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Summary

The reclamation bond estimate for Belle Ayr Mine has been revised based on aerial topography and mapping as of September, 2017. A revised interim post-mining topography (PMT) design was developed based on a projection of the mining operation for the period of time from the mapping through the end of 2018. The interim PMT was designed to minimize the borrow area for backfill and the disturbance of lands that are in permanent reclamation. Truck shovel equipment, consistent with current practices in the Powder River Basin of Wyoming, has been applied for the majority of borrow excavation and removal of overburden stockpiles. In addition, dozers and scrapers are used in appropriate areas. Other tasks such as topsoil handling, demolition of infrastructure and facilities, and overhead and profit items have been updated based on current site conditions.

The following report includes tables, maps and supporting appendices for the 2018 Belle Ayr Mine Annual Report Bond.

The total bond estimate for this report period, as detailed in Table 1, is $118,147,500.

Introduction

This estimate of the cost for reclamation of Belle Ayr Mine has been prepared according to the Wyoming State Department of Environmental Quality, Land Quality Division Guideline 12, Standardized Reclamation Performance Bond Format and Cost Calculation Methods dated February 2017.

This estimate is in the suggested format of Guideline 12 and includes text describing steps of reclamation, equipment selected, estimated costs, and other miscellaneous items. Detailed cost information and tables are included. Maps showing the December 2018 projected pit configuration, bond reclamation topography, cut/fill thickness and locations, and other important information to support the cost estimate are also provided. The following sections include a discussion on area bond, incremental bond, and miscellaneous items.

Bond Calculation

Table 1 provides the Reclamation Bond Summary. The table includes a breakdown of the Area Bond and the Incremental Bond; in addition to contingencies and the large shovel purchase price. All additional individual tables provide backup and support to Table 1.

Area Bond

To determine the worst-case condition for calculating the reclamation bond, the projected mine plan and related production schedules for the period through December 2018 were compared with the November 2017 pit configuration. This comparison indicates that the worst-case conditions will occur in December 2018, at the end of the period. This topography is shown on Map 4, *2018 Bond Mine Operation Projection.*

The design of the bond reclamation topography considered existing land status as shown on *the Annual Report Land Status Map.* The interim PMT design for the bond topography is shown on Bond Map 1, *2018 Bond Post Mining Topography.* This map is used to determine the extent and location of cut and fill material needed to achieve the final graded surface. Cut and fill thicknesses are shown on Map 2, *2018 Bond Area Cut and Fill Thickness.* Topsoil distribution and locations of permanently reclaimed areas are shown on Map 3, *2018 Bond Topsoil Distribution.*

Backfill

The most significant portion of bond reclamation cost consists of excavation of borrow material and removal of overburden stockpiles for backfilling the existing pits to a surface elevation that achieves drainage from the site. The locations of

borrow material and overburden stockpiles, along with the primary excavation method details, are shown on Map 2.

Backfill placement will be completed by three primary methods depending on location and configuration of the excavation. These methods include dozers, truck/shovel, and scrapers.

Production dozing is planned for the area adjacent to the pit excavation. Truck/shovel excavation and backfilling will be used to excavate material for backfilling the adjacent pit. Scrapers (657 class units) are utilized in a push-pull configuration to excavate and backfill miscellaneous areas around the mine facilities and associated infrastructure and final grading.

Productivity and operating costs for the 80-cubic yard class shovel are described in Appendix D1 of Guideline 12. Capital cost for purchase of this shovel is not included in the operating cost category. As agreed upon in previously approved bonds, Belle Ayr would transport the shovel purchased from the Eagle Butte Mine's Bond and is shown as a single unit cost in a separate line item in Table 1.

Tables 2 and 3 provide a detailed account of each haul route including volumes, distances, grades and unit costs. Table 2 focuses on native borrow area material movement of both topsoil and overburden. Table 3 addresses other material movements and backfilling details. Table 4 provides a summary of excavation areas in addition to the final grading costs.

Blasting costs are included for native overburden that is moved by either by dozer or by truck/shovel. These costs are also addressed in Tables 2 and 3. Belle Ayr drill and blast personnel maintain that material less than 20' in height cannot be efficiently blasted with typical minesite equipment due to limitations with stemming and safety concerns. Furthermore, the first 20 feet of the uppermost 60-foot bench in all borrow areas has been blasted with a reduced powder factor and associated unit cost that is 60% of the normal cost as discussed with LQD staff. These areas are generally weathered and tend to dig easily with less blasting. In addition, the borrow areas are presumed to be quite sandy.

Native Topsoil Removal from Borrow Areas

Topsoil to be removed from the borrow areas and topsoil projected to be removed during the upcoming period is addressed in Table 18. These topsoil removal areas are documented on maps 3 and 4, respectively.

Rough Grade Backfill

Experience at the mine has shown that dozers, scrapers, and trucks are all capable of placing the backfill to the desired elevation, so rough grading of the backfill is not necessary.

Final Grade Backfill
Final grading will be done in preparation for placement of topsoil. As described in Appendix G of Guideline 12, a 16M motor grader would be used for this task. The cost is addressed in Table 4.

Incremental Bond

Overburden Redistribution from Facilities and Infrastructure
Minor quantities of overburden will be removed and used to establish final graded surfaces for sites that require removal of hydrologic structures, culverts, and access and haulage roads. Table 5 shows overburden redistribution areas, and volume calculations.

Hydrologic structures that will be replaced include Caballo Creek alluvial valley floor (AVF), Duck Nest AVF, Bone Pile AVF, Caballo Creek pools and runs outside of the AVFs, Caballo Creek pools and runs within the AVFs and Caballo Lake. These items have been evaluated in previous bond estimates. Results of these estimates are included in this estimate as the locations and extent of each are the same as those used in previous estimates and are shown in Table 23.

Demolition
Demolition/removal costs for fences, power lines, hard surfaced roads, bridges, culverts, railroads, buildings, material handling facilities and support facilities are all summarized on Table 6. Demolition of facilities and removal of infrastructure items would be completed at the end of reclamation operations. Note that although removal of power lines is addressed in Table 6, no net demolition cost is included in the bond. All power lines owned by PREC are assumed to remain in place. For all other power lines, it is assumed that salvage value of the materials from the dismantled power lines will more than cover the cost of demolition. Also, note there are currently no bridges scheduled for reclamation.

A tabulation of all existing culverts is provided on Table 7. Demolition/removal quantities for the buildings, materials handling facilities and support facilities are presented in Tables 8, 9 and 10, respectively. All demolition/removal quantity estimates are calculated by using the demolition costs specified in the appropriate appendix of DEQ Guideline 12. For buildings, materials handling and support facilities, this extension is carried out in Tables 8, 9 and 10 respectively, and the resulting costs are brought forward to Table 6. For the other facilities, the application of DEQ Guideline 12 unit costs to the estimated demolition/removal quantities is carried out directly on Table 6.

Demolition costs for the overland conveyor and near-pit truck dump facility that have been constructed at the mine were originally added to the 2008 bond. These costs continue to be shown in Table 9. As with previous bonds, facilities that will not be removed include a reclamation building and approximately five

miles of access road. The costs for demolition of facilities have been re-calculated based on current Guideline 12 values.

Other Miscellaneous Items
Costs for completing various reclamation tasks on environmental monitoring infrastructure and coal exploration drill holes planned for the upcoming year are summarized in Table 11. Where appropriate the costs are calculated using the applicable appendix of DEQ Guideline 12.

Table 12 provides details on reclaiming monitoring wells and coal exploration drill holes while Table 13 includes costs for other wells owned by the operator. Table 14 contains costs for dewatering wells. Surface water monitoring stations are shown on Table 15 while meteorological and air quality monitoring sites are provided on Table 16.

Scarification or Ripping of All Compacted Surfaces
Scarification of all the excavation borrow and backfilled surface following construction to the bond topography will be required to provide a surface suitable for placement of topsoil, as described in Appendix P of Guideline 12. Table 17, provides the details.

Topsoil Redistribution on All Disturbed Areas
Topsoil resources are currently in stockpile to cover all disturbed lands not currently in permanent reclamation. In addition, topsoil will be removed from virgin areas used for borrow of backfill material. Topsoil will be either direct placed or removed from stockpile and hauled to a prepared area for replacement. The total volume of topsoil to be redistributed and the methods utilized are shown in Table 18.

