

**Appendix A**  
**Cost Estimates**

## **Appendix B**

**MDNR  
10 CSR 80, Chapter 11**

**Table A**

**AmerenUE - Power Plant Ash Disposal  
Preliminary Landfill Development Costs  
Quantity Estimates**

June 8, 2004

	<u>Annual Production</u> <u>Tons</u>	<u>Cubic Yards*</u>	<u>20 Year Production</u> <u>Cubic Yards*</u>
<b><u>Labadie Power Plant:</u></b>			
Flyash	350,000		
Scrubber Sludge	70,000		
Bottom Ash	150,000		
Total Ash Disposed	570,000	704,000	14,100,000
		Intermediate Cover**	0
	<b>TOTAL VOLUME LANDFILLED</b>		<b>14,100,000</b>
<b><u>Rush Island Power Plant:</u></b>			
Flyash	180,000		
Scrubber Sludge	70,000		
Bottom Ash	80,000		
Total Ash Disposed	330,000	408,000	8,200,000
		Intermediate Cover**	0
	<b>TOTAL VOLUME LANDFILLED</b>		<b>8,200,000</b>
<b><u>Meramec Power Plant:</u></b>			
Flyash	135,000		
Scrubber Sludge	5,000		
Bottom Ash	35,000		
Total Ash Disposed	175,000	217,000	4,400,000
		Intermediate Cover**	0
	<b>TOTAL VOLUME LANDFILLED</b>		<b>4,400,000</b>
<b><u>Sioux Power Plant:</u></b>			
Flyash	70,000		
Scrubber Sludge	70,000		
Bottom Ash	110,000		
Total Ash Disposed	250,000	309,000	6,200,000
		Intermediate Cover**	0
	<b>TOTAL VOLUME LANDFILLED</b>		<b>6,200,000</b>
<b><u>TOTAL - (All 4 Plants):</u></b>			
Flyash	735,000		
Scrubber Sludge	215,000		
Bottom Ash	375,000		
Total Ash Disposed	1,325,000	1,636,000	32,800,000
		Total Intermediate Cover	0
	<b>TOTAL VOLUME LANDFILLED</b>		<b>32,800,000</b>

\* Assumes average in-situ ash density of 60 lbs/cuft

\*\* We assumed that intermediate cover would not be required due to cementitious nature of ash

**Table B**

**AmerenUE - Power Plant Ash Disposal  
Preliminary Landfill Development Costs  
Cost Estimate  
June 8, 2004**

Power Plant	Quantity Landfilled (tons)		Present Value Costs*							Cost per Ton** of Material Landfilled	Cost per Ton** of Material Landfilled w/contingencies
	Annual	Total (20 Years)	Total Site Development	Annual Operating	Site Closure	Post Closure	Total	Potential Cost Additions			
<b><u>Labadie:</u></b>											
Pit Quarry Landfill	570,000	11,400,000	\$6,484,000	\$17,671,414	\$240,079	\$3,311,298	\$27,706,790	\$7,652,552	\$2.43	\$3.10	
Above Grade Landfill	570,000	11,400,000	\$11,142,000	\$17,671,414	\$533,676	\$3,311,298	\$32,658,387	\$1,108,809	\$2.86	\$2.96	
<b><u>Rush Island:</u></b>											
Pit Quarry Landfill	330,000	6,600,000	\$4,508,000	\$10,318,710	\$139,826	\$1,925,719	\$16,892,255	\$5,092,317	\$2.56	\$3.33	
Above Grade Landfill	330,000	6,600,000	\$7,526,000	\$10,318,710	\$364,452	\$1,925,719	\$20,134,881	\$711,944	\$3.05	\$3.16	
<b><u>Meramec:</u></b>											
Pit Quarry Landfill	175,000	3,500,000	\$5,615,000	\$5,583,070	\$75,001	\$1,033,313	\$12,306,384	\$3,262,611	\$3.52	\$4.45	
Above Grade Landfill	175,000	3,500,000	\$12,651,000	\$5,583,070	\$246,863	\$1,033,313	\$19,514,246	\$394,226	\$5.58	\$5.69	
<b><u>Sioux:</u></b>											
Pit Quarry Landfill	250,000	5,000,000	\$3,629,000	\$7,826,268	\$105,906	\$1,456,032	\$13,017,206	\$4,155,311	\$2.60	\$3.43	
Above Grade Landfill	250,000	5,000,000	\$5,752,000	\$7,826,268	\$304,150	\$1,456,032	\$15,338,449	\$567,596	\$3.07	\$3.18	
<b><u>4 Plants Combined:</u></b>											
Pit Quarry Landfill	1,325,000	26,500,000	\$12,383,000	\$40,975,748	\$559,304	\$7,702,877	\$61,620,928	\$14,967,268	\$2.33	\$2.89	
Above Grade Landfill	1,325,000	26,500,000	\$21,987,000	\$40,975,748	\$1,042,099	\$7,702,877	\$71,707,724	\$2,321,262	\$2.71	\$2.79	

