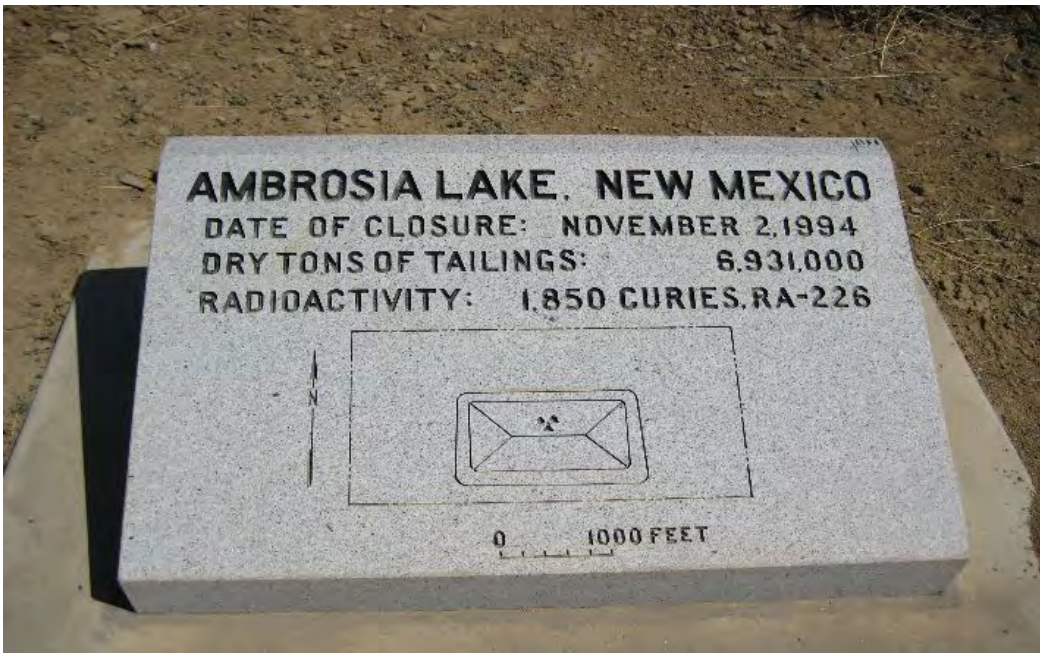
LMS/S05055



Office of Legacy Management
Facilities Information Management System

OSF Data Acquisition Report for the Ambrosia Lake, New Mexico, Disposal Site

Validated May 2009

U.S. DEPARTMENT OF ENERGY | Legacy Management

This page intentionally left blank

LMS/S05055

Office of Legacy Management
Facilities Information Management System

OSF Data Acquisition Report for the Ambrosia Lake, New Mexico, Disposal Site

Validated May 2009

This page intentionally left blank

Contents

1.0 Summary 1–1
1.1 Purpose 1–1
1.2 Assessment Methodology 1–1
1.3 Report Data 1–1
1.4 Costing 1–2
1.5 Safety Compliance 1–2
1.6 Conclusion 1–2
2.0 Description of Site 2–1
2.1 Site Description and History 2–1
2.2 Regulatory Setting 2–1
2.3 Disposal Site 2–1
2.4 Compliance Strategy 2–2
2.5 Disposal Cell Design 2–2
2.6 Property Assets for Assessment 2–2
3.0 FIMS Data Element Table 3–1
4.0 Summary of OSF Assessment 4–1
5.0 Backup Information 5–1
5.1 Maps and Drawings 5–1
5.2 Costing Methodology 5–3
5.2.1 RPV Cost Estimates 5–3
5.3 Deficiency/Deferred Maintenance Item Estimating 5–3
5.4 Data Analysis and Costing Spreadsheet 5–5
5.5 Supporting Photos 5–7
6.0 References 6–1
7.0 Abbreviations 7–1

Tables

Table 1–1. Summary of Findings 1–2
Table 2–1. Property Identification Table 2–3
Table 3–1. FIMS Data Element Table 3–2
Table 5–1. Data Analysis and Costing Spreadsheet Ambrosia Lake, New Mexico, Site 5–5

Appendix

Appendix A Assessment Guidance

This page intentionally left blank

1.0 Summary

This is the Ambrosia Lake, New Mexico, Disposal Site report for the Facilities Information Management System (FIMS) Data Acquisition Project. As part of the DE-AM01-07LM00060 contract, the U.S. Department of Energy (DOE) and S.M. Stoller Corporation (Stoller) tasked JG Management Systems, Inc. (JGMS), with performing asset condition assessments at DOE's Office of Legacy Management (LM) sites. These site assessments provide information for the evaluation and analysis of real property assets as well as for maintenance of the asset inventory records in FIMS.

1.1 Purpose

DOE Order 430.1B, *Real Property Asset Management*, requires programs to maintain a complete inventory of real property assets, which include buildings, trailers, and Other Structures and Facilities (OSF), and to perform a condition assessment on all assets every five years. The purpose of the current site assessments is to gather a complete inventory of OSF assets (real property improvements to land other than buildings, e.g., monitor wells, disposal cells, roads, and fences) and to perform condition assessments of each OSF asset. The assessments provide data for 15 inventory data element fields, such as acquisition date, replacement cost, deferred maintenance, and location. The accurate and complete data provided by these site condition assessments is critical to the success of LM's annual FIMS Data Validations.

1.2 Assessment Methodology

Stoller provided JGMS with general information regarding the Ambrosia Lake Site. Additional site information was acquired through a preliminary interview with the DOE and Stoller site leads. Two assessors, who are subject experts in the areas of facility and site systems, visited the site to assess, collect, and validate information relating to the OSF at the Ambrosia Lake Site.

The methodology the assessors used was based on the American Society for Testing and Materials (ASTM) International Standard Uniformat II Level 2 Checklist and related facility condition assessment tools. The general condition, specific measurements, and any deferred maintenance (DE) items or deficiencies (DI) were identified. The information collected using this methodology was compiled into a global data collection spreadsheet, which was further refined into the 15 data elements identified by the project Statement of Work. The FIMS Data Element Table (Table 3−1) in this report presents the data identified for those elements.