Scrapers, truck/shovel and dozers are used for topsoil handling. The mine has successfully used truck/shovel equipment to remove topsoil from stockpiles to graded areas in the past; this equipment is efficient when loading from large stockpiles. A minor amount of stockpiled topsoil will be redistributed with dozers for small stockpiles that are located next to distribution areas.

Costs for truck shovel operations handling topsoil have been increased based on LQD required 115% multiplier over normal unit costs. This increase is to account for increased shovel maneuvering caused by the pile configurations and reduced face height that is anticipated to be encountered.

Revegetation of All Disturbed Areas
All areas that will be disturbed during bond reclamation activities will be revegetated. The estimated revegetation cost per acre is based on LQD costs.

Revegetation and Reclamation Reserve (Carryover)
Tables 20 and 21 provide details on revegetation and reclamation carryover. As required by Guideline 12, lands that have been topsoiled and seeded but have no bond release are bonded for retopsoiling, scarification, and revegetation. This also applies to land that has topsoil placed but not permanently seeded.

Coal Drilling
Costs for coal exploration drill holes are shown with the environmental monitoring cost line items in Other Miscellaneous Items above.

Direct Costs

Direct costs are those costs of bond reclamation which would be incurred by actual site work that a contracted firm would complete. The categories described above for area bond and incremental bond provide estimates of all direct costs that would be associated with carrying out the general reclamation activities on the site.

Miscellaneous Items

Several miscellaneous items that are in addition to direct costs described above will be part of the overall project costs. These costs include project design, contractor profit and related overhead costs, pre-construction investigation, project management, site monitoring, site security, and long-term administration costs. Each of these costs are addressed based on Guideline 12 and are shown on Table 22.

Purchase Price – 80 cy Shovel

Guideline 12 bond cost estimating format requires adding a line item for a shovel used for borrow excavation. This cost is addressed in Table 1. As agreed upon in previously approved bonds, Belle Ayr would transport the shovel purchased from the Eagle Butte Mine's Bond

Total Bond Cost Estimate

The Total Bond Cost Estimate provided in Table 1 reflects a total of direct costs and indirect costs, including contractor profit, overhead, and mobilization for completing all reclamation activities to establish a surface configuration as shown on Map 1.

TABLE 1
Belle Ayr Mine - Reclamation Bond Summary
January 1, 2018 to January 1, 2019 Bond Period

		Estimated Costs for Current Report Period
I. AREA BOND		
Backfill		$42,559,500
Rough Grade Backfill		$0
Final Grade Backfill		$216,600
Native Topsoil Removal		$1,277,175
Native Overburden Removal		$31,993,727
	Area Bond Subtotal	$76,047,000
II. INCREMENTAL BOND		
Overburden Redistribution		$48,891
Stream & Lake Reconstruction		$1,863,782
Demolition		$4,424,786
Removal of Monitoring Structures		$141,159
Scarification of All Compacted Surfaces		$221,231
Topsoil Redistribution on All Disturbed Areas		$5,302,250
Revegetation of All Disturbed Areas		$2,864,600
Reclamation Status of All Disturbed Lands		$2,623,651
Reclamation of Exploratory Drill Holes		$0
	Incremental Subtotal	$17,490,300
	Area and Incremental Total	$93,537,300
Contingencies:		
Miscellaneous Items (Table 22)		$18,088,308
Unknown Costs (5% - Guideline 12)		$4,676,900
Rounding Amount		$492
	Contingencies Subtotal	$22,765,700
O. Transporting of 80 CY Shovel from Eagle Butte		$1,844,500
RECLAMATION BOND TOTAL		$118,147,500

Table 2
Area Bond - Summary of Material Movements and Backfilling Costs
Native Overburden (Borrow Areas) Removal

Route ID (Map 3)	Equipment Operation	Volume (kCY)	Swell Factor (%)	Volume (kLCY)	Haul Distance (ft)	Grade (%)	Unit Cost ($/Unit)	(Units)	(Source)	Unit Drill & Blast Cost ($/BCY)	Total Cost
STD-3	Carry Dozer	118	14%	135	120	-17.3%	$0.1280	LCY	App. F1	$0.190	$40,000
STD-4	Carry Dozer	182	14%	208	297	-12.0%	$0.3056	LCY	App. F1	$0.190	$98,000
STD-5	Carry Dozer	629	14%	717	315	-9.4%	$0.3378	LCY	App. F1	$0.190	$362,000
STD-6	Carry Dozer	384	14%	438	299	-7.8%	$0.3302	LCY	App. F1	$0.190	$218,000
STD-7	Carry Dozer	676	14%	771	319	-10.2%	$0.3377	LCY	App. F1	$0.190	$389,000
STD-8	Carry Dozer	171	14%	195	328	-9.1%	$0.3550	LCY	App. F1	$0.190	$102,000
STD-9	Carry Dozer	94	14%	107	276	-3.7%	$0.3355	LCY	App. F1	$0.190	$54,000
STD-10	Carry Dozer	60	14%	68	377	-1.0%	$0.4679	LCY	App. F1	$0.190	$43,000
STD-11	Carry Dozer	375	14%	428	500	-5.0%	$0.5488	LCY	App. F1	$0.190	$306,000
STD-14	Carry Dozer	134	14%	153	146	-19.8%	$0.1431	LCY	App. F1	$0.190	$47,000
STD-15	Carry Dozer	431	14%	491	283	-19.0%	$0.2645	LCY	App. F1	$0.190	$212,000
STD-20	Carry Dozer	9	14%	10	108	-14.6%	$0.1232	LCY	App. F1	$0.190	$3,000
STD-24	Carry Dozer	27	14%	31	162	-9.9%	$0.1824	LCY	App. F1	$0.190	$11,000
STD-25	Carry Dozer	19	14%	22	188	-10.1%	$0.2077	LCY	App. F1	$0.190	$8,000
STD-26	Carry Dozer	49	14%	56	94	-17.1%	$0.1080	LCY	App. F1	$0.190	$15,000
STD-54	Truck/Shovel	48,267	14%	55,024	2,887	-1.5%	$0.4792	BCY	App. D1	$0.190	$32,302,000
	Subtotal:	51,626		58,854						Subtotal	$34,210,000
										Less Cost of Blasting Not Needed in Weathered Zone, see below	$2,216,273
										Total	$31,993,727

Total Area of Borrow (Table 4)	603	acres
Unit Cost, Blasting cost in weathered zone (60% of normal)	$0.1140	$/bcy
Depth of Weathered Zone	20.0	feet
Volume in Weathered zone	19,440,989	bcy
Less Cost of Blasting in Weathered zone	$2,216,273	bcy

Volume by Equipment:			
	Carry Dozer	3,360	kBCY
	Dozer	-	kBCY
	Truck/Shovel	48,267	kBCY
	Scraper	-	kBCY

Project Life:			
	Truck/Shovel Adjusted Rate:	5,865	BCY/HR
	Annual Production:	49,970	kBCY
	Life of Project:	1.0	Years

Notes: Locations of the individual Cut and Fill Polygons within the Area Bond Line are presented on Map 3.
The column heading labeled "Source" provides the reference to the appropriate Appendix for each operation.
Normal blasting cost in the weathered zone has been reduced as discussed with LQD staff due to stemming requirements and the uppermost 60 foot bench requiring a lower powder factor.
All costs were obtained of the February, 2017 WDEQ-LQD Bond Calculation package (Guideline 12).