\* Future Costs are discounted assuming an average annual interest rate of 5%

\*\* Does not include transportation costs

**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
March 2, 2004

**Labadie Power Plant - Landfill in Abandoned Quarry**

Total Ash Storage Required (CY) 14,100,000

**Landfill Dimensions:**

Height (feet): 150  
Length & Width (feet): 1,593  
Approximate Footprint (acres): 58  
Approximate Property Required (acres): 74

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$10,000.00	Acres	74	\$739,000	
Site Clearing	\$500.00	Acres	58	\$30,000	
General Site Preparation (Grading)	\$2,000.00	Acre	58	\$117,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	6,480	\$195,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	6,560	\$164,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	188,000	\$564,000	
Side Liner: 10 Ft. wide compacted clay (on-site soils)	\$3.00	Cubic Yard	354,074	\$1,063,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	2,538,000	\$2,538,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				Total Development Costs	\$6,484,000
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	705,000	\$1,410,000	
				Annual Operating Cost	\$1,418,000
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	94,000	\$282,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	94,000	\$282,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	58	\$73,000	
				Total Closure Costs	\$637,000
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	14,100,000	\$705,000	
				Annual Post-Closure Cost	\$705,000
<b><u>Potential Cost Additions</u></b>					
<b><u>Import Off-Site Soils for:</u></b>					
Bottom Liner	\$10.00	Cubic Yard	188,000	\$1,880,000	
Side Liner	\$10.00	Cubic Yard	354,074	\$3,541,000	
Final Cover	\$10.00	Cubic Yard	94,000	\$940,000	
Final Cover Topsoil	\$10.00	Cubic Yard	94,000	\$940,000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	2,538,000	\$1,523,000	
				Total Potential Extra Costs	\$8,824,000

**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
March 2, 2004

**Labadie Power Plant - Landfill Above Grade**

Total Ash Storage Required (CY) 14,100,000

**Landfill Dimensions:**

Height Above Natural Grade (feet): 100  
Depth Below Natural Grade (feet): 10  
Length & Width at Top (feet): 1,412  
Approximate Footprint (acres): 112  
Approximate Property Required (acres): 184 Includes 50 acres for stockpile  
Borrow Created by Excavation (cubic yards): 1,760,000

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$10,000.00	Acres	184	\$1,844,000	
Site Clearing	\$500.00	Acres	112	\$57,000	
Excavate/Stockpile Excess Soil (Grading)	\$2.00	Cubic Yard	979,111	\$1,959,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	8,940	\$269,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	9,020	\$226,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	363,185	\$1,090,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	4,623,000	\$4,623,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				Total Development Costs	\$11,142,000
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	705,000	\$1,410,000	
				Annual Operating Cost	\$1,418,000
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	208,852	\$627,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	208,852	\$627,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	129	\$162,000	
				Total Closure Costs	\$1,416,000
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	14,100,000	\$705,000	
				Annual Post-Closure Cost	\$705,000
<b><u>Potential Cost Additions</u></b>					
<b><u>Off-Site Soils required (Cubic Yards):</u></b>					
Total Soil Required	780,889				
Total Soil Excavated for UWL Development	1,760,000				
	-979,111	Excess Cut			
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	4,903,000	\$2,942,000	
				Total Potential Extra Costs	\$2,942,000

**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
March 2, 2004

**Rush Island Power Plant - Landfill in Abandoned Quarry**

Total Ash Storage Required (CY)      8,200,000

**Landfill Dimensions:**

Height (feet): 150  
Length & Width (feet): 1,215  
Approximate Footprint (acres): 34  
Approximate Property Required (acres): 46

