

5.0 Project Schedules and Milestones (FY 2012–2014)

5.1 Establishing Project Schedules and Milestones

As stated in Section 1.1.2, the Site Management Plan (SMP) establishes the overall plan for remedial actions at the Monticello Mill Tailings Site (MMTS) and milestones against which progress can be measured. The SMP also documents the overall plan for remedial actions at the Monticello Vicinity Properties site (MVP), which was deleted from the National Priorities List (NPL) on February 28, 2000. The SMP was first prepared in 1995 and was revised annually from 1998 through fiscal year (FY) 2003. Starting in FY 2004 (October 1, 2003, through September 30, 2004), only Section 5.0 of the SMP, “Project Schedules and Milestones,” is updated annually to reflect revised schedules agreed to by the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and Utah Department of Environmental Quality (UDEQ). This update of Section 5.0 of the SMP contains project schedules and milestones for FY 2012–2014. The stipulated penalty milestones listed in this section are enforceable milestones unless superseded by revised schedules agreed to by DOE, EPA, and UDEQ, or by amendments to the Federal Facilities Agreement (FFA).

5.1.1 FFA Requirements

Section XXX of the FFA states that “. . . [a]ll terms and conditions of this Agreement which relate to interim or final remedial actions, including corresponding timetables, deadlines, or schedules . . . shall be enforceable.” The FFA required DOE to submit a work plan establishing how DOE would complete the tasks required by the FFA and specific timetables and a schedule for completing remedial actions. The FFA Work Plan was completed in May 1989 and established the enforceable timetable for completing primary documents identified in the FFA and for completing remedial action.

The scope of work, timetable, and schedule for remedial actions presented in the FFA Work Plan were superseded by the Remedial Design Work Plan (RDWP). The RDWP was identified as a primary document and was submitted as a final document in January 1992. The RDWP established a revised timetable with specific stipulated penalty milestones. The stipulated penalty milestones were associated with the submittal of primary design documents that would be generated as part of the remedial design and notice of award to subcontractors for remedial action work.

The timetable in the RDWP was superseded by the timetables established in the 1995 version of the SMP. DOE, EPA, and UDEQ concurrence on the SMP has been the basis for establishing new enforceable milestones and nonenforceable target dates for all activities extending through the completion of the Monticello Projects. The SMP is a primary document, and per the FFA, the corresponding timetables, deadlines, and schedules are enforceable.

5.1.2 Enforceable Milestones and Nonenforceable Targets

DOE, with EPA and UDEQ concurrence, has developed a 3-year (FY + 2 years) rolling milestone approach for establishing a schedule for completing remedial actions at the Monticello NPL sites. Under this approach, schedule dates are designated as either “milestones” or “target

dates.” Milestones and target dates are established in consideration of the Monticello Projects environmental budget allocation. Milestones are enforceable deadlines established for near-term (FY + 2 years) activities for which greater fiscal and technical certainty exists. Target dates are nonenforceable deadlines for longer-term activities (greater than FY + 2 years) and may be converted to milestones on an annual basis. Target dates may also be established in the FY + 2-year time frame, and beyond, for completing activities associated with a stipulated penalty milestone. Each year, after receipt of the Approved Funding Program that reflects the final Congressional appropriation for the current FY, existing milestones are reviewed and adjusted if necessary. An additional year of milestones is also established, adjusting the previous target dates if necessary.

Enforceable milestones and nonenforceable target dates for the Monticello Projects are described in Table 5–1 and Table 5–2, respectively. Enforceable milestones are identified for those activities in FY 2012–2014 for which stipulated penalties may be assessed against DOE. Each penalty date listed in Table 5–1 is defined as the date EPA and UDEQ must receive the respective document in draft final form. As work on the projects progresses, additional documents may be submitted. Additional documents will be identified in the FFA quarterly report as soon as it is determined that they are required.