Table 3
Area Bond - Summary of Material Movements and Backfilling Costs
Spoil Material

Route ID (Map 3)	Equipment Operation	Volume (kCY)	Swell Factor (%)	Volume (kLCY)	Haul Distance (ft)	Grade (%)	Unit Cost ($/Unit)	(Units)	(Source)	Unit Drill & Blast Cost ($/BCY)	Total Cost
STD-1	Carry Dozer	157	0%	157	147	-2.8%	$0.1913	LCY	App. F1	$0.000	$30,000
STD-2	Carry Dozer	75	0%	75	137	-20.0%	$0.1356	LCY	App. F1	$0.000	$10,000
STD-12	Carry Dozer	22	0%	22	227	-1.9%	$0.2912	LCY	App. F1	$0.000	$6,000
STD-13	Carry Dozer	77	0%	77	431	-1.5%	$0.5235	LCY	App. F1	$0.000	$40,000
STD-16	Dozer	33	0%	33	24	-20.0%	$0.0736	LCY	App. F	$0.000	$2,000
STD-17	Carry Dozer	91	0%	91	139	-20.0%	$0.1371	LCY	App. F1	$0.000	$12,000
STD-18	Carry Dozer	13	0%	13	137	-3.0%	$0.1802	LCY	App. F1	$0.000	$2,000
STD-19	Dozer	26	0%	26	38	-20.0%	$0.0736	LCY	App. F	$0.000	$2,000
STD-21	Carry Dozer	5	0%	5	93	-13.4%	$0.1135	LCY	App. F1	$0.000	$1,000
STD-22	Carry Dozer	10	0%	10	188	0.2%	$0.2510	LCY	App. F1	$0.000	$3,000
STD-23	Carry Dozer	17	0%	17	122	-7.4%	$0.1522	LCY	App. F1	$0.000	$3,000
STD-27	Carry Dozer	4	0%	4	101	-10.5%	$0.1246	LCY	App. F1	$0.000	$500
STD-28	Carry Dozer	60	0%	60	138	-15.9%	$0.1458	LCY	App. F1	$0.000	$9,000
STD-29	Carry Dozer	63	0%	63	151	-11.1%	$0.1683	LCY	App. F1	$0.000	$11,000
STD-30	Carry Dozer	94	0%	94	301	-1.6%	$0.3718	LCY	App. F1	$0.000	$35,000
STD-31	Carry Dozer	69	0%	69	174	-7.5%	$0.2036	LCY	App. F1	$0.000	$14,000
STD-32	Carry Dozer	51	0%	51	214	-5.1%	$0.2588	LCY	App. F1	$0.000	$13,000
STD-33	Carry Dozer	51	0%	51	239	-5.2%	$0.2897	LCY	App. F1	$0.000	$15,000
STD-34	Carry Dozer	336	0%	336	198	-20.0%	$0.1868	LCY	App. F1	$0.000	$63,000
STD-35	Carry Dozer	216	0%	216	183	-20.0%	$0.1740	LCY	App. F1	$0.000	$38,000
STD-36	Carry Dozer	70	0%	70	234	-20.0%	$0.2218	LCY	App. F1	$0.000	$16,000
STD-37	Scraper	10	0%	10	536	-10.0%	$0.6437	BCY	App. B	$0.000	$6,000
STD-38	Carry Dozer	100	0%	100	261	1.3%	$0.3573	LCY	App. F1	$0.000	$36,000
STD-39	Truck/Shovel	135	0%	135	536	0.1%	$0.3948	BCY	App. D1	$0.000	$53,000
STD-40	Truck/Shovel	245	0%	245	1,198	-1.2%	$0.4195	BCY	App. D1	$0.000	$103,000
STD-41	Truck/Shovel	104	0%	104	686	-1.0%	$0.4002	BCY	App. D1	$0.000	$42,000
STD-42	Truck/Shovel	108	0%	108	828	-0.5%	$0.4059	BCY	App. D1	$0.000	$44,000
STD-43	Carry Dozer	107	0%	107	390	-3.4%	$0.4610	LCY	App. F1	$0.000	$49,000
STD-44	Truck/Shovel	275	0%	275	549	-1.9%	$0.3947	BCY	App. D1	$0.000	$109,000
STD-45	Truck/Shovel	198	0%	198	784	-1.0%	$0.4040	BCY	App. D1	$0.000	$80,000
STD-46	Truck/Shovel	221	0%	221	1,891	-0.2%	$0.4454	BCY	App. D1	$0.000	$98,000
STD-47	Carry Dozer	182	0%	182	279	-0.9%	$0.3548	LCY	App. F1	$0.000	$65,000

Table 3
Area Bond - Summary of Material Movements and Backfilling Costs
Spoil Material

Route ID (Map 3)	Equipment Operation	Volume (kCY)	Swell Factor (%)	Volume (kLCY)	Haul Distance (ft)	Grade (%)	Unit Cost ($/Unit)	(Units)	(Source)	Unit Drill & Blast Cost ($/BCY)	Total Cost
STD-48	Carry Dozer	16	0%	16	305	-0.4%	$0.3847	LCY	App. F1	$0.000	$6,000
STD-49	Scraper	27	0%	27	3,060	-0.3%	$1.1790	BCY	App. B	$0.000	$32,000
STD-50	Truck/Shovel	803	0%	803	2,259	1.1%	$0.4722	BCY	App. D1	$0.000	$379,000
STD-51	Truck/Shovel	580	0%	580	2,293	0.4%	$0.4648	BCY	App. D1	$0.000	$270,000
STD-52	Truck/Shovel	9,930	0%	9,930	2,022	-0.2%	$0.4501	BCY	App. D1	$0.000	$4,470,000
STD-53	Truck/Shovel	56,946	0%	56,946	7,253	-0.3%	$0.639055	BCY	App. D1	$0.000	$36,392,000
	Subtotal:	71,527		71,527							$42,559,500

Volume by Equipment	Carry Dozer	1,886	kBCY	Project Life: Truck/Shovel Adjusted Rate (Table App D-Mod):	5,865	BCY/HR
	Dozer	59	kBCY	Annual Production:	49,970	kBCY
	Truck/Shovel	69,545	kBCY	Life of Project:	1.4	Years
	Scraper	37	kBCY			

Notes: Locations of the individual Cut and Fill Polygons within the Area Bond Line are presented on Map 3.
The column heading labeled "Source" provides the reference to the appropriate Appendix for each operation.
All costs were obtained of the February, 2017 WDEQ-LQD Bond Calculation package (Guideline 12).
All volumes for spoil areas are considered to be LCY. No Swell Factor or Blasting Cost is applied.

Table 4
Area Bond - Summary of Excavation Areas and Grading Costs

Hauls or Pushes		*Hauls or Pushes*		*Hauls or Pushes*	
Area	*Acres*	*Route*	*Acres*	*Route*	*Acres*
STD-1	28.1	STD-20	3.2	STD-39	36.1
STD-2	11.1	STD-21	2.7	STD-40	70.1
STD-3	8.4	STD-22	2.6	STD-41	43.8
STD-4	11.1	STD-23	6.2	STD-42	45.9
STD-5	26.4	STD-24	3.4	STD-43	22.8
STD-6	15.3	STD-25	3.8	STD-44	57.8
STD-7	24.5	STD-26	10.0	STD-45	37.1
STD-8	9.9	STD-27	17.8	STD-46	57.9
STD-9	12.2	STD-28	8.0	STD-47	77.4
STD-10	17.8	STD-29	6.9	STD-48	12.2
STD-11	22.3	STD-30	10.4	STD-49	21.5
STD-12	9.9	STD-31	11.5	STD-50	172.9
STD-13	21.9	STD-32	6.8	STD-51	96.7
STD-14	23.0	STD-33	8.6	STD-52	557.8
STD-15	50.7	STD-34	31.3	STD-53	1362.2
STD-16	71.0	STD-35	26.5	STD-54	672.4
STD-17	16.3	STD-36	9.0		
STD-18	8.3	STD-37	4.4		
STD-19	20.5	STD-38	32.3		
Subtotal	408.6		205.4		3344.5
				Total, Acres	3,958.5

Borrow Only:
Area 602.51 Acres

Computations:

0 Area to be Rough Graded, times
$51.80 Rough grading cost per acre assuming RT dozer
$0 Cost for Rough Grading, Rounded

3,959 Acres Requiring final grading, times
$54.73 Final Grading Cost per Acre
$216,600 Cost for Final Grading, Rounded

Note: See Map 3 for the location of the individual areas within the Area Bond Line,
All polygons within this line require Final Grading. Material Volumes are shown in Tables 2 & 3.

