Book	Page	Y	N
MS-00895-OT	A33230367811	E068703	B814	533	x	<input type="checkbox"/>
	A33230367825			electronic record	x	<input type="checkbox"/>
MS-00892-OT	A33230367202	E068704	B814	534	x	<input type="checkbox"/>
MS-01021-OT	A33230367812	E068705	B814	535-536	x book	x electronic
MS-01020-OT	A33230369001	E068706	B814	537-538	x	<input type="checkbox"/>

Notes for deed restriction inspection:

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

III. Repository Inspection

A. Access Area

- | | | |
|---|--|---|
| 1. Site Access Sign/Emergency Information | <input checked="" type="checkbox"/> Satisfactory | <input type="checkbox"/> Repairs/Maintenance Needed |
| 2. Field Office | <input checked="" type="checkbox"/> Satisfactory | <input type="checkbox"/> Repairs/Maintenance Needed |
| 3. Temporary Storage Facility | <input checked="" type="checkbox"/> Satisfactory | <input type="checkbox"/> Repairs/Maintenance Needed |
| Bin cover | <input checked="" type="checkbox"/> Functional | <input type="checkbox"/> Not Functional |
| Approximate volume of bin contents (cubic yards) <u><5</u> | | |
| Health and safety/rad postings | <input checked="" type="checkbox"/> Appropriate | <input type="checkbox"/> Inadequate |
| Drums and secondary containment | <input checked="" type="checkbox"/> Good condition | <input type="checkbox"/> Unavailable/not good condition |
| Vandalism/trespassing | <input checked="" type="checkbox"/> Not evident | <input type="checkbox"/> Evident (locate on map) |

Describe access area repairs/maintenance needed:

Material stored in super sacks outside the bin is appropriately posted (22 cubic yards)

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

- | | | |
|--|---|--|
| 1. Outer Fencing and Gates | <input checked="" type="checkbox"/> Satisfactory | <input type="checkbox"/> Repairs/Maintenance Needed |
| 2. Signs <i>(Note condition of 40 numbered reference signs and posts)</i> | | |
| Signs damaged but legible, requiring monitoring: P5, P15, and P20 damaged but legible | | |
| Signs requiring replacement: none | | |
| 3. South Boundary Markers | <input checked="" type="checkbox"/> All six markers located | <input type="checkbox"/> Marker(s) _____ not located |
| 4. Erosion/Gullying | <input type="checkbox"/> Not evident | <input checked="" type="checkbox"/> Evident (but stabilized) |
| 5. Vegetation | <input checked="" type="checkbox"/> Not excessive | <input type="checkbox"/> Excessive growth |
| | <input type="checkbox"/> Noxious weeds absent | <input checked="" type="checkbox"/> Noxious weeds present |
| 6. Land use changes on adjoining property | <input checked="" type="checkbox"/> No change | <input type="checkbox"/> Change |
| 7. Vandalism/trespassing | <input checked="" type="checkbox"/> Not evident | <input type="checkbox"/> Evident |

Notes for condition of repository perimeter (e.g., repairs needed, erosion areas, vandalism):

Infestations of noxious weeds were flagged by weed control supervisor prior to inspection. Need for minor repairs to perimeter fence were noted and reported to site staff during inspection.

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

- | | | |
|--------------------------------|---|--|
| 1. Settlement | <input checked="" type="checkbox"/> Not evident | <input type="checkbox"/> Evident |
| 2. Material Degradation | <input type="checkbox"/> Not evident | <input checked="" type="checkbox"/> Evident Not excessive |
| 3. Erosion/gullies | <input checked="" type="checkbox"/> Not evident | <input type="checkbox"/> Evident |
| 4. Siltation | <input type="checkbox"/> Not evident | <input checked="" type="checkbox"/> Evident Not of concern |
| 5. Obstructions | <input checked="" type="checkbox"/> Not evident | <input type="checkbox"/> Evident |
| 6. Excessive Vegetation | <input checked="" type="checkbox"/> Not evident | <input type="checkbox"/> Evident |

Notes for condition of repository runoff and run-on controls *(Note: locate all areas of concern on map)*:

Rock above the North Toe Trench shows evidence of some movement, but trench function is not impaired.