Under DOE’s rolling milestone approach, DOE, EPA, and UDEQ consider a variety of factors during the annual review and establishment of milestones and target dates. These include funding availability; latest information on cost estimates; site priorities identified through consultations among DOE, EPA, UDEQ, and stakeholders; new or emerging technologies; and other relevant factors. Milestones can be renegotiated if there are insufficient Congressional appropriations. Out-year nonenforceable target dates are established using realistic assumptions. DOE, EPA, and UDEQ recognize the uncertainties associated with long-term target dates that lay out DOE’s strategic vision of how it ultimately plans to accomplish projects. Furthermore, DOE provides the regulatory agencies and other stakeholders with an opportunity to assist in developing priorities at the site. Beginning in September 2004, DOE, EPA, and UDEQ concurrence on updates to Section 5.0, “Project Schedules and Milestones,” became the basis for establishing new enforceable milestones and nonenforceable target dates.

EPA and UDEQ agree to meet with DOE annually to renegotiate the milestones and target dates established in the SMP. The enforceable milestones described in Table 5–1 for activities in FY 2012–2014 may be modified only as part of this renegotiation or through the existing procedures of the FFA. Further, EPA and UDEQ reserve the right to initiate any action deemed necessary to enforce these milestones. DOE, EPA, and UDEQ agree to abide by the existing procedure for resolving disputes (Section XIV, “Resolution of Disputes,” Monticello FFA, 1988) and will make all reasonable efforts to informally resolve any disputes involving insufficient funding before invoking formal dispute procedures.

5.2 Site Status

Remedial actions at the Monticello NPL sites have been completed in accordance with the Record of Decision (ROD) for the corresponding Operable Unit (OU). The remedial actions are protective of current and anticipated land and water use; however, they do not allow for unlimited use and unrestricted exposure in all areas. This is because contaminated soil, sediment, and debris removed from the MMTS and MVP site remain encapsulated in the on-site DOE

repository, in the soil at locations where supplemental standards were applied, and in groundwater and surface water. Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), these circumstances obligate DOE to conduct five-year reviews of the sites to ensure that the remedies remain protective of human health and the environment.

The most recent five-year review of the MVP site, finalized in June 2007, concluded that the remedy for all OUs remained protective of human health and the environment. The five-year review of the MMTS, also finalized in June 2007, concluded that the remedy for all OUs remained protective of human health and the environment, except that the remedy for OU III was not fully protective because of possible excess risk to ecological receptors from recent redistribution of selenium in surface water and sediment. Follow-up activities to address this ecological issue are ongoing (see Section 5.3.4). In addition, follow-up activities, including a contingency remedy for OU III, are in progress to address water quality restoration that is not progressing at rates that will attain remedial action objectives (RAOs) established in the *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface Water and Ground Water, Monticello, Utah* (OU III ROD) (see Section 5.3.4). The next CERCLA five-year reviews are due in June 2012.

5.3 Long-Term Surveillance and Maintenance (LTSM)

In addition to 5-year reviews required under CERCLA, DOE conducts routine (weekly, monthly, and quarterly) inspection and surveillance—and annual site inspections—as an ongoing evaluation of remedy effectiveness. These activities are directed under the DOE LTSM program initiated in October 2001. DOE’s LTSM program is currently implemented under the DOE Office of Legacy Management. LTSM activities at the Monticello NPL sites comprise periodic surveillance and inspection of affected properties, operation and maintenance of the on-site repository, monitoring for compliance with institutional controls that restrict land and groundwater use, groundwater and surface water monitoring, and the appropriate documentation and reporting (see *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites*, June 20, 2007, Rev. 0, which supersedes the *Monticello Long-Term Surveillance and Maintenance Administrative Manual*, September 2005, and associated Volumes I to IV).

5.3.1 Millsite Remediation and Restoration

Soil contamination removal activities were concluded at the former millsite in July 1999. DOE transferred ownership of the former millsite property and several adjacent (“peripheral”) properties to the City of Monticello in June 2000. Millsite restoration activities were completed in fall 2001. The associated wetland areas were fully restored by 2004. By condition of the land transfer agreement, the City maintains the transferred properties for public recreation. DOE continues to monitor the properties for compliance with institutional controls that restrict land and water use and to ensure that the remedy remains protective. There are currently no violations of land or water use restrictions.