Table 5
Incremental Bond Overburden Redistribution

Structure	Length (ft)	Depth (ft)		Grading Volume (lcy)	Unit Cost ($/lcy) [1]	Total Cost ($)
Diversion No. 10	5,427	20		30,150	$0.150	$4,510
RR Loop Diversion	750	3		625	$0.150	$93
East Spoil Diversion	1,400	3		6,222	$0.150	$931
Caballo Lake Bypass/Div. No 11	5,255	15		116,778	$0.150	$17,467
					Subtotal	$23,001
Reservoirs	*Embankment Length (ft)*	*Height (ft)*	*Top Width (ft)*	*Grading Volume (lcy)*	*Unit Cost ($/lcy) [1]*	*Total Cost ($)*
BA8 Res.	90	4	12	120	$0.150	$18
BANPDES 002 Res.	150	15	12	2,125	$0.150	$318
BA10 Res.	75	10	12	500	$0.150	$75
Boneyard Res.	75	10	12	500	$0.150	$75
Coal Haul Road Res.	250	13	12	2,708	$0.150	$405
Gralla's Gulch Res.	200	7	12	700	$0.150	$105
BA 34 Res.	400	16	12	6,400	$0.150	$957
BA 57 Res.	600	15	12	8,500	$0.150	$1,271
BANPDES 19 Res.	1300	15	12	18,417	$0.150	$2,755
BANPDES 15 Res.	75	25	12	2,813	$0.150	$421
BANPDES 13 Res.	70	20	12	1,711	$0.150	$256
NW Reservoir	500	19	12	11,083	$0.150	$1,658
Staging Pond	75	15	12	1,063	$0.150	$159
Duck Nest Res.	850	25	12	31,875	$0.150	$4,768
					Subtotal	$13,240
ASCM's	*Length (ft)*	*Number (ea)*			*Unit Cost ($/ea)*	*Total Cost ($)*
ASCM's	50	23			$550	$12,650
					Total	**$48,891**

[1]Unit cost assumes embankments removed by D11R Carry Dozer moving material an average of 100' at 0% grade.

Table 6
Summary of Demolition Costs

Item	Units	Unit Costs	Costs
Fences			
Removal of existing fence	4.5 miles	$ 1,637 $/mile	$7,366
Removal of existing electric fence	- miles	$ 818 $/mile *	$0
Removal of chain link fence	1,500.0 feet	$ 3.14 $/ft	$4,710
Installation of new fence	0.0 miles	$ 10,085 $/mile	$0
Powerlines			
Removal of powerlines			$0
Hard-surfaced roads			
Asphalt ripping, roads and parking lots	4.6 acres	$ 629.53 $/ac.	$2,923
Asphalt disposal on site	2,497.1 cu yd	$ 3.89 $/cy yd	$9,714
Bridges			
Cost to remove all bridges (See text)			$0
Culverts			
Culvert removal (See Table 7)	710 sections	$ 103.50 $/sec.	$73,449
Railroads			
Track removal	48,100 feet	$ 8.99 $/ft	$432,419
Ballast and subballast removal	24,050 cu yd	$ 4.53 $/cu yd	$108,947
Building and Facilities Removal			
Facility Buildings (Table 8)			$1,585,367
Material Handling Facilities (Table 9)			$1,928,451
Support Facilities (Table 10)			$271,440
		Total Cost for Demolition	$4,424,786

* Unit cost for electric fence removal based on one half of the normal fence removal cost based on telephone conversation with Doug Emme.
Chain link fence removal cost from 2018 Means Building Construction Cost Data Guide.

Table 7
Culverts Installed

Culvert No.	Township	Location Range	Section	Length (Feet)	Number CMP's / Sections	Total Sections
A	48N	71W	26	164	1 / 8	8
B	48N	71W	26	106	1 / 5	5
C	48N	71W	26	111	1 / 6	6
D	48N	71W	36	151	1 / 8	8
F	48N	71W	28	286	1 / 14	14
G	48N	71W	26	96	1 / 5	5
H	48N	71W	26	118	1 / 6	6
I	48N	71W	35	254	1 / 13	13
J	48N	71W	35	108	1 / 5	5
K	48N	71W	35	108	1 / 5	5
L	48N	71W	36	96	1 / 5	5
M	48N	71W	35	132	1 / 7	7
N	48N	71W	26	146	1 / 7	7
O	48N	71W	26	144	1 / 7	7
P	48N	71W	27	245	1 / 12	12
R	48N	71W	27	240	1 / 12	12
S	48N	71W	28	100	1 / 5	5
T	48N	71W	34	282	1 / 14	14
U	48N	71W	27	536	1 / 27	27
W	48N	71W	28	234	1 / 12	12
X	48N	71W	35	132	1 / 7	7
Y	48N	71W	33	217	1 / 11	11
Z	48N	71W	34	163	1 / 8	8
AA	48N	71W	27	131	1 / 7	7
BB	48N	71W	27	151	1 / 8	8
CC	48N	71W	36	268	1 / 13	13
DD	48N	71W	35	135	1 / 7	7
EE	48N	71W	35	135	1 / 7	7
FF	48N	71W	34	127	1 / 6	6
GG	48N	71W	27	108	1 / 5	5
HH	48N	71W	32	266	4 / 13	53
II	48N	71W	31	100	1 / 5	5
JJ	48N	71W	34	80	1 / 4	4
KK	48N	71W	34	93	1 / 5	5
LL	48N	71W	34	93	1 / 5	5
MM	48N	71W	28	185	1 / 9	9
NN	48N	71W	35	259	1 / 13	13
OO	48N	71W	28	286	1 / 14	14
PP	48N	71W	28	136	1 / 7	7
RR	48N	71W	34	304	1 / 15	15
SS	48N	71W	34	126	1 / 6	6
TT	48N	71W	34	153	1 / 8	8
UU	48N	71W	35	180	1 / 9	9
VV	48N	71W	34	210	1 / 11	11
WW	48N	71W	35	194	1 / 10	10
XX	48N	71W	32	189	1 / 9	9
YY	48N	71W	26	104	1 / 5	5
AB	48N	71W	26	221	1 / 11	11
AC	48N	71W	26	150	1 / 8	8
AD	48N	71W	27	185	1 / 9	9

Table 7
Culverts Installed

Culvert No.	Township	Location Range	Section	Length (Feet)	Number CMP's / Sections	Total Sections
AI	48N	71W	35	130	1 / 7	7
AJ	48N	71W	33	217	1 / 11	11
AK	48N	71W	34	195	3 / 10	29
AN	48N	71W	35	217	1 / 11	11
AO	48N	71W	34	124	1 / 6	6
AP	48N	71W	35	221	1 / 11	11
AQ	48N	71W	27	163	1 / 8	8
AR	48N	71W	34	163	1 / 8	8
AU	48N	71W	27	180	1 / 9	9
AV	48N	71W	27	136	1 / 7	7
AW	48N	71W	26	185	1 / 9	9
AX	48N	71W	26	102	1 / 5	5
AY	48N	71W	26	116	1 / 6	6
AZ	48N	71W	26	117	1 / 6	6
BB	48N	71W	27	151	1 / 8	8
BD	48N	71W	19	138	1 / 7	7
BE	48N	71W	30	138	1 / 7	7
BF	48N	71W	19	138	1 / 7	7
BL	48N	71W	34	124	1 / 6	6
BM	48N	71W	34	124	1 / 6	6
BO	48N	71W	34	266	1 / 13	13
BP	48N	72W	24	138	1 / 7	7
BQ	48N	71W	19	138	1 / 7	7
BR	48N	71W	30	138	1 / 7	7
BU	48N	71W	33	254	2 / 13	25
					Total Sections:	**710**

Note: Sections have been rounded to nearest 20 ft section. Additional sections may have been added to cover future installations during the next report period. Culvert locations are shown on the Annual Report "Map 3, Inspection Map"

Table 8
Facility Buildings To Be Removed

Building Description	Building/ Disposal Type	Quantity	Unit	Unit Cost ($/C.F.)	Demolition & Disposal Costs
Maintenance Building bldg demolition	M.T.	22,300	cu ft	$0.298	$6,645
disposal	D.A.	200	cu yd	$10.100	$2,020
slab, 8" thick w rebar	S.L.08	1,710	sq ft	$5.450	$9,320
Footings- 2' Thick, 3' Wide	F.R.	170	lin ft	$15.970	$2,715
concrete disposal on-site	D.C.	80	cy yd	$8.800	$704
Reclamation Building bldg demolition	M.T.	51,410	cu ft	$0.298	$15,320
disposal	D.A.	480	cu yd	$10.100	$4,848
slab, 6" thick w rebar	S.L.06	3,020	sq ft	$4.674	$14,115
Footings- 2' Thick, 3' Wide	F.R.	230	lin ft	$15.970	$3,673
concrete disposal on-site	D.C.	200	cy yd	$8.800	$1,760
Service Building complex, bldg demolition	M.T.	2,864,800	cu ft	$0.298	$853,710
disposal	D.A.	22,500	cu yd	$10.100	$227,250
slab, 6" thick w rebar	S.L.04	1,740	sq ft	$3.890	$6,769
slab, 12" thick w rebar	S.L.12	56,000	sq ft	$7.010	$392,560
Footings- 2' Thick, 3' Wide	F.R.	1,430	lin ft	$15.970	$22,837
concrete disposal on-site	D.C.	2,400	cy yd	$8.800	$21,120
				Total	$1,585,367
					(Summarized in Table 6)