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

- | | | |
|--|---|--|
| 1. Perimeter Fence and Access Gate | <input checked="" type="checkbox"/> Satisfactory | <input type="checkbox"/> Unsatisfactory |
| 2. Erosion/Biointrusion of Pond Berm | <input type="checkbox"/> Not evident | <input checked="" type="checkbox"/> Evident |
| 3. Safety Equipment | Pond barrier rope intact | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | Personal floatation device (PFD) posting present and visible | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | PFD storage containers appropriately marked and in good condition | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | PFDs accessible, in good condition, and appropriately sized | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 4. Pond 4 LCRS and LDS Electrical Housing/Surface Installations | Physical condition is: | <input checked="" type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory |
| 5. Liner—Holes/Cracks/Tears | <input checked="" type="checkbox"/> Not Evident | <input type="checkbox"/> Evident |
| 6. Liner Anchors | No longer needed in pond; removed | |
| 7. Siltation and Vegetation in Pond 4 | <input type="checkbox"/> Not evident | <input checked="" type="checkbox"/> Evident |
| 8. Pond 4 Water Level | Estimated water depth is <u>5</u> ft. | |
| 9. Vandalism | <input checked="" type="checkbox"/> Not evident | <input type="checkbox"/> Evident |

Notes for condition of Pond 4 features:

Animal burrows and rills do not threaten the integrity of the berm. Minor siltation in pond. Life rings placed on hooks around the pond rather than inside cabinets.

E. Repository Cover Inspection			
1. Top Perimeter Road and Road to Pond 4	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Unsatisfactory	
2. Interior Wildlife Fence and Wildlife Gates			
Physical condition is:	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Unsatisfactory	
Wildlife gates are:	<input checked="" type="checkbox"/> Open	<input type="checkbox"/> Closed	
3. Cover Vegetation	See attached Repository Cover Vegetation Index form; note areas of concern on map		
4. Riprap Armoring			
<input type="checkbox"/> Slumping/sliding not evident	<input checked="" type="checkbox"/> Slumping/sliding evident (locate on map)		
<input checked="" type="checkbox"/> Rock deterioration not evident	<input type="checkbox"/> Rock deterioration evident (locate on map)		
5. Settlement/Desiccation/Erosion/Gullies			
<input checked="" type="checkbox"/> Settlement depressions not evident	<input type="checkbox"/> Settlement depressions evident (locate on map)		
<input checked="" type="checkbox"/> Desiccation cracking not evident	<input type="checkbox"/> Desiccation cracking evident (locate on map)		
<input checked="" type="checkbox"/> Erosion/gullies not evident	<input type="checkbox"/> Erosion/gullies evident (locate on map)		
6. Holes/Burrows/Biointrusion			
<input type="checkbox"/> Holes/burrows/biointrusion not evident	<input checked="" type="checkbox"/> Holes/burrows/biointrusion evident (locate on map)		
7. Seepage/Ponding			
<input checked="" type="checkbox"/> Seepage not evident	<input type="checkbox"/> Seepage evident (locate on map)		
<input checked="" type="checkbox"/> Ponding not evident	<input type="checkbox"/> Ponding evident (locate on map)		
<input checked="" type="checkbox"/> Soft subgrade not evident	<input type="checkbox"/> Soft subgrade evident (locate on map)		
<input checked="" type="checkbox"/> Phreatophytes not present	<input type="checkbox"/> Phreatophytes present (locate on map)		
8. Site Monument at apex of cover	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Repairs/maintenance needed	
Site Monument at boundary gate	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Repairs/maintenance needed	
Notes for repository cover inspection:			
<i>Some movement of rock evident above the North Toe Trench, creating horizontal features in the rock. Rock also building up just above the smaller rock on the North Toe Trench. A channel-shaped feature has formed on the repository side slope. Photos were taken for monitoring purposes.</i>			
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	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Exterior pump access ports are undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Evidence of leakage into vaults	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Evidence of drainage through cover penetrations	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Telemetry surface installations in good condition	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Vaults are posted as confined-spaces	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
2. Manholes 2, 4, and 5			
Covers secure and operable	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Evidence of drainage through cover penetrations	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Manholes are posted as confined-spaces	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Notes for condition of manholes:			
3. LCR Video Ports (check covers only; ports are inoperable)			
Covers secure and operable	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Evidence of drainage through cover penetrations	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
4. Settlement Monuments (A to I) (Note: Plates surveyed during Five-Year Reviews only.)			
Surface completions undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Inner plates undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
5. Embedded Lysimeter			
Evidence of seepage at outlet	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Instrumentation installations undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Evidence of drainage along cover penetrations	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Telemetry surface installations in good condition	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