1.3 Report Data

Any necessary conversions, calculations, or coding of the information collected were completed in accordance with the FIMS Data Dictionary and the FIMS OSF Usage Codes to provide the information required by the FIMS Data Element Table and the data entry system. Any deferred maintenance items or deficiencies were put through cost estimation scenarios using the RS Means CostWorks 2007 program. The results are provided on the Data Analysis and Costing Spreadsheet (Table 5−1).

The assessment areas were photographed to produce a photo catalog reflecting the condition of the assets. These photos, as well as the site map, are included in Section 5, "Backup

Information," along with the Data Analysis and Costing Spreadsheet, to document existing conditions and quantities for the cost estimations.

1.4 Costing

According to the 2008 FIMS Source Documentation Worksheet, the Replacement Plant Value (RPV) for OSFs is acceptable in the form of a rough estimate from the site subject matter experts, an adjusted Current Plant Value, or RPV. Based on the April 23 Costing Directive from Stoller, it was determined that the Stoller subject matter experts would provide the RPV cost estimation for the disposal cell and monitoring well system for this site. RPV cost estimation for the monument markers was provided by JGMS using the RS Means CostWorks 2007 program.

1.5 Safety Compliance

Before conducting the site visits, the assessors completed the contractor-required training, which included General Employee Radiological Training, Site Emergency Preparedness/Building Warden Training, Defensive Driving, a review of the Stoller *Comprehensive Emergency Management System* (LMS/POL/S04326-2.0), and a review of the site-specific Job Safety Analysis.

1.6 Conclusion

In general, the Ambrosia Lake Site was found to be in very good condition. There were no deferred maintenance items and no deficient items to be reported. Table 1−1 shows a summary of the findings.

Table 1–1. Summary of Findings

Property ID	Description	Condition	Findings
AMB-DISPCELL	Disposal Cell	Very Good	None
AMB-MWS	Monitoring Well System	Good	None
AMB-SITEMARKER	Site Markers	Very Good	None

2.0 Description of Site[1]

2.1 Site Description and History

The Ambrosia Lake, New Mexico, Disposal Site is a former uranium-ore processing facility in McKinley County, approximately 25 miles north of Grants, New Mexico. The site is in the Ambrosia Lake Valley, a broad, elongate valley dominated by desert grassland plant communities and basalt-capped mesas to the north. The site is within the Ambrosia Lake Mining District, near the center of the Grants Mineral Belt. Decommissioned uranium mills, abandoned underground mines, mine shafts and vents, ore piles, tailings piles, and heap leach piles are close to the site. The area surrounding the mill site is sparsely populated.

The former mill processed more than 3 million tons of uranium ore between 1958 and 1963 and provided uranium for national defense programs. Phillips Petroleum Company built the original mill at the Ambrosia Lake Site in 1957 to process ore from nearby mines. United Nuclear Corporation purchased and operated the mill for a brief period in 1963, then ceased milling operations but retained ownership of the site. In the late 1970s to early 1980s, United Nuclear Corporation operated an ion exchange system, extracting uranium from mine water. All mill operations ceased in 1982, leaving radioactive mill tailings, a predominantly sandy material, on approximately 111 acres. Wind and water erosion spread some of the tailings across a 230-acre area.

DOE remediated the Ambrosia Lake Site and local contaminated vicinity properties between 1987 and 1995. Surface remediation consisted of consolidating and encapsulating all contaminated material on site in an engineered disposal cell. The disposal cell occupies 91 acres of a 356-acre tract of land.

2.2 Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act (UMTRCA) in 1978 (Public Law 95-604). DOE remediated these sites under the Uranium Mill Tailings Remedial Action Project in accordance with standards promulgated by the U.S. Environmental Protection Agency in Title 40 *Code of Federal Regulations* (CFR) Part 192 Subpart B, which required the cleanup of 24 inactive uranium-ore processing sites. This code also regulates cleanup of contaminated groundwater at the processing sites. The radioactive materials were encapsulated in U.S. Nuclear Regulatory Commission–approved disposal cells. The U.S. Nuclear Regulatory Commission general license for UMTRCA Title I sites is established in 10 CFR 40.27. The Ambrosia Lake Disposal Site was included under the general license in 1998.

2.3 Disposal Site

Construction of the disposal cell was completed in 1995. The cell contains 6.9 million dry tons (about 5.2 million cubic yards) of contaminated material with a total activity of 1,850 curies of radium-226. The uppermost aquifer beneath the site consists of alluvium (river deposits), sandstone, and weathered shale. The maximum thickness of the aquifer is approximately 175 feet

[1]LM (Office of Legacy Management), 2007b. *Ambrosia Lake, New Mexico, Disposal Site Fact Sheet*, available on the Internet at http://www.lm.doe.gov/Ambrosia/Documents.aspx, accessed May 2, 2008.

(ft); the maximum saturated thickness is 25 ft. This uppermost aquifer is not a current or potential source of drinking water because of low yield.

2.4 Compliance Strategy

The groundwater compliance strategy for the Ambrosia Lake Disposal Site is no remediation and the application of supplemental standards. Supplemental standards may be applied at UMTRCA sites where groundwater in the uppermost aquifer is classified as limited use because it meets any of several criteria. Groundwater at the Ambrosia Lake site meets the criterion of low yield, that is, the quantity of water reasonably available for sustained continuous use is less than 150 gallons per day (40 CFR 192.11[e]). Past milling operations, such as wastewater disposal and seepage from the tailings pile, supplied most of the water that recharged the aquifer. Those sources no longer exist, and the tailings and other contaminated materials are encapsulated in an engineered disposal cell. The alluvium is expected to return to the conditions of little to no saturation that prevailed before milling and mining began in the area. Because groundwater is not a present or potential resource, no monitoring is required at the site. However, at the request of the New Mexico Environment Department, DOE samples two monitor wells every 3 years to monitor cell performance.