Note: For Building Type and Demolition Method, See App. K of Guideline No. 12

A.W. = All Wood
D.A. =Disposal, average
E.A. = Explosive Demolition, All Buildings
E.C. = Explosive Demolition, Concrete
F.R. = Footing Removal
L.C. = Large Concrete Building
L.S. = Large Steel Building
M.T. = Mixed type building
S.C. = Small Concrete Building
S.L.04 = Slab Removal, 4" thick w rebar
S.L.06 = Slab Removal, 6" thick w rebar
S.L.08 = Slab Removal, 8" thick w rebar
S.L.12 = Slab Removal, 12" thick w rebar
S.S. = Small Steel Building

Table 9
Material Handling Facilities To Be Removed

Facility Description		Facility/ Disposal Type	Quantity	Unit	Unit Cost	Demolition Costs
Batch Loadout Facility	facility demolition	M.T.	162,500	cu ft	$0.298	$48,425
	disposal	D.A.	1,500	cu yd	$10.100	$15,150
	slab, 8" thick w rebar	S.L.08	1,200	sq ft	$5.450	$6,540
	Footings- 2' Thick, 3' Wide	F.R.	140	lin ft	$15.970	$2,236
	concrete disposal on-site	D.C.	60	cy yd	$8.800	$528
Conveyor System	facility demolition	M.T.	61,700	cu ft	$0.298	$18,387
	disposal	D.A.	1,370	cu yd	$10.100	$13,837
Overland Conveyor / Near Pit Truck Dump						
Overland Conveyor						
CV-01	facility demolition	M.T.	109,800	cu ft	$0.298	$32,720
CV-02	facility demolition	M.T.	410,900	cu ft	$0.298	$122,448
CV-03	facility demolition	M.T.	30,600	cu ft	$0.298	$9,119
CV-04	facility demolition	M.T.	29,600	cu ft	$0.298	$8,821
Crusher tower	facility demolition	M.T.	36,300	cu ft	$0.298	$10,817
Transfer tower	facility demolition	M.T.	46,600	cu ft	$0.298	$13,887
Truck dump strctr.	facility demolition	M.T.	216,500	cu ft	$0.298	$64,517
Foundations for above facilities						
	slab, 12" thick w rebar	S.L.08	1,430	sq ft	$5.450	$7,794
	slab, 24" thick w rebar	S.L.24	7,695	sq ft	$14.020	$107,884
	slab, 32" thick w rebar	S.L.32	3,927	sq ft	$18.693	$73,409
	Footings- 2' Thick, 3' Wide	F.R.	0	lin ft	$15.970	$0
	Footings- 1.5' Thick, 2' Wide	F.R.	0	cy yd	$15.970	$0
	concrete disposal on-site	D.C.	1,023	cy yd	$8.800	$9,002
Prep Plants						
Prep Plant #1	facility demolition	M.T.	41,600	cu ft	$0.298	$12,397
	disposal	D.A.	460	cu yd	$10.100	$4,646
	slab, 8" thick w rebar	S.L.08	1,300	sq ft	$5.450	$7,085
	Footings- 2' Thick, 3' Wide	F.R.	160	lin ft	$15.970	$2,555
	concrete disposal on-site	D.C.	70	cy yd	$8.800	$616
Prep Plant #1	facility demolition	M.T.	119,700	cu ft	$0.298	$35,671
	disposal	D.A.	3,000	cu yd	$10.100	$30,300
	slab, 8" thick w rebar	S.L.08	2,660	sq ft	$5.450	$14,497
	Footings- 2' Thick, 3' Wide	F.R.	200	lin ft	$15.970	$3,194
	concrete disposal on-site	D.C.	110	cy yd	$8.800	$968
Silos, 4 @ 70'Dx193.8H	facility demolition	E.C.	2,983,300	cu ft	$0.289	$862,174
	concrete disposal on-site	D.C.	4,730	cu yd	$8.800	$41,624
Dryer Complex Silos No 5 & 6,	facility demolition	E.C.	888,610	cu ft	$0.289	$256,808
	concrete disposal on-site	D.C.	2,030	cu yd	$8.800	$17,864

Table 9
Material Handling Facilities To Be Removed

Facility Description		Facility/ Disposal Type	Quantity	Unit	Unit Cost	Demolition Costs
Transfer Houses						
Transfer House #1	facility demolition	M.T.	52,650	cu ft	$0.298	$15,690
	disposal	D.A.	490	cu yd	$10.100	$4,949
	slab, 8" thick w rebar	S.L.08	1,350	sq ft	$5.450	$7,358
	Footings- 2' Thick, 3' Wide	F.R.	150	lin ft	$15.970	$2,396
	concrete disposal on-site	D.C.	70	cy yd	$8.800	$616
Transfer House #2	facility demolition	M.T.	26,880	cu ft	$0.298	$8,010
	disposal	D.A.	250	cu yd	$10.100	$2,525
	slab, 8" thick w rebar	S.L.08	840	sq ft	$5.450	$4,578
	Footings- 2' Thick, 3' Wide	F.R.	120	lin ft	$15.970	$1,916
	concrete disposal on-site	D.C.	50	cy yd	$8.800	$440
Transfer House #3	facility demolition	M.T.	26,750	cu ft	$0.298	$7,972
	disposal	D.A.	250	cu yd	$10.100	$2,525
	slab, 8" thick w rebar	S.L.08	700	sq ft	$5.450	$3,815
	Footings- 2' Thick, 3' Wide	F.R.	110	lin ft	$15.970	$1,757
	concrete disposal on-site	D.C.	40	cy yd	$8.800	$352
Truck Hopper/Crusher Rooms						
Trk Hopper/Crush. Rm #1	facility demolition	M.T.	7,980	cu ft	$0.298	$2,378
	disposal	D.A.	0	cu yd	$10.100	$0
Trk Hopper/Crush. Rm #2	facility demolition	M.T.	17,640	cu ft	$0.298	$5,257
	disposal	D.A.	0	cu yd	$10.100	$0
						$1,928,451 (Summarized in Table 6)

Note: For Building Type and Demolition Method, See App. K of Guideline No. 12
A.W. = All Wood
D.A. =Disposal, average
E.A. = Explosive Demolition, All Buildings
E.C. = Explosive Demolition, Concrete
F.R. = Footing Removal
L.C. = Large Concrete Building
L.S. = Large Steel Building
M.T. = Mixed type building
S.C. = Small Concrete Building
S.L.04 = Slab Removal, 4" thick w rebar
S.L.06 = Slab Removal, 6" thick w rebar
S.L.08 = Slab Removal, 8" thick w rebar
S.L.09 = Slab Removal, 9" thick w rebar
S.L.12 = Slab Removal, 12" thick w rebar
S.S. = Small Steel Building