5.3.2 Repository and Pond 4

Operation and maintenance of the repository and Pond 4 are required to ensure that leachate production from waste contained in the repository is properly managed and that waste

encapsulation is not compromised. The physical condition of the repository and Pond 4 is visually inspected on a monthly basis. An automated measurement and data-recording system (telemetry system) continually measures leachate production from the repository and Pond 4. The telemetry system is integrated with the DOE System Operation and Analysis at Remote Sites for data management. Visual observations and telemetry-system data are reported quarterly in status reports mandated by the FFA. Leachate production in the repository continues to remain well below established action levels. The integrity of the repository cover remains intact.

5.3.3 Monticello Mill Tailings Site OU II—Peripheral Properties

Completion reports, remedial action reports, and closeout documentation have been completed for the remediation of contaminated soil and sediment on all OU II properties. Twenty-two of the OU II properties without contaminated surface water or groundwater were deleted from the NPL on October 14, 2003. Twelve of the OU II properties impacted by contaminated groundwater cannot be deleted from the NPL until surface water and groundwater remediation goals are met. DOE continues to perform long-term surveillance of the OU II properties for compliance with institutional controls that restrict land and groundwater use and to ensure that the implemented remedies remain protective. There are currently no violations of land or groundwater use restrictions.

DOE continues the process to relinquish ownership of OU II peripheral property MP-01081-VL, located east of the repository site. Open houses, property tours, and a land auction occurred in June 2011.

5.3.4 Monticello Mill Tailings Site OU III—Surface Water and Groundwater

On June 2, 2004, the remedy for MMTS OU III was selected and documented in the OU III ROD. The OU III ROD was prepared following the submittal of *Monticello Mill Tailings Site Operable Unit III Remedial Investigation Addendum/Focused Feasibility Study*, January 2004, as a basis for OU III remedy selection. That document updated human health and ecological risk assessments, and updated conceptual and numerical models of groundwater flow and contaminant transport from the 1998 Remedial Investigation/Feasibility Study. The groundwater model predicted groundwater restoration would be complete by 2045.

The selected remedy presented in the OU III ROD consists of monitored natural attenuation (MNA), institutional controls, and an evaluation of selenium concentration trends and the potential impacts of selenium concentrations at specific locations on ecological receptors (biomonitoring). The OU III ROD also specifies the criteria for removing the permeable reactive barrier (PRB), installed in 1999 as a full-scale treatability study of in situ groundwater treatment using zero-valent iron (ZVI) as the reactive media. Water quality monitoring to assess the performance of the OU III remedy is conducted in accordance with the Post-ROD Monitoring Plan and the OU III ROD.

Analysis of groundwater monitoring data, presented in annual groundwater reports, indicates that, at present cleanup rates, water quality restoration is not attainable within the allowed 42-year restoration period. This was first recognized in the 2006 annual groundwater report by the initial method of analysis specified in the OU III ROD. An additional specification of the OU III ROD was to apply a separate statistical analysis to evaluate concentration trends if restoration progress evaluated by the initial method was less than expected. The statistical

analysis, completed in August 2007, provided results and conclusions similar to those of the initial method (see *Monticello Mill Tailings Site Operable Unit III Analysis of Uranium Trends in Ground Water*, August 2007).

The projected nonattainment of water quality goals within the allowable restoration period led DOE, in concurrence with EPA and UDEQ, to implement a contingency remedy for OU III. The decision to implement a contingency remedy and the scope of the contingency remedy are documented in an Explanation of Significant Difference (ESD). The ESD was provided for public review in December 2008 and became effective in March 2009. In accordance with the ESD, DOE will operate a groundwater pump-and-treat enhancement upgradient of the PRB until RAOs are met or another remedy is selected. Further studies will be conducted during the current CERCLA five-year review period to determine whether the contingency remedy of pump-and-treat enhancement, with MNA, is a viable remedy for OU III and if it can achieve current RAOs (water quality restoration goals and a reasonable remediation time) as described in Section 8 of the OU III ROD. The ESD also adopted the protection standard for uranium in surface water recently enacted by the State of Utah (30 µg/L).