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

LCRS and LDS pumps, water level sensors, and flow meters are fully operational Yes No
 Telemetry system is fully operational Yes No
 Leachate production is below action levels Yes No
 Leachate production rates are stable Yes No
 Water levels do not exceed top of sumps Yes No
 Monitoring data are managed through SOARS Yes No
 Pumping rates (gallons/week): LCRS 1 _____ LCRS 2 _____ LDS 1 _____
 LDS 2 _____ Pond 4 LCRS 1 _____ Pond 4 LDS 1 _____

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

Pumping rates are reported in quarterly Federal Facility Agreement reports to EPA and UDEQ. No anomalies reported. Reports are available in SOARS.

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	<input checked="" type="checkbox"/>	<input type="checkbox"/>												
Evidence of camping	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
Habitable structure(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
Gullies/erosion	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
Runoff/drainage controls intact and in good repair (ditches, riprap structures, dams, check dams, berms)	<input checked="" type="checkbox"/>	<input type="checkbox"/>												
Land use changes	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
Evidence of vandalism	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
Soil removal evident	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water well installation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		n/a		n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wetland/creek damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		n/a		n/a		n/a	
Supp. Stds. fence intact	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

Portions of Property 181 were under construction by the City and not easily accessible to the public because of heavy equipment operation. Gullies and erosion are all stabilized, and no new areas were noted. The fence was breached in multiple places to allow access for mountain bike trails.

B. City-Owned Property MP-00211

	Yes	No	N/A
Evidence of excavation or construction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If yes, confirm the following with onsite LM representative:			
In accordance with Monticello zoning district Overlay Zone (OL-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Violation has been reported	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Radiological contamination was encountered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Radiological contamination was appropriately managed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Corrective action required	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Notes for City-owned property MP-00211 inspection:

No evidence of activity on this property.

V. Montezuma Creek Soil and Sediment Properties

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

Evidence of habitable structures within the restricted area	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Evidence of soil removal from the restricted area	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Land use/ownership has changed *	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Land owners are aware of use restrictions *	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Violations have been reported *	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Corrective action required	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

Notes for Soil and Sediment Properties inspection:

* Confirm with onsite LM representative.

VI. Groundwater Management Area

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

Evidence of water well installation within the restricted area*	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
No permits for water well installation within the restricted area†	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Violations have been reported*	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Land ownership has changed*	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Landowners are aware of water use restriction*	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Corrective action required	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

Notes for Groundwater Management Area inspection:

Onsite representatives regularly inspect area to verify wells.

* Confirm with onsite LM representative.

† Confirm with State Engineer's Office.

VII. OU III Monitoring Wells and Water Treatment Systems

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

	Yes	No
Active wells in working condition (verify with sampling teams)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Outer casing or flush mount vault intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wells are locked/flush mount well lids secured	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes for inactive monitoring well inspection (note location of any maintenance issues on map):

Wells are checked and maintained twice a year by groundwater sampling team. No items reported by sampling team or during routine inspections by onsite personnel.

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

	Yes	No
Electrical panel, antenna, fence, and vault access in satisfactory condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evidence of ponded water or saturated soil	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Evidence of surface disturbance	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Evidence of stressed vegetation	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Notes for PRB and treatment cells inspection:

Treatment cells are inactive but capable of being restarted if needed.