2.5 Disposal Cell Design

The rectangular disposal cell measures approximately 2,500 ft by 1,600 ft, including the toe apron. The cell rises approximately 50 ft above the surrounding terrain. The cover of the Ambrosia Lake disposal cell is a multicomponent system designed to encapsulate and protect the contaminated materials. The disposal cell cover comprises (1) a low-permeability radon barrier (first layer placed over compacted tailings) consisting of compacted clay soil, (2) a bedding layer of granular bedding material, and (3) a rock (riprap) erosion protection layer for the top and side slopes. A rock apron of larger-diameter riprap surrounds the toe of the disposal cell. The ground immediately adjacent to the cell perimeter has been graded away from the cell to protect the site from storm water runoff. Disturbed areas have been successfully revegetated.

DOE manages the disposal site according to a site-specific Long-Term Surveillance Plan to ensure that the disposal cell systems continue to prevent release of contaminants to the environment. Under provisions of this plan, DOE conducts annual inspections of the site to evaluate the condition of surface features, performs site maintenance as necessary, and samples two monitor wells every 3 years. The encapsulated materials will remain potentially hazardous for thousands of years. In accordance with 40 CFR 192.32, the disposal cell is designed to be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years. However, the general license has no expiration date, and DOE's responsibility for the integrity of the disposal cell will last indefinitely.

2.6 Property Assets for Assessment

The disposal cell, monitoring well system, and site markers were the only features specifically identified for OSF assessment for this FIMS Data Acquisition Report.

Table 2–1. Property Identification Table

Ambrosia Lake, New Mexico, Disposal Site	
Other Structures and Facilities (OSF)	
Property ID	**Property Name**
AMB-DISPCELL	Disposal Cell
AMB-MWS	Monitoring Well System
AMB-SITEMARKER	Site Markers

This page intentionally left blank

3.0 FIMS Data Element Table

Table 3−1 contains assessment information from the data collection checklists and spreadsheets that pertain to the 15 contractor-required FIMS OSF data fields. Raw data conversion to meet FIMS data entry requirements was performed using the FIMS Data Dictionary, FIMS OSF Usage Codes, and RS Means CostWorks 2007.

Table 3–1. FIMS Data Element Table

No.	App.	Reference	Data Element	Disposal Cell	Monitoring Well System	Site Markers
		FIMS User Guide 2/25/08	**Property ID**	AMB-DISPCELL	AMB-MWS	AMB-SITEMARKER
1	O	Appendix A Page A-65; Appendix C OSF Usage Codes	Usage Code	4922	5007	2919
2	O	Appendix A Page A-19-21; Appendix E-4	Hazard Category	10-N/A	10-N/A	10-N/A
3	O	Appendix A Page A-49; *Costing Directive	RPV Cost	$26,331,162	$38,442	$9,360
4	O	Appendix A-66; For OSF= the older of the Construction or Acquisition dates	Year Acquired	1995	1988	1994
5	O	Appendix A-11; Appendix E-2-3	Deficiency Systems	None	None	None
6	O	Appendix A-42; Appendix C OSF Usage Codes	Primary Unit of Measure	Acres	Each	Each
7	O	Appendix A-41; Appendix C OSF Usage Codes	Primary Quantity	91	1	2
8	O	Appendix A-50; Appendix C OSF Usage Codes	Secondary Unit of Measure	None	None	None
9	O	Appendix A-50; Appendix C OSF Usage Codes	Secondary Quantity	0	0	0
10	O	Appendix A-13	Energy Consuming Buildings/Facilities.	0	0	0
11	O	Appendix A-13-14	Energy Consuming Metered Process (Excluded) Facilities.	0	0	0
12	O	Appendix A-28-29	Meters 1-4	None	None	None
13	O	Appendix A-10; RS Means CostWorks 2007	Deferred/Deficient Cost	$0	$0	$0
14	O	Appendix A-24; Project Schedule	Assessment Date	5/12/2008	5/12/2008	5/12/2008
15	O	Appendix A-41	Physical Barriers Preventing Assessment	No	No	No
		Property Type	**OSF**			
			Subject to Source Documentation			

* Costing Directive: RPV costs for disposal cells, wells, calibration models, lysimeters, weather stations, telemetry, permeable reactive barriers, entombed reactor cores, treatment systems, trench systems, and certain solar ponds and landfills provided by the Stoller SME. All other RPV costs calculated using RS Means CostWorks 2007.

4.0 Summary of OSF Assessment

Disposal Cell: AMB-DISPCELL ***See supporting photos in Section 5.5***

The basalt rock riprap erosion protection layer is 6 inches deep on the top of the cell (small riprap), 12 inches deep on the sides of the cell (medium riprap), and 3 ft deep on the toe apron of the cell (large riprap). All of the riprap is in excellent condition.

The sides and apron of the disposal cell are free from vegetation, and the top has only a few scattered clumps of shallow-rooted native grass that poses no threat to the integrity of the cell. There are no deep-rooted shrubs on the disposal cell, but there is evidence of previously cut and treated shrub stumps on the edge of the toe apron that show no signs of regrowth. Water marks were visible in one area on the south side of the toe apron, but no standing water was present at the time of the assessment. Desiccation cracks are present in the soil to the south side of the cell from runoff water but pose no threat to the disposal cell. Native grasses and shrubs grow directly outside the toe apron and in the surrounding site area and appear to be healthy.

The top of the disposal cell has eight settlement plates that are used to monitor the anticipated consolidation of the tailings. The settlement plates are located in different layers of the cell, and the settlement rods are encased in 8-inch-diameter steel pipe, 12 inches high and set on a concrete pad. The pipe is covered with a steel cap and locked shut. All eight settlement plate steel pipe covers/caps have surface rust, but because of the thick gauge of the steel used in their construction, it is not deemed to be a problem now or in the future. A shallow depression to the riprap around settlement plate SP-4 on the northwest side of the cell was repaired in August 2005, and no further settling is evident. Overall, the Ambrosia Lake disposal cell is in very good condition with no evidence of cracking, settling, slumping, or erosion.