Table 10
Support Facilities To Be Removed

Facility/Building and Action Description	Facility/ Disposal Type	Quantity	Unit	Unit Cost	Demolition & Disposal Costs
Bulk Diesel Storage (Fuel Island) Tanks and Facilities					
6 tks @ 35,000 gal demolition	S.S.	28,071	cu ft	$0.298	$8,365
disposal	D.A.	30	cu yd	$10.100	$303
Containment Structure (concrete)					
demolition	E.C.	9,300	cu ft	$0.289	$2,688
12" reinf concrete slab	S.R.12	3,500	sq ft	$7.010	$24,535
8" reinf concrete slab	S.R.08	1,700	sq ft	$7.010	$11,917
9" reinf concrete slab	S.R.09	2,300	sq ft	$7.010	$16,123
Footings- 2' Thick, 3' Wide	F.R.	240	lin ft	$15.970	$3,833
concrete disposal on-site	D.C.	300	cu yd	$8.800	$2,640
Bulk Oil Tanks (Lube Room) Tanks and Facilities					
3 tks @ 6,000 gal demolition	S.S.	2,406	cu ft	$0.298	$717
2 tks @ 2,000 gal demolition	S.S.	535	cu ft	$0.298	$159
1 tk @ 580 gal demolition	S.S.	78	cu ft	$0.298	$23
1 tk @ 320 gal demolition	S.S.	43	cu ft	$0.298	$13
disposal	D.A.	30	cu yd	$10.100	$303
Containment Structure (concrete)					
demolition	E.C.	20,819	cu ft	$0.289	$6,017
disposal misc.	D.A.	15	cu yd	$10.100	$152
8" reinf concrete slab	S.R.08	1,230	sq ft	$7.010	$8,622
9" reinf concrete slab	S.R.09	711	sq ft	$7.010	$4,984
Footings- 2' Thick, 3' Wide	F.R.	140	lin ft	$15.970	$2,236
concrete disposal on-site	D.C.	81	cu yd	$8.800	$713
Gasoline Island Tanks and Facilities					
1 tk @ 15,000 gal demolition	S.S.	2,005	cu ft	$0.298	$597
disposal	D.A.	2	cu yd	$10.100	$20
Containment Structure (concrete)					
demolition	E.C.	4,275	cu ft	$0.289	$1,235
8" reinf concrete pvt slab	S.R.08	570	sq ft	$7.010	$3,996
9" reinf concrete slab	S.R.09	570	sq ft	$7.010	$3,996
Footings- 2' Thick, 3' Wide	F.R.	110	lin ft	$15.970	$1,757
concrete disposal on-site	D.C.	79	cu yd	$8.800	$695
Fuel Oil Storage Tanks					
2 tks @ 300,000 gal demolition	S.S.	80,203	cu ft	$0.298	$23,900
disposal	D.A.	70	cu yd	$10.100	$707
Plant Tanks					
1 tk @ 550 gal demolition	S.S.	74	cu ft	$0.298	$22
1 tk @ 150 gal demolition	S.S.	20	cu ft	$0.298	$6
1 tk @ 12,600 gal demolition	S.S.	1,684	cu ft	$0.298	$502
1 tk @ 8000 gal demolition	S.S.	1,069	cu ft	$0.298	$319
1 tk @ 8000 gal demolition	S.S.	1,069	cu ft	$0.298	$319
disposal	D.A.	4	cu yd	$10.100	$40
Shop Tanks					
1 tk @ 8,000 gal demolition	S.S.	1,069	cu ft	$0.298	$319
2 tks @ 350 gal demolition	S.S.	94	cu ft	$0.298	$28
2 tk @ 8,000 gal demolition	S.S.	2,139	cu ft	$0.298	$637
disposal	D.A.	3	cu yd	$10.100	$30

Table 10
Support Facilities To Be Removed

Facility/Building and Action Description		Facility/ Disposal Type	Quantity	Unit	Unit Cost	Demolition & Disposal Costs
Misc. Tanks						
1 tk @ 2,000 gal	demolition	S.S.	267	cu ft	$0.298	$80
1 tk @ 100,000 gal	demolition	S.S.	13,367	cu ft	$0.298	$3,983
2 tk @ 15,000 gal	demolition	S.S.	4,010	cu ft	$0.298	$1,195
	disposal	D.A.	20	cu yd	$10.100	$202
Fuel Island						
12" reinf concrete slab		S.R.12	1,230	sq ft	$7.010	$8,622
concrete disposal on-site		D.C.	81	cu yd	$8.800	$713
Tire Change Pad						
12" reinf concrete slab		S.R.12	5,400	sq ft	$7.010	$37,854
concrete disposal on-site		D.C.	200	cu yd	$8.800	$1,760
Truck Ready Line						
	demolition	M.T.	4,050	cu ft	$0.298	$1,207
	disposal	D.C.	1	cu yd	$8.800	$9
Wash Bay						
facility demolition		M.T.	129,600	cu ft	$0.298	$38,621
disposal		D.A.	960	cu yd	$10.100	$9,696
slab, 8" thick w rebar		S.R.08	2,880	sq ft	$7.010	$20,189
slab, 12" thick w rebar		S.R.12	1,260	sq ft	$7.010	$8,833
Footings- 2' Thick, 3' Wide		F.R.	220	lin ft	$15.970	$3,513
concrete disposal on-site		D.C.	170	cy yd	$8.800	$1,496
					Total	$271,440 (Summarized in Table 6)

Note: For Building Type and Demolition Method, See App. K of Guideline No. 12
A.W. = All Wood
D.A. =Disposal, average
E.A. = Explosive Demolition, All Buildings
E.C. = Explosive Demolition, Concrete
F.R. = Footing Removal
L.C. = Large Concrete Building
L.S. = Large Steel Building
M.T. = Mixed type building
S.C. = Small Concrete Building
S.L.04 = Slab Removal, 4" thick w rebar
S.L.06 = Slab Removal, 6" thick w rebar
S.L.08 = Slab Removal, 8" thick w rebar
S.L.09 = Slab Removal, 9" thick w rebar
S.L.12 = Slab Removal, 12" thick w rebar
S.S. = Small Steel Building

Table 11
Removal of Monitoring Structures
and Other Miscellaneous Items

Item	Units	Unit Costs	Costs
Ground water stations			
Mobilization per project			$ 1,000
Monitoring wells and Drill Holes (Table 12)	89 wells	N/A	$56,569
Other operator owned wells (Table 13)	14 wells	N/A	$60,787
Dewatering wells (Table 14)	45 wells	N/A	$15,955
Surface water stations			
Surface water stations (Table 15)	2 sites	$1,967.04 $/site	$3,934
All other experimental study sites			
Not Applicable			$0
Meteorological/air quality sites			
Site Removal (Table 16)	5 sites	$782.72 $/site	$3,914
		Total Cost	$141,159

Table 12
Removal of Ground Water Monitoring Wells and Exploration Drill Holes

No.	Well Name	Total Depth (Feet)	Diameter (Inches)
1.	A401Y	315	5"STL
2.	B110HC	50	5"STL
3.	B110ZC	87	5"STL
4.	B57EG	120	5"STL
5.	BAS 17 A	20.0	2"PVC
6.	BAS 17 B	20.0	2"PVC
7.	BAS 17 C	14.0	2"PVC
8.	BAS 17 D	14.0	2"PVC
9.	BAS 17 E	20.0	2"PVC
10.	BAS 17 F	18.0	2"PVC
11.	BAS 17H=BAS 20	20.0	2"PVC
12.	DFW #1	48.0	5"PVC
13.	DFW #10	33.0	2"PVC
14.	DFW #11	35.0	2"PVC
15.	DFW #12	210.0	5"PVC
16.	DFW #2	48.0	5"PVC
17.	DFW #3	48.0	5"PVC
18.	Dunlap 24-34-48-72-A	446.0	
19.	HAMER #1	10.0	ROCKED
20.	LBA-10C	377.0	5"PVC
21.	LBA-10O	280.0	5"PVC
22.	LBA-12C	392.0	5"PVC
23.	LBA-12O	200.0	5"PVC
24.	LBA-14C	471.0	5"PVC
25.	LBA-14O	120.0	5"PVC
26.	LBA-1C	460.0	2"PVC
27.	LBA-1O	198.0	5"PVC
28.	LBA-21C	470.0	5"PVC
29.	LBA-6C	435.0	5"PVC
30.	LBA-6O	100.0	5"PVC
31.	LBA-7C	442.0	5"PVC
32.	LBA-7O	249.0	5"PVC
33.	N11	207.0	4"PVC
34.	NORTH PIT RESERVOIR #1	260.0	N/A
35.	P551273	370.0	5"PVC
36.	P568375	295.0	2"PVC
37.	P571375	243.0	2"PVC
38.	P577293	313.0	2"PVC
39.	P577372	247.0	2"PVC
40.	P577375	320.0	2"PVC
41.	P581303	360.0	2"PVC
42.	P581309	390.0	2"PVC
43.	P581362	275.0	2"PVC
44.	P581365	257.0	2"PVC
45.	P581369	265.0	2"PVC
46.	P581375	270.0	2"PVC
47.	P584342	405.0	2"PVC
48.	P584346	377.0	2"PVC
No.	*Well Name*	*Total Depth (Feet)*	*Diameter (Inches)*