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$10,000.00	Acres	46	\$460,000	
Site Clearing	\$500.00	Acres	34	\$17,000	
General Site Preparation (Grading)	\$2,000.00	Acre	34	\$68,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	4,960	\$149,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	5,040	\$126,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	109,333	\$328,000	
Side Liner: 10 Ft. wide compacted clay (on-site soils)	\$3.00	Cubic Yard	270,000	\$810,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	1,476,000	\$1,476,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
Total Development Costs					\$4,508,000
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	410,000	\$820,000	
Annual Operating Cost					\$828,000
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	54,667	\$164,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	54,667	\$164,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	34	\$43,000	
Total Closure Costs					\$371,000
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	8,200,000	\$410,000	
Annual Post-Closure Cost					\$410,000
<b><u>Potential Cost Additions</u></b>					
<u>Import Off-Site Soils for:</u>					
Bottom Liner	\$10.00	Cubic Yard	109,333	\$1,094,000	
Side Liner	\$10.00	Cubic Yard	270,000	\$2,700,000	
Final Cover	\$10.00	Cubic Yard	54,667	\$547,000	
Final Cover Topsoil	\$10.00	Cubic Yard	54,667	\$547,000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	1,476,000	\$886,000	
Total Potential Extra Costs					\$5,774,000

**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
March 2, 2004

**Rush Island Power Plant - Landfill Above Grade**

Total Ash Storage Required (CY) 8,200,000

**Landfill Dimensions:**

Height Above Natural Grade (feet): 100  
Depth Below Natural Grade (feet): 10  
Length & Width at Top (feet): 965  
Approximate Footprint (acres): 72  
Approximate Property Required (acres): 119 Includes 30 acres for stockpile  
Borrow Created by Excavation (cubic yards): 1,120,000

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$10,000.00	Acres	119	\$1,191,000	
Site Clearing	\$500.00	Acres	72	\$36,000	
Excavate/Stockpile Excess Soil (Grading)	\$2.00	Cubic Yard	601,000	\$1,202,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	7,160	\$215,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	7,260	\$182,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	234,000	\$702,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	2,924,000	\$2,924,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				<b>Total Development Costs</b>	<b>\$7,526,000</b>
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	410,000	\$820,000	
				<b>Annual Operating Cost</b>	<b>\$828,000</b>
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	142,593	\$428,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	142,593	\$428,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	88	\$111,000	
				<b>Total Closure Costs</b>	<b>\$967,000</b>
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	8,200,000	\$410,000	
				<b>Annual Post-Closure Cost</b>	<b>\$410,000</b>
<b><u>Potential Cost Additions</u></b>					
<b><u>Off-Site Soils required (Cubic Yards):</u></b>					
Total Soil Required	519,185				
Total Soil Excavated for UWL Development	<u>1,120,000</u>				
	-600,815	Excess Cut			
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	3,148,000	\$1,889,000	
				<b>Total Potential Extra Costs</b>	<b>\$1,889,000</b>



**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
 March 2, 2004

**Sioux Power Plant - Landfill in Abandoned Quarry**

Total Ash Storage Required (CY)      6,200,000

**Landfill Dimensions:**

Height (feet): 150  
 Length & Width (feet): 1,056  
 Approximate Footprint (acres): 26  
 Approximate Property Required (acres): 36

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$5,000.00	Acres	36	\$182,000	
Site Clearing	\$500.00	Acres	26	\$13,000	
General Site Preparation (Grading)	\$2,000.00	Acre	26	\$52,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	4,320	\$130,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	4,400	\$110,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	82,593	\$248,000	
Side Liner: 10 Ft. wide compacted clay (on-site soils)	\$3.00	Cubic Yard	234,815	\$705,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	1,115,000	\$1,115,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				Total Development Costs	\$3,629,000
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	310,000	\$620,000	
				Annual Operating Cost	\$628,000
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	41,296	\$124,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	41,296	\$124,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	26	\$33,000	
				Total Closure Costs	\$281,000
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	6,200,000	\$310,000	
				Annual Post-Closure Cost	\$310,000
<b><u>Potential Cost Additions</u></b>					
<b><u>Import Off-Site Soils for:</u></b>					
Bottom Liner	\$10.00	Cubic Yard	82,593	\$826,000	
Side Liner	\$10.00	Cubic Yard	234,815	\$2,349,000	
Final Cover	\$10.00	Cubic Yard	41,296	\$413,000	
Final Cover Topsoil	\$10.00	Cubic Yard	41,296	\$413,000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	1,115,000	\$669,000	
				Total Potential Extra Costs	\$4,670,000