Monitoring Well System: AMB-MWS ***See supporting photos in Section 5.5***

The monitoring well system consists of two individual monitoring wells located on the northeast and southeast corners of the disposal cell. Both wells are within the site boundary. Both wells have 4-inch-diameter casings and are enclosed in 6-inch steel casings. Well depths are 35 ft and 263 ft below ground surface. Well 0678 is adjacent to the northeast corner of the disposal cell and was installed in 1989. Well 0675 is adjacent to the south side of the disposal cell near perimeter sign P56 and was installed in 1988. The monitoring well system is in good condition.

Site Markers: AMB-SITEMARKER ***See supporting photos in Section 5.5***

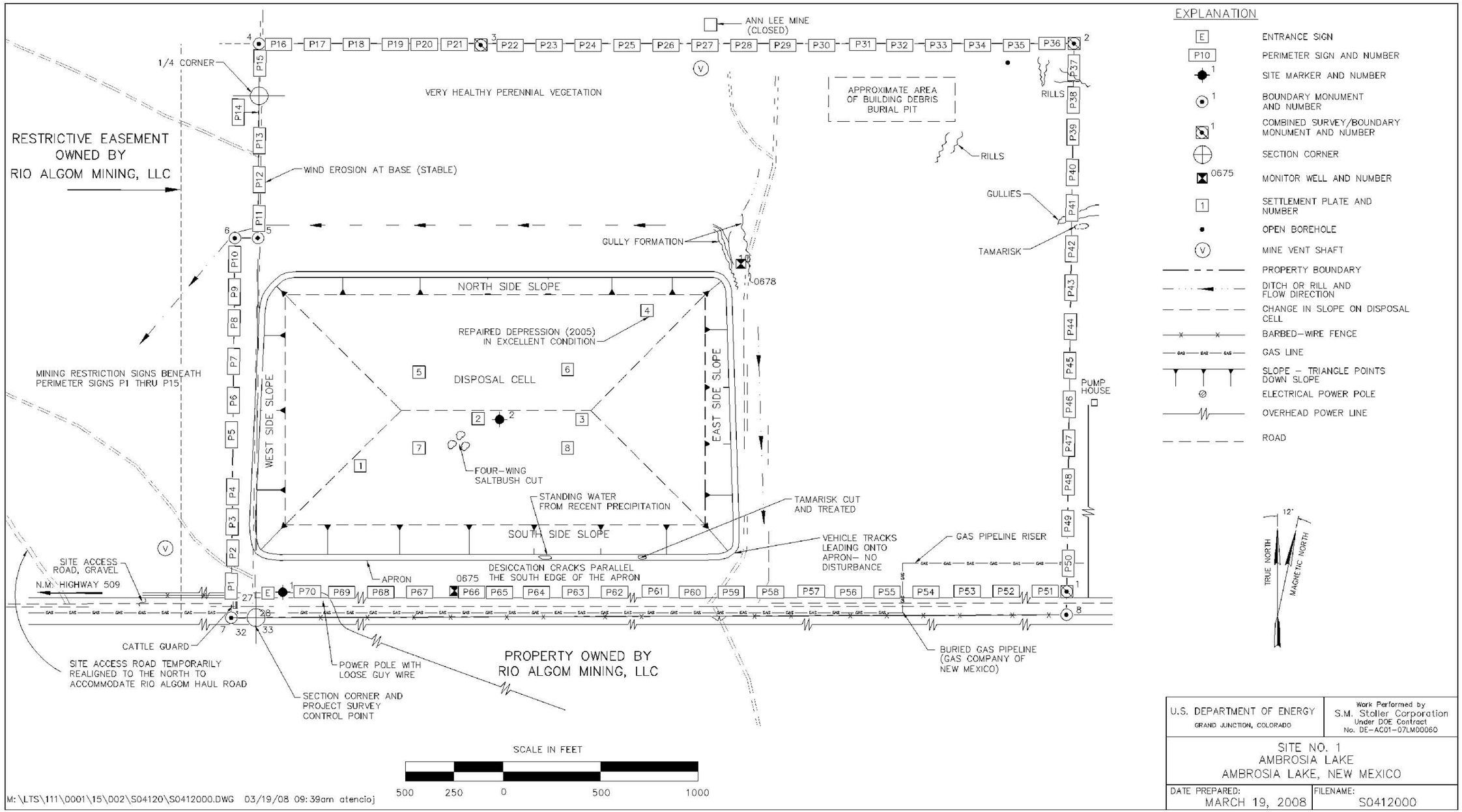
The site has two granite site markers set on concrete pads. Marker SMK-1 is located along the perimeter southern boundary in the southwest corner of the DOE property. Marker SMK-2 is located on the top of the disposal cell. Both site markers are in very good condition and contain the following information:

Ambrosia Lake, New Mexico
Date of closure: November 12, 1994
Dry tons of tailings: 6,931,000
Radioactivity: 1,850 curies Ra-226

This page intentionally left blank

5.0 Backup Information

5.1 Maps and Drawings



This page intentionally left blank

5.2 Costing Methodology

The following presents the methodology used to estimate the RPV and deficiency cost estimates for LM sites in the FIMS database. Generally, most of the RPV estimates are based on published unit prices. In contrast, most of the deficiencies and deferred maintenance cost estimates are based on professional judgment.

5.2.1 RPV Cost Estimates

Most of the RPV costs are based on published unit price (mostly from RS Means CostWorks 2007). The following provides details on how the RPV costs are estimated.