Table 12
Removal of Ground Water Monitoring Wells and Exploration Drill Holes

49. P584352	296.0	2"PVC
50. P584355	370.0	2"PVC
51. P584359	288.0	2"PVC
52. P584362	322.0	2"PVC
53. P584365	286.0	2"PVC
54. P584369	297.0	2"PVC
55. P584372	282.0	2"PVC
56. PL1901	12.0	2"PVC
57. PL1902	24.0	5"PVC
58. PL1902-1	5.5	2"PVC
59. PL1903	8.5	2"PVC
60. PL2401	25.0	2"PVC
61. PL2402	25.0	5"PVC
62. PL2403	22.50	2"PVC
63. PL2501	25.00	2"PVC
64. PL2502	35.00	5"PVC
65. PL3001	21.0	2"PVC
66. RW 0402	172.0	5"PVC
67. RW 2701	213.0	5"STL
68. RW 2703	213.0	2"STL
69. RW 2704	213.0	2"STL
70. RW 2705	147.3	5"STL
71. RW 2706	79.0	5"STL
72. RW 2707	75.0	5"STL
73. RW 2804	117.50	5"STL
74. RW 2902	189.00	PVC
75. RW 3201	235.00	5"PVC
76. RW 3304-1	155.00	5"STL
77. RW 3401	128.50	5"STL
78. RW 3402	13.00	2"PVC
79. RW 3403	16.00	2"PVC
80. RW 3404	74.00	5"PVC
81. RW 3405	48.00	5"PVC
82. RW 3406	17.00	1.5"STL
83. RW 3407	160.00	5"PVC
84. RW 3408	112.00	PVC
85. RW 3409	120.00	5"PVC
86. UB 0301	96.10	4"PVC
87. UB3301	211.0	5"PVC
88. UB3401	96.5	4"PVC
89. WRRI 9	20.0	4"PVC

Number of Wells (Sites)	89
Total Linear Feet	15,890

Table 12
Removal of Ground Water Monitoring Wells and Exploration Drill Holes

Calculations:

Well abandonment costs, based on WDEQ-LQD Bond Calculation package
Appendix L, "Abandonment of Drill Holes and Wells"
See below for cost calculations.

Monitoring Wells	Units	Unit Cost	Total Cost
Well Abandonment Cost	feet	$3.00	$47,669
Small Site Grading & Seeding	site	$50.00	$4,450
Capping w/ precast concrete cap	well	$10.00	$890
Location Fee	site	$10.00	$890
Removal of top few feet of casing	well	$30.00	$2,670
		Monitoring Well Total	$56,569 (Summarized in Table 11)

Table 13
Other Operator Owned Wells

	Well Number	Total Depth (Feet)	Diameter (Inches)	Depth of Pump
1.	A401	391.0	5.5"STL	N/A
2.	B161PD=B136KC	80.0	5"PVC	N/A
3.	B59FJ	144.0	5"STL	144.3
4.	BAS20S	50.0	5"STL	N/A
5.	BELLE AYR #2	1100.0	6"STL	978
6.	BELLE AYR #4	10200.0	7"STL	1478
7.	BELLE AYR #5	4070.0	7"STL	1612
8.	BELLE AYR GUARD	313.0	5"PVC	N/A
10.	DUNLAP #1	206.0	6"STL	N/A
11.	EARL #2	130.0	4" STL	N/A
12.	ENL BELLE AYR GUARD WELL	612.0	5"PVC	N/A
14.	ENL PLANT #2 WELL	96.1	8"STL	N/A
16.	PLANT #2	1230.0	8"STL	N/A
17.	TRAILER WELL #1	612.0	6.6"STL	N/A

Number of Wells (Sites)	14
Total Linear Feet of Well Hole	19234
Total Feet of Wiring & Drop Pipe to Pumps	4212

Calculations:

Well abandonment costs, based on WDEQ-LQD Bond Calculation package
Appendix L, "Abandonment of Drill Holes and Wells"
See below for cost calculations.

Other Operator Owned Wells	Units	Unit Cost	Total Cost
Well Abandonment Cost	feet	$3.00	$57,702
Small Site Grading & Seeding	site	$50.00	$700
Capping w/ precast concrete cap	well	$10.00	$140
Location Fee	site	$10.00	$140
Remove pump, wiring & drop pipe	feet	$0.40	$1,685
Removal of top few feet of casing	well	$30.00	$420
	Other Operator Owned Wells Total		$60,787 (Summarized in Table 11)

Table 14
Dewatering Wells

Dewatering Wells	# of Wells/ Permit	Avg Depth	Total depth/ permit (ft)	Depth of Pump	Total ft of wiring & drop pipe/permit	Diameter (inches)
NENE Section 36 Dewater	5	390	390	360	360	5" PVC
NENW Section 36 Dewater	5	380	380	332	332	5" PVC
NWNE Section 36 Dewater	5	392	392	380	380	5" PVC
NWNW Section 36 Dewater	5	384	384	369	369	5" PVC
NWSW Section 36 Dewater	5	340	340	320	320	5" PVC
SENW Section 36 Dewater	5	415	415	400	400	5" PVC
SWNE Section 36 Dewater	5	370	370	340	340	5" PVC
SWNW Section 36 Dewater	5	360	360	340	340	5" PVC
SWSW Section 36 Dewater	5	362	362	350	350	5" PVC

Number of Wells (Sites)	45
Total Linear Feet of Well Hole	3393
Total Feet of Wiring & Drop Pipe to Pumps	3191

Calculations:

Well abandonment costs, based on WDEQ-LQD Bond Calculation package Appendix L, "Abandonment of Drill Holes and Wells"
See below for cost calculations.

Dewatering Wells	Units	Unit Cost	Total Cost
Well Abandonment Cost	feet	$3.00	$10,179
Small Site Grading & Seeding	site	$50.00	$2,250
Capping w/ precast concrete cap	well	$10.00	$450
Location Fee	site	$10.00	$450
Remove pump, wiring & drop pipe	feet	$0.40	$1,276
Removal of top few feet of casing	well	$30.00	$1,350
		Dewatering Well Total	$15,955
			(Summarized in Table 11)

Table 15
Surface Water Monitoring Stations

No.	Station Name	Structures
1.	BA4 Surface Water Station	V-Notch weir with datalogger
2.	BA6 Surface Water Station	V-Notch weir with datalogger

Total Number, Monitoring Stations 2

(Summarized in Table 11)

Table 16
Meteorological and Air Quality Monitoring Sites

No.	Station Name	Structures
1.	Belle Ayr Met Station	Meteorological Station
2.	BA-1	PM10
3.	BA-4/BA-4S (co-located)	PM10
4.	BA-3	PM10
5.	Ranch House Monitor	PM10

Total Number, Met / Air Quality Sites 5

(Summarized in Table 11)

Table 17
Scarification of All Compacted Surfaces

Affected Lands		Area	Units
Currently affected area		7,429	acres
Planned disturbance through December 2018		25	acres
Minus areas not needing seeding*		(81)	acres
Minus permanent reclamation		(3,311)	acres
Borrow Areas		346	acres
	Subtotal 1	4,407	acres

Computations:

Area to be scarified		4,407	acres
Scarification cost		$50.20	$/ac
	Total cost	$221,231	(rounded)

Table 18

Projected Topsoil Stripped from Borrow Areas and Mining Areas to Stockpiles

Topsoil Pile/ Haul Route		Equipment Operation	Stripped (Acres)	Stripped Volume (CY)	Haul Distance To Stockpile (ft)	Grade (%)	Unit Cost ($/Unit)	(Source)	Total Cost
T-56			6.50	14,000					$0
T-59			9.84	22,000					$0
T-84			8.41	17,000					$0
T-56	A	Scraper	6.90	27,000	1,143	4.5%	$0.8586	App. B	$23,183
T-56	B	Scraper	0.63	3,000	1,620	2.7%	$0.9568	App. B	$2,870
T-56	C	Scraper	15.07	56,000	2,255	2.0%	$1.0989	App. B	$61,536
SM-2		Scraper	5.97	1,000	2,766	-4.9%	$1.1439	App. B	$1,144
TBND (NEW)	A	Scraper	0.48	2,000	2,502	0.2%	$1.0745	App. B	$2,149
TBND (NEW)	B	Scraper	1.30	4,000	2,716	-0.2%	$1.1089	App. B	$4,436
TBND (NEW)	C	Scraper	286.66	1,011,000	2,982	-1.3%	$1.1690	App. B	$1,181,858
Total Stripped:			341.76	1,157,000					$1,277,175