VIII. MVP Field Inspection

A. City Streets and Utilities

	Y	N
Roads/Utilities under Construction	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Unmonitored excavations observed during inspection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned excavations are identified by onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiological material is properly controlled and managed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The utility locator service is contacted regularly by the onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes for city streets and utilities inspection:

No radiological contamination was found by onsite personnel at any excavation since the last annual inspection. All areas of major excavation were visited during the annual inspection.

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

	Y	N
1. Roads Under Construction	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Unmonitored excavations observed during inspection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned excavations are identified by onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiological material is properly controlled and managed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The local UDOT official is contacted periodically by the onsite LM representative – <i>n/a – website only</i>		

Notes for UDOT highways inspection:

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

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:

Gravel was placed along new construction in 2014 (guard rails), and it has moved downhill through erosion rills.

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

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

	Y	N
Unmonitored excavations observed during inspection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned excavations are identified by onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Site conditions indicate ICs properly implemented	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes for Property MS-00176 inspection:

No changes noted since last annual 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 (21)	City-Owned Properties Transferred from DOE	Campsite in Supplemental Standards Areas on City-Owned Property MP-01041, No Signs of Recent Use
2 (22)	City-Owned Properties Transferred from DOE	Mountain Bike Trail on City-Owned Property MP-01077
3 (30)	City-Owned Properties Transferred from DOE	View of the OU III Water Transmission Pipeline Access Road
4 (23)	City-Owned Properties Transferred from DOE	Deer Draw Dam Area on City-Owned Property MP-01040
5	City-Owned Properties Transferred from DOE	Erosion Controls and Mature Vegetation on City-Owned Property MP-01040
6 (7)	Repository Runoff/Run-on Controls	South Drain Ditch
7	Repository Cover Inspection	Wildlife Fence on South Side of Repository
8	Repository Runoff/Run-on Controls	Edge of South Drain Ditch by Wildlife Gate
9 (9)	Repository Runoff/Run-on Controls	East Toe Trench Showing Vegetation and Material Movement
10	Repository Runoff/Run-on Controls	East Toe Trench, View South from Access Road
11	Repository Runoff/Run-on Controls	East Toe Trench, View North from Access Road
12	Cover Penetrations	Manhole 5 Showing Health and Safety Postings
13 (10)	Repository Runoff/Run-on Controls	North Toe Trench Showing Vegetation and Sediment
14	Cover Penetrations	Manhole 4
15	Cover Penetrations	Manhole 3 Showing Interior Equipment
16	Repository Cover Inspection / Repository Runoff/Run-on controls	Side Slope of Repository, North Toe Trench, and Vegetation
17 (15)	Repository Cover Inspection	Horizontal Line Features in Side Slope of Repository
18 (16)	Repository Cover Inspection	Rock Accumulation Above the North Toe Trench
19 (17)	Repository Cover Inspection	Channel-Shaped Area on Side Slope of Repository
20 (18)	Cover Penetrations	Manhole 1 Showing Interior Equipment
21	Repository Cover Inspection / Repository Runoff/Run-on controls	Repository Side Slope and North Toe Trench
22 (8)	Repository Runoff/Run-on Controls	West Drain Ditch
23	Repository cover Inspection	Site Monument 1
24	Repository Perimeter	Repository Gate with Up-to-Date Postings
25	Access Area	Revegetation Area from Recent Water Line Installation
26 (6)	Repository Perimeter	Erosion Rill Near Perimeter Sign P1
27 (3)	Repository Perimeter	Perimeter Sign P1
28	Repository Perimeter	Undercut Fence Post Between Perimeter Signs P1 and P2
29	Repository Runoff/Run-on Controls	Outfall of West Drain Ditch, View South-Southeast
30	Repository Runoff/Run-on Controls	Outfall of West Drain Ditch, View North-Northwest