- Unit prices are mostly taken from RS Means CostWorks 2007 Construction Costs database for the systems described in the spreadsheets. This sometimes involves having to interpolate between the listed unit prices. For example, to determine a representative price for a 7-ft fence, it is necessary to interpolate between the listed prices for 6-ft and 8-ft fences. Page number references are listed on the spreadsheet where appropriate.
- All prices include the overhead and profit markup.
- A 20 percent markup is applied to the unit price for:
  - General condition items such as site pick-ups, cleanup, safety equipment, cell phones, small tools, and portable toilets.
  - Typically higher cost for government work.
- The selected unit price is then multiplied by the listed quantity on the spreadsheet to derive the RPV cost estimate.

For difficult-to-price systems that are not in RS Means CostWorks 2007, the following sources and approach are used:

- Prices from potential vendors (obtained mostly from the Internet).
- Prices taken from other projects (preferably DOE or other government projects).
- For large, one-of-a-kind systems (such as the borehole calibration models at the Grand Junction Site), the cost estimates are built up from typical daily rates for work crews, assumed productivity rates, and common material prices. In addition, for the borehole calibration model example, a placeholder was assumed for the enrichment zone material since the pricing is highly dependent on variables such as the material specifications (not available), the hazards associated with developing this material, and the difficulty of obtaining the base ingredients.

5.3 Deficiency/Deferred Maintenance Item Estimating

Typically, most items do not have standard published costs since many are based on site-specific factors and situations. To estimate the deficiency and deferred maintenance cost, the following approach was used:

- Examine photos and the other information provided to gain an understanding of what is needed to accomplish the repair, the size of the job, and site-specific difficulties.
- Based on this information, determine how a typical contractor would complete the job.

- Estimate the crew and equipment needed to complete the work, typical hourly rates, and labor hours needed to correct the deficiency.
- Estimate materials and supplies needed and obtain unit prices, mostly from published databases such as RS Means CostWorks 2007.
- Assess whether mobilization or other special costs should be included.
- Multiply the above unit prices by the quantity estimates to derive the overall cost.

5.4 Data Analysis and Costing Spreadsheet

Table 5–1. Data Analysis and Costing Spreadsheet
Ambrosia Lake, New Mexico, Site

Property ID	Discipline	FIMS Alternate Name/ID #	Level 2 Description	Item Description	Location	Sub Location	Latitude/Northern GPS	Longitude/Eastern GPS	Deferred/Deficient Code	Condition	Criticality	Unit Measure	No. Units	Photo Code	Manufacturer Name	Model Number	Voltage	PH	HZ	BTU/BTH	Tons	RPMS	Amps	Motor Size	Install Year	Replace Year	Years Deficient	Years Deferred	Useful Life	Yrs. Remaining	Unit Cost [1]	SF / LF PRICE[1]	Deficiency Cost [1]	Deferred Cost[1]	RPV Cost[1]	RS Means CostWorks 2007 Notes	Remarks
AMB-DISPCELL	Site		Site Development	Disposal Cell (2,360 Ft. x 1,560 Ft.)	Ambrosia Lake, NM	25 miles NW of Grants, NM	35 24' 31.75"N	107 48' 00.12"W		2-Above Average	4-Critical	Acre	91	AMB-DISPCELL.Disposal Cell.G.1, AMB-DISPCELL.Disposal Cell SE corner.G.1, AMB-DISPCELL.Disposal Cell NE corner.G.1, AMB-DISPCELL.Disposal Cell NW corner.G.1, AMB-DISPCELL.Disposal Cell SW corner.G.1, AMB-DISPCELL.Disposal Cell top.G.1, AMB-DISPCELL.Grass clump cell top.G.1												1995	2995			1000	987					$26,331,162.00		The 91-acre disposal cell measures 2,360 ft. x 1,560 ft. and rises 50 ft. above the surrounding ground level. The basalt riprap erosion layer covering the top, sides and toe apron is in very good condition with only a few scattered clumps of shallow root native grass present which do not compromise the integrity of the disposal cell. There are no deep rooted shrubs on the disposal cell but there is evidence of previously cut and treated shrub stumps on the edge of the toe apron that show no signs of re-growth. There was no evidence of cracking, settling, slumping or erosion. All eight settlement plate steel pipe covers/caps have surface rust but because of the thick gauge of the steel used in their construction it is not deemed to be a problem now or in the long term. RPV provided by SM Stoller SME.
																																$0.00	**$0.00**	**$26,331,162.00**		
AMB-MWS	Site		Site Development	Monitoring Well System, consisting of 2 monitoring wells.	Ambrosia Lake, NM	25 miles North of Grants, NM				3-Average	4-Critical	System	1	AMB-MW.#675.G.1, AMB-MW.#675.DE.1																						
AMB-MW	Site		Site Development	Monitoring Well - 0675, 4" Dia casing.	Ambrosia Lake, NM	25 miles North of Grants, NM	1603182.54 N	509915.9 E		3-Average	4-Critical	Lin. Ft.	35	AMB-MW.#675.G.1, AMB-MW.#675.DE.1											1988	2038			50	30	$129.00	$129.00			$4,515.00		Generally, the monitoring wells are in good condition. RPV provided by SM Stoller SME.
AMB-MW	Site		Site Development	Monitoring Well - 0678, 4" Dia casing.	Ambrosia Lake, NM	25 miles North of Grants, NM	1604864.86 N	511385.93 E		3-Average	4-Critical	Lin. Ft.	263	AMB-MW.#678.G.1, AMB-MW.#678.DE.1											1989	2039			50	31	$129.00	$129.00			$33,927.00		Generally, the monitoring wells are in good condition. RPV provided by SM Stoller SME.
																																$0.00	**$0.00**	**$38,442.00**		
AMB-SITEMARKER	Site		Site Development	Site Marker	Ambrosia Lake, NM	25 miles NW of Grants, NM	35 24' 31.75"N	107 48' 00.12"W		2-Above Average	1-Low	Each	2	AMB-SITEMARKER.marker.G.1, AMB-SITEMARKER.marker.G.2, AMB-DISPCELL.Site marker SMK-2.G.1											1994	2044			50	36	$4,680.00				$9,360.00	Calculate replacement plant value (RPV). RPV Cost - $3,000 for marker (price from internet for similar grave stones), $400 for small concrete pad, and $500 for setting marker. Assume letter information is provided.	There are two granite site monument markers set on concrete pads at the disposal cell site. Marker SMK-1 is located along the perimeter boundary in the southwest corner of the DOE property. Marker SMK-2 is located on the top of the disposal cell. Both site markers are in very good condition.
																																$0.00	**$0.00**	**$9,360.00**		
				Note 1: 20% added to unit price (10% for general condition items and 10% for government premium)																										**Grand Totals**		**$0.00**	**$0.00**	**$26,378,964.00**		