**AmerenUE - Power Plant Ash Disposal  
Preliminary Landfill Development Costs**  
March 2, 2004

**Sioux Power Plant - Landfill Above Grade**

Total Ash Storage Required (CY)      6,200,000

**Landfill Dimensions:**  
 Height Above Natural Grade (feet): 100  
 Depth Below Natural Grade (feet): 10  
 Length & Width at Top (feet): 775  
 Approximate Footprint (acres): 57  
 Approximate Property Required (acres): 103      Includes 30 acres for stockpile  
 Borrow Created by Excavation (cubic yards): 880,000

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$5,000.00	Acres	103	\$514,000	
Site Clearing	\$500.00	Acres	57	\$29,000	
Excavate/Stockpile Excess Soil (Grading)	\$2.00	Cubic Yard	458,000	\$912,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	6,400	\$192,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	6,500	\$163,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	186,000	\$558,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	2,310,000	\$2,310,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
Total Development Costs					<u>\$5,752,000</u>
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	310,000	\$620,000	
Annual Operating Cost					<u>\$628,000</u>
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	118,778	\$357,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	118,778	\$357,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	74	\$93,000	
Total Closure Costs					<u>\$807,000</u>
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	6,200,000	\$310,000	
Annual Post-Closure Cost					<u>\$310,000</u>
<b><u>Potential Cost Additions</u></b>					
<b><u>Off-Site Soils required (Cubic Yards):</u></b>					
Total Soil Required	423,556				
Total Soil Excavated for UWL Development	<u>880,000</u>				
	-456,444	Excess Cut			
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	2,510,000	\$1,506,000	
Total Potential Extra Costs					<u>\$1,506,000</u>

**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
March 2, 2004

**Meramec Power Plant - Landfill in Abandoned Quarry**

Total Ash Storage Required (CY)      4,400,000

**Landfill Dimensions:**

Height (feet): 150  
Length & Width (feet): 890  
Approximate Footprint (acres): 18  
Approximate Property Required (acres): 27

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$100,000.00	Acres	27	\$2,728,000	
Site Clearing	\$500.00	Acres	18	\$10,000	
General Site Preparation (Grading)	\$2,000.00	Acre	18	\$37,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	3,660	\$110,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	3,740	\$94,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	58,667	\$176,000	
Side Liner: 10 Ft. wide compacted clay (on-site soils)	\$3.00	Cubic Yard	197,778	\$594,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	792,000	\$792,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				Total Development Costs	\$5,615,000
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	220,000	\$440,000	
				Annual Operating Cost	\$448,000
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	29,333	\$88,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	29,333	\$88,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	18	\$23,000	
				Total Closure Costs	\$199,000
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	4,400,000	\$220,000	
				Annual Post-Closure Cost	\$220,000
<b><u>Potential Cost Additions</u></b>					
<b><u>Import Off-Site Soils for:</u></b>					
Bottom Liner	\$10.00	Cubic Yard	58,667	\$587,000	
Side Liner	\$10.00	Cubic Yard	197,778	\$1,978,000	
Final Cover	\$10.00	Cubic Yard	29,333	\$294,000	
Final Cover Topsoil	\$10.00	Cubic Yard	29,333	\$294,000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	792,000	\$476,000	
				Total Potential Extra Costs	\$3,629,000

**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
March 2, 2004

**Meramec Power Plant - Landfill Above Grade**

Total Ash Storage Required (CY) 4,400,000

**Landfill Dimensions:**

Height Above Natural Grade (feet): 100  
Depth Below Natural Grade (feet): 10  
Length & Width at Top (feet): 575  
Approximate Footprint (acres): 44  
Approximate Property Required (acres): 82 Includes 25 acres for stockpile  
Borrow Created by Excavation (cubic yards): 670,000

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$100,000.00	Acres	82	\$8,231,000	
Site Clearing	\$500.00	Acres	44	\$22,000	
Excavate/Stockpile Excess Soil (Grading)	\$2.00	Cubic Yard	335,000	\$670,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	5,600	\$168,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	5,700	\$143,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	142,000	\$426,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	1,917,000	\$1,917,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				Total Development Costs	\$12,651,000
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	220,000	\$440,000	
				Annual Operating Cost	\$448,000
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	96,556	\$290,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	96,556	\$290,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	60	\$75,000	
				Total Closure Costs	\$655,000
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	4,400,000	\$220,000	
				Annual Post-Closure Cost	\$220,000
<b><u>Potential Cost Additions</u></b>					
<b><u>Off-Site Soils required (Cubic Yards):</u></b>					
Total Soil Required	335,111				
Total Soil Excavated for UWL Development	670,000				
	-334,889	Excess Cut			
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	1,742,000	\$1,046,000	
				Total Potential Extra Costs	\$1,046,000