The current pump-and-treat enhancement in OU III comprises an ex situ treatment system installed in 2005 as a technology demonstration project using ZVI. DOE installed this system after it became apparent that mineral fouling had significantly reduced the capacity of the PRB to transmit and treat the groundwater. The ex situ treatment system was also designed to alleviate potential adverse land-use effects associated with groundwater monitoring. The existing ex situ treatment enhancement that was adopted under the contingency remedy can treat up to about 13 gallons per minute (gpm) as currently configured with one extraction well and two treatment vessels. As allowed by the Utah Division of Water Quality, up to 10 gpm of the treated water is discharged to Montezuma Creek, and the remaining flow is diverted to an infiltration trench.

To evaluate the contingency remedy, DOE prepared the *Monticello Mill Tailings Site Operable Unit III Water Quality Compliance Strategy* (WQCS), December 2009, which describes the work elements, schedule, and data-use objectives of the contingency remedy tasks. The strategy presents a conceptual, phased approach to attain compliance goals. FFA quarterly reports will document work scope completed or revisions to the compliance strategy. Results and discussion of the completed activities will be documented in the annual groundwater reports.

The WQCS allows expansion of the pump-and-treat enhancement to be evaluated to determine the effectiveness of the contingency remedy. EPA and UDEQ concurred on DOE's conceptual approach for expanding the OU III groundwater treatment system, proposed in April 2010, which consists of the following components:

- Install a new groundwater collection trench upgradient of the PRB to capture additional contaminated groundwater.
- Install a new subsurface pipeline to convey contaminated groundwater from the new groundwater collection trench to the DOE repository property located approximately 1.2 miles south of the groundwater collection trench.
- Discharge contaminated groundwater from the new pipeline into Pond 4 for evaporative treatment.

- Continue to use the existing ex situ treatment enhancement that includes one extraction well and two treatment vessels that discharge treated groundwater into Montezuma Creek and an infiltration trench.
- Leave the PRB in place as a groundwater containment structure until its eventual decommissioning.

DOE formalized the planned expansion of the OU III groundwater treatment system, as outlined above, in the *Monticello Mill Tailings Site Operable Unit III Remedial Design/Remedial Action Work Plan for Groundwater Remediation Expansion*, January 2011, which incorporates EPA and UDEQ review comments. However, with EPA and UDEQ concurrence, DOE postponed implementing the work plan in April 2011 to investigate other options for evaluating the contingency remedy. DOE will update EPA and UDEQ on those options in fall or winter 2011.

Primary goals in evaluating the contingency remedy are to determine if current RAOs are feasible by MNA with pump-and-treat enhancement and to evaluate risk reduction and costs associated with the contingency remedy. If current RAOs are not feasible, and in accordance with the ESD, DOE will petition EPA and UDEQ for an Applicable or Relevant and Appropriate Requirements waiver to reestablish RAOs based on technical impracticability.

Biomonitoring

The biomonitoring component of the OU III ROD (see Appendix C of the OU III ROD) provides that data collection and analysis be initiated and continued until sufficient information allows a protectiveness determination regarding potential risk to ecological receptors from selenium in surface water, sediment, and benthic macroinvertebrates at specific wetland areas of OU III. The OU III Biological Technical Assistance Group (BTAG), including DOE, EPA, UDEQ, and the U.S. Fish and Wildlife Service, provides input on the necessity, scope, and schedule of biomonitoring, and reviews biomonitoring results.

DOE, in consultation with other members of the BTAG, continues to evaluate analytical data to determine the future scope of biomonitoring. Biomonitoring field activities were suspended in 2011 pending review of DOE submittal *Monticello Mill Tailings Site Operable Unit III Biomonitoring Program Status and Analytical Update*, March 2011. The scope of biomonitoring was also addressed in a meeting convened among BTAG representatives in Denver, Colorado, on June 27, 2011. A letter dated August 16, 2011, was prepared by DOE and transmitted to EPA and UDEQ soliciting specific concerns and means to address those concerns regarding OU III biomonitoring.