Photo No.	Feature Photographed	Description (include photo location on map)
31 (5)	Repository Perimeter	Erosion Rill Above Perimeter Sign P6; No Significant New Erosion
32	Repository Perimeter	Boundary Marker S-4 Under Shrub But Still Visible
33 (4)	Repository Perimeter	Boundary Marker S-3
34	Repository Perimeter; Access Area	Site Entrance Gate
35	Access Area	Bin in TSF
36 (2)	Access Area	Gate, Postings, and Equipment in TSF
37	Access Area	Radiological Area with Super Sacks in TSF
38 (1)	Access Area	Field Office Facility and Parking Lot
39	Repository Cover Inspection	Raptor Perch near Disposal Cell
40 (14)	Repository Cover Inspection	Site Monument 2
41 (19)	Repository Cover Inspection	Interior Structures Within Settlement Plate I
42 (24)	City-Owned Properties Transferred from DOE	Wetland 1 at the Former Millsite
43 (28)	UDOT Highways 191 and 491 Rights-of-Way	Highway 191 Embankment Showing No New Erosion
44 (25)	City-Owned Properties Transferred from DOE	Wetland 2 at the Former Millsite
45 (26)	City-Owned Properties Transferred from DOE	Wetland 3 at the Former Millsite
46 (29)	Property MS-00176	Private Property MS-00176; Drainage Ditch Scanned After Major Runoff Events
47	Property MS-00176	Private Property MS-00176
48	Montezuma Creek Soil and Sediment Properties	Sediment Pond and Montezuma Creek on Private Property MP-00990
49 (13)	Pond 4	Pond 4
50 (11)	Pond 4	Pond 4 Fence Showing New Fencing Added in 2015
51 (12)	Pond 4	Pond 4 Berm Showing Animal Burrows
52	City Streets and Utilities	City Streets and Utilities Area of Shallow Excavation
53 (27)	City Streets and Utilities	City Streets and Utilities Area of Deeper Excavation
54	City-Owned Properties Transferred from DOE	Soil Being Placed by City on Property MP-00181
55	City-Owned Properties Transferred from DOE	Soil Being Placed by City on Property MP-00181
56 (20)	City-Owned Property MP-00211	No Activity on Property MP-00211
57	City Streets and Utilities	Excavation in City Streets; No Elevated Radiation

Repository Cover Vegetation Index
Monticello, Utah

Date inspected: 9/22/15 Inspected by: L. Sheader

The following table lists the dominant species present on the repository cover at time of inspection. (**Note:** dominant species make up an estimated 10% or more of the vegetation cover.)

Species Name	Growth Form			Life Cycle		Vegetation Type		
	Shrub	Grass	Other	Annual	Perennial	Native	Weedy	Other
<i>Pascopyrum smithii</i>		X			X	X		
<i>Artemisia tridentata</i>	X				X	X		
<i>Agropyron cristatum</i>		X			X			X
<i>Thinopyrum intermedium</i>		X			X			X

Less common species present on repository cover: *Ericameria nauseosa*, *Bromus inermis*, *Elymus trachycaulus*, *Pleuraphis jamesii*, *Pseudoroegneria spicata*, *Helianthus annuus*, *viguiera multiflora*, *Bromus tectorum*.

Noxious weed species present (record locations on map or GPS): *Convolvulus arvensis*
observed in early September (List C species; no control warranted)

Additional notes: _____

Vegetation Condition Score (see reverse): 3.9

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).)

Trace species are fewer as the vegetation community develops. Very low weed cover. Excellent cover by shrubs and perennial grasses. Most grass species were seeding this year.

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 onsite causing burial or abrasion of vegetation	Sheet erosion not obvious; no visible rills or rills stabilized OR soil swept from offsite 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	0	1	8	0

Add up all columns for total condition score:

<u>0</u>	(Column 1) × 1 =	<u>0</u>
<u>0</u>	(Column 2) × 2 =	<u>0</u>
<u>1</u>	(Column 3) × 3 =	<u>3</u>
<u>8</u>	(Column 4) × 4 =	<u>32</u>
<u>0</u>	(Column 5) × 5 =	<u>0</u>
		<u>35 Total</u>

Divide total by 9 to calculate vegetation cover condition score = 3.9

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