This page intentionally left blank

5.5 Supporting Photos

Disposal Cell: AMB-DISPCELL

AMB-DISPCELL.Disposal Cell NE corner.G.1.jpg

AMB-DISPCELL.Disposal Cell NW corner.G.1.jpg

AMB-DISPCELL.Disposal Cell SE corner.G.1.jpg

AMB-DISPCELL.Disposal Cell SW corner.G.1.jpg

AMB-DISPCELL.Disposal Cell.G.1.jpg

AMB-DISPCELL -Grass clump cell top.G.1.jpg

AMB-DISPCELL.Disposal Cell top.G.1.jpg

Monitoring Well System: AMB-MWS

AMB-MW.#675.G.1.jpg	AMB-MW#675.DE.1.jpg
AMB-MW.#678.G.1.jpg	AMB-MW#678.DE.1.jpg

Site Markers: AMB-SITEMARKER

AMB-SITEMARKER.Marker.G.1.jpg	AMB-SITEMARKER.Marker.G.2.jpg
AMB-DISPCELL.Site marker SMK-2.G.1.jpg	

6.0 References

ASTM (American Society for Testing and Materials), 1997. *Standard Classification for Building Elements and Related Sitework*, UNIFORMAT II, E1557, Level 2, "Group Elements."

DOE Order 430.1B, *Real Property Asset Management*, Chg 1, February 28, 2008.

LM (Office of Legacy Management), 2007a. *2007 UMTRCA Title I Annual Report, Ambrosia Lake, New Mexico*, available on the Internet at http://www.lm.doe.gov/Ambrosia/Documents.aspx, accessed May 5, 2008.

LM (Office of Legacy Management), 2007b. *Ambrosia Lake, New Mexico, Disposal Site Fact Sheet*, available on the Internet at http://www.lm.doe.gov/Ambrosia/Documents.aspx, accessed May 2, 2008.

LM (Office of Legacy Management), 1996. *Long-Term Surveillance Plan for the Ambrosia Lake, New Mexico, Disposal Site*, available on the Internet at http://www.lm.doe.gov/Ambrosia/Documents.aspx, accessed May 5, 2008.

This page intentionally left blank

7.0 Abbreviations

ASTM	American Society for Testing and Materials
CFR	*Code of Federal Regulations*
DE	deferred maintenance
DI	deficiency
DOE	U.S. Department of Energy
FIMS	Facilities Information Management System
ft	foot/feet
JGMS	JG Management Systems, Inc.
LM	Office of Legacy Management
OSF	Other Structures and Facilities
RPV	Replacement Plant Value
Stoller	S.M. Stoller Corporation
UMTRCA	Uranium Mill Tailings Radiation Control Act

This page intentionally left blank

Appendix A

Assessment Guidance

This page intentionally left blank

The following guidance was provided to JGMS for the FIMS Data Acquisition Project. These references are industry standards according to ASTM, International Facilities Management Association, and DOE Order 430.1B. Specific management guidance from DOE was also included.

Condition and Criticality Codes

Field Discipline	Systems/Components Covered	Level 3 Description	Level 4 Description	Common Useful Life	Typical Criticality
Architectural	All Suspended Ceiling Tiles (ACT or VCT)	Ceiling Finishes	Suspended Ceilings	10	2 - Medium
Architectural	Metal Overhead Roll-up Doors (include frame and hardware)	Exterior Doors	Overhead Doors	30	3 - High
Architectural	Doors, Exterior: Hollow/Solid and Meta/Wood (include frame and hardware)	Exterior Doors	Other Doors & Entrances	40	4 - Critical
Architectural	Exterior Wall Construction: CMU, Face Brick/stone (Veneer), Stucco, Metal/wood studs, Vinyl/Metal Siding/Paneling	Exterior Walls	Exterior Wall Construction	60	2 - Medium
Architectural	All Windows (does not include skylights - See L4-Glazed Roof Openings)	Exterior Windows	Windows	40	4 - Critical
Architectural	Toilet Rm Paritions: Baked Enamel Metal or Plastic Laminate	Fittings	Fabricated Toilet Partitions	25	3 - High
Architectural	Steel Structural Frame, Corrugated Metal Decking with Concrete and I-beams	Floor Construction	Upper Floors Construction	75	4 - Critical
Architectural	Elevated steel grating and balconies (catwalks)	Floor Construction	Balcony Floors Construction	40	3 - High
Architectural	Ramps: Concrete/Steel/Metal	Floor Construction	Ramps	25	1 - Low
Architectural	Flooring: Ceramic/Vinyl/Wood/Concrete	Floor Finishes	Flooring	25	3 - High
Architectural	Interior Carpeting	Floor Finishes	Carpeting	12	3 - High
Architectural	Doors, Interior: Hollow/Solid, Meta/Wood, Roll-up, Swinging (include frame and hardware)	Interior Doors	Interior Doors	40/30	2 - Medium
Architectural	Interior Walls (Drywall/Gypsum Board/Concrete/Brick/CMU/Glass)	Partitions	Fixed Partitions	25	2 - Medium
Architectural	Exterior Stairs: Concrete or Steel	Pedestrian Paving	Exterior Steps	60	4 - Critical
Architectural	Roof Finishes: Built-up (Felt-ply, EPDM, etc), All Types of shingle roofing	Roof Coverings	Roof Finishes	20	4 - Critical
Architectural	Gutters and Downspouts	Roof Coverings	Gutters and Downspouts	20	4 - Critical
Architectural	Exterior/Roof Flashing and Trim	Roof Coverings	Flashings and Trim	20	2 - Medium
Architectural	Skylights	Roof Openings	Glazed Roof Openings	40	4 - Critical
Architectural	Slab on Grade Foundation	Slab on Grade	Standard Slab on Grade	50	4 - Critical
Architectural	Modular Trailers, Steel or Fiberglass Containers, Butler Type Building Construction, Pre-Fab Sheds/Storage	Special Structures	Pre-Engineered Structures	40	4 - Critical
Architectural	Interior Stairs: Concrete or Steel	Stair Construction	Regular Stairs	50	4 - Critical
Architectural	Foundation Walls	Standard Foundations	Wall Foundations	150	4 - Critical
Architectural	Concrete Column / Floor Structure	Standard Foundations	Column Foundations & Pile Caps	75	4 - Critical
Architectural	Fire Extinguishers (See L4-Fire Extinguisher Cabinets for Fire Extinguisher Cabinets)	Fire Protection Specialties	Fire Extinguishers	15	4 - Critical
Architectural	Flat Roof Construction: Reinforced Concrete Roofs, Steel beams with metal decking roofs	Roof Construction	Flat Roof Construction	75	4 - Critical
Architectural	Pitched Roof Construction: Reinforced Concrete Roofs, Steel beams with metal decking roofs	Roof Construction	Pitched Roof Construction	75	4 - Critical
Architectural	Steel, concrete loading dock-type canopies	Roof Construction	Canopies	25	1 - Low
Architectural	Roof ladders, catwalks	Roof Construction	Other Roof Systems	40	2 - Medium