5.3.5 MVP Site OUs A Through H

Remediation of the MVP site was completed on September 30, 1999. The direct and final rule to delete the MVP site from the NPL became effective on February 28, 2000. DOE continues to perform LTSM activities for certain vicinity properties through annual inspections, enforcement of institutional controls, and monitoring. The affected MVP site properties are the city streets and utility corridors in Monticello and private property MS-00176, where contamination was left in place and supplemental standards were applied.

During spring 2008, the City of Monticello started an extensive upgrade of streets and utilities beneath streets within city limits, including Highway 191, Highway 491, and numerous others. Utility upgrades include the repair, replacement, or installation of the storm water system, natural gas pipeline system, and fiber optics cable. These activities continue in FY 2011 and are expected to continue in FY 2012.

As part of the utility upgrades, all radioactively contaminated soil encountered in the excavations is excavated and transported to the Temporary Storage Facility (TSF) at the Monticello repository. DOE provides the required monitoring and radiological controls during these activities. Radioactively contaminated soil and debris stored in the TSF are transferred to the Grand Junction Disposal Site for permanent disposal. Contaminated material was last transferred from the TSF to the Grand Junction Disposal Site in June 2010.

5.3.6 Long-Term Decommissioning Activities and Site Deletions

Components of the MMTS infrastructure that require eventual decommissioning are (1) the PRB, (2) Pond 4 (repository leachate evaporation pond), (3) OU III monitoring wells, (4) the OU III groundwater pump-and-treat system, and (5) the water diversion flap of the embedded lysimeter.

Plans to decommission the PRB are in progress. The decommissioning plan will be documented in a work plan that will be subject to EPA and UDEQ concurrence.

Decommissioning Pond 4 is contingent on the rate of leachate production from the disposal cell and, if implemented, the duration of evaporative treatment of OU III contaminated groundwater. The rate of leachate production has decreased significantly since final waste encapsulation in 1999. The current rate of leachate production is 6,000–8,000 gallons per month. Pond 4's capacity (16 million gallons) and the evaporation rate greatly exceed the rate of leachate production. Pond 4 is eligible for decommissioning only if the repository leachate is managed by other means and, if implemented, when evaporative treatment of OU III contaminated groundwater ceases. Pond 4 is not currently in consideration for near-term (within 5 years) decommissioning, and an out-year (>5 years) date has not been determined.

Groundwater monitoring for OU III will be conducted until water quality has attained acceptable levels established by DOE, EPA, and UDEQ. Monitoring wells will be decommissioned when the water quality objectives are met. Monitoring well decommissioning may occur in phases as regions of the aquifer meet RAOs.

Operation of the OU III groundwater pump-and-treat system is part of the contingency remedy and will continue until current RAOs are met or until another remedy is selected. The OU III groundwater pump-and-treat system is not currently in consideration for near-term (within 5 years) decommissioning, and an out-year (>5 years) date has not been determined.

DOE continues to monitor the drainage lysimeter embedded in the 7.5-acre facet comprising the northeast corner of the repository cover. The repository is capped by a vegetated water balance cover that is underlain by a Resource Conservation and Recovery Act Subtitle C cover. The lysimeter is designed to capture water that infiltrates the vegetated cover and reaches the underlying synthetic liner. The lysimeter construction includes a synthetic flap that is glue-welded to that liner. The flap diverts any water that percolates through the vegetated cover to gauging instruments so that the percolation rate can be measured. If the piping or gauging

equipment malfunctions, a response action will be implemented to prevent possible saturation of the soil layers that comprise the vegetated portion of the cover. Saturation of the soil layers could compromise the integrity of the repository cover. The eventual strategy to decommission the lysimeter will include a provision to breach the flap to prevent saturation of the soil cover. Routine monitoring of the lysimeter confirms that it is functioning properly and continues to provide water-balance data.