**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
 March 2, 2004

**Combined Power Plants (4) - Landfill in Abandoned Quarry**

Total Ash Storage Required (CY) 32,800,000

**Landfill Dimensions:**

Height (feet): 150  
 Length & Width (feet): 2,430  
 Approximate Footprint (acres): 136  
 Approximate Property Required (acres): 159

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$10,000.00	Acres	159	\$1,588,000	
Site Clearing	\$500.00	Acres	136	\$68,000	
General Site Preparation (Grading)	\$2,000.00	Acre	136	\$272,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	9,820	\$295,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	9,900	\$248,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	437,407	\$1,313,000	
Side Liner: 10 Ft. wide compacted clay (on-site soils)	\$3.00	Cubic Yard	540,000	\$1,620,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	5,905,000	\$5,905,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				Total Development Costs	\$12,383,000
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	1,640,000	\$3,280,000	
				Annual Operating Cost	\$3,288,000
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	218,704	\$657,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	218,704	\$657,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	136	\$170,000	
				Total Closure Costs	\$1,484,000
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	32,800,000	\$1,640,000	
				Annual Post-Closure Cost	\$1,640,000
<b><u>Potential Cost Additions</u></b>					
<b><u>Import Off-Site Soils for:</u></b>					
Bottom Liner	\$10.00	Cubic Yard	437,407	\$4,375,000	
Side Liner	\$10.00	Cubic Yard	540,000	\$5,400,000	
Final Cover	\$10.00	Cubic Yard	218,704	\$2,188,000	
Final Cover Topsoil	\$10.00	Cubic Yard	218,704	\$2,188,000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	5,905,000	\$3,543,000	
				Total Potential Extra Costs	\$17,694,000

**AmerenUE - Power Plant Ash Disposal**  
**Preliminary Landfill Development Costs**  
March 2, 2004

**Combined Power Plants (4) - Landfill Above Grade**

Total Ash Storage Required (CY) 32,800,000

**Landfill Dimensions:**

Height Above Natural Grade (feet): 100  
Depth Below Natural Grade (feet): 10  
Length & Width at Top (feet): 2,395  
Approximate Footprint (acres): 235  
Approximate Property Required (acres): 365 Includes 100 acres for stockpile  
Borrow Created by Excavation (cubic yards): 3,720,000

ITEM	2004 UNIT COST	UNIT TYPE	QUANTITY	EXTENDED COST	SUBTOTAL
<b><u>Entire Site Development Cost</u></b>					
Site Purchase Cost	\$10,000.00	Acres	365	\$3,654,000	
Site Clearing	\$500.00	Acres	235	\$118,000	
Excavate/Stockpile Excess Soil (Grading)	\$2.00	Cubic Yard	2,143,000	\$4,286,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	12,900	\$387,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	12,980	\$325,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site soils)	\$3.00	Cubic Yard	761,000	\$2,283,000	
Leachate Drainage Blanket or 1-foot Rock Drainage Layer	\$1.00	Square Foot	9,860,000	\$9,860,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				Total Development Costs	\$21,987,000
<b><u>Annual Operating Costs</u></b>					
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	1,640,000	\$3,280,000	
				Annual Operating Cost	\$3,288,000
<b><u>Site Closure Costs</u></b>					
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	407,926	\$1,224,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	407,926	\$1,224,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	253	\$317,000	
				Total Closure Costs	\$2,765,000
<b><u>Post-Closure Costs</u></b>					
Post Closure Operations for 20 years	\$0.05	per CY LF Matl/year	32,800,000	\$1,640,000	
				Annual Post-Closure Cost	\$1,640,000
<b><u>Potential Cost Additions</u></b>					
<b><u>Off-Site Soils required (Cubic Yards):</u></b>					
Total Soil Required	1,576,852				
Total Soil Excavated for UWL Development	3,720,000				
	-2,143,148	Excess Cut			
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	10,265,000	\$6,159,000	
				Total Potential Extra Costs	\$6,159,000