Field Discipline	Systems/Components Covered	Level 3 Description	Level 4 Description	Common Useful Life	Typical Criticality
Mechanical	Louvers (include motorized dampers, no EF's - see L3 Distribution Systems)	Exterior Walls	Exterior Louvers, Screens, and Fencing	15	3 - High
Mechanical	Roof Vents (not louvers or exhaust fans)	Roof Openings	Gravity Roof Ventilators	40	2 - Medium
Mechanical	Air Compressors (include tanks), Air Dryers, Air Separators	Other Equipment	Other Equipment	30	3 - High
Mechanical	Toilets	Plumbing Fixtures	Water Closets	35	3 - High
Mechanical	Urinals	Plumbing Fixtures	Urinals	35	3 - High
Mechanical	Sinks (not mop sinks - see below)	Plumbing Fixtures	Lavatories	35	3 - High
Mechanical	Mop Sinks	Plumbing Fixtures	Sinks	35	1 - Low
Mechanical	Showers (only prefab shower stalls)	Plumbing Fixtures	Showers	35	1 - Low
Mechanical	Drinking Fountains	Plumbing Fixtures	Drinking Fountains and Coolers	20	1 - Low
Mechanical	Wet Fire Sprinkler: Piping, Sprinkler Heads, Pumps	Sprinklers	Sprinkler Water Supply	40/30/20	4 - Critical
Mechanical	Dry Fire Sprinkler: Piping, Sprinkler heads, Tanks	Sprinklers	Dry Sprinkler System	40/30/30	4 - Critical
Mechanical	Air Handling Units - AHU (CW/DX/HW/Electric)	Controls & Instrumentation	Heating/Cooling Air Handling Units	20	4 - Critical
Mechanical	Cooling Towers	Cooling Distribution	Cooling Towers On Site	15	4 - Critical
Mechanical	Heat Pumps and Condensing Units (or Condensers)	Cooling Generating Systems	Direct Expansion Systems	20	4 - Critical
Mechanical	Chillers, Chilled Water Pumps, Chilled Water storage tanks, Chiller bypass/holding/surge tanks	Cooling Generating Systems	Chilled Water Systems	20/20/30	4 - Critical
Mechanical	Exhaust Fans (includes bathroom exhaust fans)	Distribution Systems	Exhaust Ventilation Systems	20	3 - High
Mechanical	Ductwork, Diffusers, Grilles, Stand-alone Supply Air Fans	Distribution Systems	Air Distribution Systems	40/20/20	4 - Critical
Mechanical	CW, HW, Steam (Piping) Distribution Systems: See L3 Distribution Systems	Distribution Systems	Varies	35	2 - Medium
Mechanical	Freight Elevators (Use L4-Passenger Elevators if appropriate)	Elevators & Lifts	Freight Elevators	20	4 - Critical
Mechanical	Hot Water Heaters, Hot Water Pumps, Boiler Expansion Tanks, Hot Water Storage tanks	Energy Supply	Hot Water Supply System	20/20/30	2 - Medium
Mechanical	Fuel Storage Tanks, Fuel Systems (eg: Emergency Generator fuel)	Energy Supply	Gas Supply System	20	2 - Medium
Mechanical	Boilers	Heat Generating Systems	Boilers	25	4 - Critical
Mechanical	Air Curtains	Other HVAC Systems & Equipment	Air Curtains	20	1 - Low
Mechanical	Unit Heaters, FCUs, Convectors/induction units, Humidifiers and Dehumidifiers	Terminal & Package Units	Terminal Self-Contained Units	20	4 - Critical
Mechanical	Dock Levelers, dock seals (weatherstripping), Fixed Hydraulic or Pnuematic Lifts	Vehicular Equipment	Loading Dock Equipment	20/10/20	4 - Critical