MMTS OU II properties (peripheral properties) that have been remediated for soil and sediment contamination but are underlain by contaminated groundwater are not eligible for deletion from the NPL until water quality RAOs are achieved. Similarly, MMTS OU III is not eligible for deletion until that time.

5.4 Milestones and Targets

Enforceable milestones applicable to the MVP site and MMTS for the current milestone period of FY 2012–2014 are listed in Table 5–1. Table 5–2 lists significant target dates and activities within the current CERCLA five-year review period (through June 2012). Table 5–3 and Table 5–4 list current guiding documents in effect. DOE prepares program directives (Table 5–4) to guide field and procedural activities that are beyond the routine work scope for OU III, as defined in the LTSM plan and the Post-ROD Monitoring Plan (see Section B1.1.3 in *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites*, June 20, 2007, Rev. 0).

Detailed listings of milestone and target date activities and documents related to the selection, implementation, and documentation of the remedies for the MVP site and MMTS were included as Table 5–2 and Table 5–3 in SMP revisions prior to the FY 2007 submittal. With the completion and documentation of remedial actions for the affected properties, many of which have been deleted from the NPL, and with the transition of the MVP site and MMTS to the DOE Office of Legacy Management for LTSM, the respective tables of historical activities and documentation, excepting OU III, are now omitted from the annual revisions of the SMP. A continued listing of pertinent OU III activities and documents is provided because investigation of certain components of the OU III remedy (biomonitoring, groundwater compliance) is ongoing and the restoration objectives for water quality have yet to be achieved.

Table 5–1. Penalty Milestones in FY 2012–2014

Milestones	Stipulated Penalty Dates
FY 2012 revision of Section 5.0 of Site Management Plan (draft)	August 1, 2012
FY 2013 revision of Section 5.0 of Site Management Plan (draft)	August 1, 2013
FY 2014 revision of Section 5.0 of Site Management Plan (draft)	August 1, 2014
FY 2012 Annual Site Inspection Report (draft-final)	December 31, 2012
FY 2013 Annual Site Inspection Report (draft-final)	December 31, 2013
FY 2014 Annual Site Inspection Report (draft-final)	December 31, 2014
CERCLA five-year review reports for MVP site and MMTS (draft-final)	June 30, 2012

Table 5–2. MMTS and MVP Targets

Activity/Document	Purpose	Target Date/Scope
Annual groundwater report	Evaluate water quality restoration progress. Document evaluation of contingency remedy through 2012.	September of each year.
PRB decommissioning	Remove PRB in accordance with a construction-design and compliance plan.	Target year 2013.
Biomonitoring	Evaluate selenium in abiotic and biotic media at OU III wetlands.	Determined by BTAG.
Semiannual FFA meeting	Review project status, goals, and schedule.	Spring and fall of each year.
FFA quarterly report	Summarize project scope, status, and schedule.	10th of January, April, July, and October.

Table 5–3. OU III Guiding Documents

Document	Milestone
RI Addendum/Focused FS	
Remedial Investigation Addendum/Focused Feasibility Study, Draft-Final	September 2, 2003
Surface Water/Groundwater Decision Documents	
ROD	June 2, 2004
ESD	Effective March 2009
MMTS OU III WQCS	December 2009
LTSM and Monitoring	
Draft-Final Post-ROD Monitoring Plan	August 27, 2004
LTSM Plan for the Monticello NPL Sites	Revision 0 issued June 25, 2007
MMTS OU III Analysis of Uranium Trends in Ground Water	August 16, 2007
CERCLA Reviews	
Third Five-Year Review Reports for Monticello Mill Tailings Site and Monticello Vicinity Properties Site	June 12, 2007

Table 5–4. MMTS OU III Program Directives in Effect

Program Directive Number	Description
MNT-2010-02	Revised ex situ treatment-system operating, monitoring, and reporting plan (supersedes MNT-2009-03).

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