Field Discipline	Systems/Components Covered	Level 3 Description	Level 4 Description	Common Useful Life	Typical Criticality
Electrical	Fire alarms, pull stations, strobes, smoke detectors	Communications & Security	Fire Alarm Systems	10	4 - Critical
Electrical	Transformers, High Tension Service Feeds or lines, Switchgear	Electrical Service & Distribution	High Tension Service & Dist.	20	4 - Critical
Electrical	Circuit Breaker Panels, Cut-Off Switches	Electrical Service & Distribution	Low Tension Service & Dist.	20	4 - Critical
Electrical	Electrical Outlets and Switches	Lighting & Branch Wiring	Branch Wiring Devices	20	3 - High
Electrical	Lights: Interior and Exterior	Lighting & Branch Wiring	Lighting Equipment	20	4 - Critical
Electrical	Emergency Lights, Emergency Power Backup (UPS only - see generators below)	Other Electrical System	Emergency Lighting & Power Systems	10	3 - High
Electrical	Lightning Protection/Grounding Protection	Other Electrical System	Grounding Systems	30	2 - Medium
Electrical	Emergency Power Generator (For Fuel Storage Tanks see Mech discipline)	Other Site Electrical Utilities	Site Emergency Power Generation	25	4 - Critical

Field Discipline	Systems/Components Covered	Level 3 Description	Level 4 Description	Common Useful Life	Typical Criticality
Site	Storm Sewer Manholes: Concrete, All Others	Storm Sewer	Manholes (Storm Sewer)	40	4 - Critical
Site	All Landscaping: Trees, Grass, Flowers, Etc.	Landscaping	Other Landscape Features	20	1 - Low
Site	Parking Lot Paving: Asphalt, Concrete	Parking Lots	Paving and Surfacing	15/25	2 - Medium
Site	Parking Lot Curb and Gutter: Asphalt, Concrete	Parking Lots	Curbs, Rails and Barriers	10/20	4 - Critical
Site	Parking Lot Signage	Parking Lots	Markings and Signage	10	1 - Low
Site	Pedestrian Paving: Concrete, Asphalt	Pedestrian Paving	Paving and Surfacing	25/15	3 - High
Site	Roadway Paving: Asphalt, Concrete	Roadways	Paving and Surfacing	25	3 - High
Site	Roadways Curb and Gutter: Concrete, Asphalt	Roadways	Curbs, Rails and Barriers	10/20	3 - High
Site	Roadway Signage	Roadways	Markings and Signage	10	1 - Low
Site	Signage: Other Site Related Signage	Site Development	Signage	20	1 - Low
Site	Fences and Gates: Chainlink, Metal, Other	Site Development	Fences & Gates	25	4 - Critical
Site	Storm Sewer Piping: Concrete, Metal, All Others	Storm Sewer	Piping (Storm Sewer)	30	3 - High

Criticality

The criticality rating is the primary criterion for project prioritization. This is a rating, from 1 to 4, of deficiency criticality to the DOE function. Items with a high criticality are integral to the DOE mission, life safety, and operational capabilities. High-criticality items typically include structural items, panel boards, air conditioners, lights, fire alarm, floors, loading docks and equipment, telephone, and OSF and their associated components. Low-criticality items are those that are needed in the building but are not crucial to DOE daily tasks. JGMS will work with DOE to more accurately define this scale to reflect their needs. Table A−1 below lists the definitions of the criticality timeline scale.

Table A−1. Criticality

Criticality Code	Definition
1—Low	Storage, closets, appearance[a]
2—Medium	Minor functionality, office space
3—High	Major functionality, minor structural, special equipment, production
4—Critical	Major structural, life safety, security, mission

[a] Although deficiencies of appearance typically are not critical, sometimes areas viewed by customers will require a higher priority to address customer satisfaction.

Deficiency Category

Deficiency categories classify the type of deficiency for a particular system. This category reference is meaningful in helping to evaluate prioritization and also is informative when looking at summary results of the assessment process.

- Appearance: Items that affect the appearance but have no effect on the operational or functional capability of the building.
- Code Compliance: Noncompliance with current building, mechanical, and electrical codes (International Building Code, International Mechanical Code, International Electrical Code). This category is used only to denote serious and obvious code compliance issues in the field.
- Energy: Conditions that affect the energy consumption or use of the building (e.g., lack of insulation, single-pane windows).
- Functional Capability: Problems that affect local functional use of the space but do not affect the operational capability or integrity of the building (e.g., damaged thermostats, broken electrical outlets, or obsolete equipment).
- Life Safety: Serious or obvious noncompliance with current federal life safety codes (National Fire Protection Association).
- Operational Capability: Problems that affect the capability of the building to operate, (e.g., leaking roof, structural damage, insufficient electrical load levels, damaged mechanical equipment, or inadequate capacities).

Deficiency Descriptions

Enter a written description of deficiencies for a system into the Deficiency Description field. The assessor will generate the description on the basis of all of the collected data for the system. The deficiency description will document existing conditions of the system and its components and provide an accurate cost estimate. Additional deficiency information should be included in the Notes field.

Note: Digital photos are required for all noted deficiencies.

Deferred Maintenance Descriptions

The Federal Accounting Standards Advisory Board recommends accounting principles for the federal government. The Federal Accounting Standards Advisory Board Statement of Federal Financial Accounting Standards No. 6 defines deferred maintenance as maintenance that was not performed when it should have been or was scheduled to be performed, but was put off or rescheduled for a future period.

Calculation of Deferred Maintenance

Trained condition assessment engineers with experience performing asset condition assessments for DOE, National Nuclear Security Administration, the Postal Service, and other government agencies are used to assess LM real property assets. The assessments are performed consistent with the minimum assessment criteria set forth by Office of Engineering and Construction Management in DOE O 430.1B, *Real Property Asset Management*.

Deferred Maintenance Examples

Examples of deferred maintenance include peeling paint, rust, a leaking pipe, cracked or uneven concrete or asphalt.

Analysis

Office of Engineering and Construction Management expects to find deferred maintenance and will question the lack of deferred maintenance in FIMS. Maintenance can be deferred for budgetary reasons, for operational reasons, and because it has not yet reached a condition in which the deferred maintenance will negatively affect the expected life of the asset.

Deferred Maintenance Correction

A site manager can make the decision that a deferred maintenance is not affecting the operational condition of the asset, is not affecting the anticipated mission life of the asset, or is not cost effective to perform.

This page intentionally left blank