Topsoil Redistribution on All Disturbed Areas

Topsoil Pile/ Haul Route		Equipment Operation	Report Volume (CY)	Volume Added (cy)	Haul Volume (CY)	Haul Distance To Place (ft)	Grade (%)	Unit Cost ($/Unit)	(Source)	Total Cost
SM-1		Scraper	35,869	-	35,869	667	-3.3%	$0.6751	App. B	$24,214
SM-2		Scraper	41,706	1,000	33,732	1,048	5.5%	$0.8487	App. B	$28,630
	*			-	8,974					$0
T-01A		Carry Dozer	4,800	-	4,800	209	-1.5%	$0.2689	App. F1	$1,291
T-03		Carry Dozer	728	-	728	85	3.6%	$0.1525	App. F1	$111
T-05		Truck/Shovel	388,506	-	313,087	4,366	-1.5%	$0.6116	App. D1	$191,499
	*			-	75,419					$0
T-06	A	Truck/Shovel	344,756	-	296,589	1,778	-4.9%	$0.5025	App. D1	$149,023
	B	Scraper		-	4,004	1,049	-5.9%	$0.7664	App. B	$3,069
	*			-	44,163					$0
T-08		Carry Dozer	1,345	-	1,345	283	2.2%	$0.3912	App. F1	$526
T-09	A	Truck/Shovel	869,000	-	850,157	2,647	-1.7%	$0.5412	App. D1	$460,105
	B	Scraper		-	18,843	1,522	0.7%	$0.8842	App. B	$16,660
T-18		Carry Dozer	4,050	-	4,050	317	1.7%	$0.4256	App. F1	$1,724
T-23		Truck/Shovel	85,737	-	68,307	2,635	-1.1%	$0.5417	App. D1	$36,999
	*			-	17,430					$0
T-24		Carry Dozer	400	-	400	178	-2.3%	$0.2279	App. F1	$91
T-32		Carry Dozer	42,455	-	42,455	158	-14.3%	$0.1675	App. F1	$7,110
T-34		Carry Dozer	7,238	-	7,238	280	0.0%	$0.3615	App. F1	$2,616
T-35		Carry Dozer	17,667	-	17,667	295	-7.1%	$0.3313	App. F1	$5,853
T-37		Truck/Shovel	86,597	-	86,597	986	-5.0%	$0.4715	App. D1	$40,829
T-41		Truck/Shovel	1,863,473	-	1,863,473	2,128	-3.6%	$0.5177	App. D1	$964,685
T-43		Carry Dozer	12,840	-	9,896	195	-12.5%	$0.2074	App. F1	$2,053
T-43	*			-	2,944					$0
T-46		Truck/Shovel	280,993	-	280,993	2,757	-5.0%	$0.5403	App. D1	$151,809
T-55		Truck/Shovel	697,425	-	697,425	1,764	-4.3%	$0.5026	App. D1	$350,540
T-56		Truck/Shovel	786,434	100,000	886,434	2,820	-3.7%	$0.5447	App. D1	$482,854
T-57		Truck/Shovel	263,666	-	263,666	4,736	-2.7%	$0.6233	App. D1	$164,355
T-59		Truck/Shovel	1,398,315	22,000	1,420,315	4,272	-3.5%	$0.6029	App. D1	$856,308
T-70		Truck/Shovel	197,835	-	197,835	3,709	-0.1%	$0.5882	App. D1	$116,371
T-76	A	Truck/Shovel	71,024	-	64,123	996	-2.1%	$0.4734	App. D1	$30,355
	B	Scraper		-	6,901	533	-5.2%	$0.6428	App. B	$4,436
T-77		Truck/Shovel	134,782	-	134,782	968	-2.2%	$0.4721	App. D1	$63,637
T-78		Carry Dozer	45,985	-	45,985	399	-5.3%	$0.4535	App. F1	$20,854
T-79		Truck/Shovel	209,546	-	209,546	1,380	-2.7%	$0.4889	App. D1	$102,448
T-84		Truck/Shovel	327,143	17,000	344,143	3,844	-3.7%	$0.5856	App. D1	$201,518
T-86	A	Truck/Shovel	412,846	-	407,334	1,048	-3.0%	$0.4750	App. D1	$193,501
	B	Scraper		-	5,512	3,980	1.7%	$1.4997	App. B	$8,265
T-87		Carry Dozer	123,437	-	123,437	388	-7.6%	$0.4251	App. F1	$52,472
TBND (NEW)		Truck/Shovel	0	1,017,000	1,017,000	3,063	-2.8%	$0.5560	App. D1	$565,438
Total Applied:			8,756,598	1,157,000	9,913,598					$5,302,250

Table 18

Topsoil Redistribution Summary

		Volume			Costs
Scraper Costs:	Scraper	104,861			$ 85,275
Dozer Costs:	Dozer	-			$ -
Carry Dozer Costs:	Carry Dozer	258,001			$ 94,701
Truck/Shovel Costs	Truck/Shovel	9,401,806			$ 5,122,275
Total:		9,764,668	$ 0.53	avg $/yd (used in Table 21)	$5,302,250
Project Life:	Truck/Shovel Adjusted Rate:		5,865	BCY/HR	
	Annual Production:		49,969,800	BCY	
	Life of Project:		0.19	Years	

*Topsoil was left to reclaim topsoil stockpile areas and not included in haul volume for stockpiles SM-2, T-5, T-6, T-23, and T-43.
All costs were obtained of the February, 2017 WDEQ-LQD Bond Calculation package (Guideline 12).
Appendix B, "Calculations for Moving Materials With a Caterpiller 657E Push-Pull Scraper Fleet";
Appendix D1, " Calculations for Moving Materials with 80CY Shovel and Cat 360T Trucks";
Appendix F, "Calculations for Moving Materials with a Caterpillar D11T Dozer".
Appendix F1, " Calculations for Moving Materials with a Caterpillar D11R Carry Dozer".
*Volumes Reduced do to projected Reclamation of 348.13 a.c. (779,932 c.y.) in 2017

Table 19
Revegetation of Disturbed Areas

Affected Lands		Area	Units
Currently affected area		7,429	acres
Planned disturbance through December 2018		25	acres
Minus permanent reclamation		(3,311)	acres
Minus Exempt Areas (Includes Caballo Lake)		(81)	acres
Borrow Areas		346	acres
	Total	4,407	acres

Computations:

Area to be revegetated		4,407	acres
Revegetation cost (See Table 20)		$650.00	$/ac
	Total cost	$2,864,600	(rounded)

Table 20
Revegetation Costs Per Acre
Permanent Reclamation

Reclamation Seeding Cost[1] $650.00 per acre

MIX	SEEDING COST ($/acre)	SEED COST ($/acre)	TOTAL COST ($/acre)
Grazing (w/ shrubs)	$108.00	$225.61	$333.61
Cropland	$108.00	$27.77	$135.77
Shrub Plots	$188.00	$500.00	$688.00
Bottomland	$108.00	$215.25	$323.25

	Weighted Average Revegetation Costs
Grasslands	70%
Cropland / Pastureland	0%
Shrubs	20%
Bottomlands	10%

Weighted Average Cost[1] $650.00 per acre

[1] Assumes 30% of the Grasslands is seeded to Cropland and 70% to Grazing with shrubs.

Table 21
Retained Incremental Bond and Reclamation Carryover

The Incremental bond task consists of the following costs per acre:

Scarification (Guideline 12)	$50.20	per acre
Topsoil replacement [1]	$1,366.23	per acre
Revegetation (See Table 20)	$650.00	per acre
Retained incremental bond amount:	$2,066.43	per acre

	Acres (Found in Recl. History Tables and Land Status)	Cost per Acre Retained	Cost
Reclamation Carryover Lands			
All Reclaimed Lands with No bond release	595		
Minus lands reclaimed prior to 12/31/82	-		
Total, Carryover Lands	595	$2,066.43	$1,230,004
Phase 1 Bond Release: [2]			
Total, Phase 1 Lands	1,285	$826.57	$1,062,147
Phase 2 Bond Release: [3]			
Total, Phase 2 Lands	510	$650.00	$331,500
Phase 3 Bond Release:			
Total, Phase 3 Lands	921	$0.00	$0
Total, Carryover Lands			$2,623,651

[1] Assumes abount an 18-inch replacement depth of topsoil per acre.
The average topsoil redistribution cost from Table 18 is used to calculate the costs.

[2] The retained incremental bond on land with Phase 1 (60%) bond release is calculated as the total incremental bond less 60%.

[3] The retained incremental bond on land with Phase 2 bond release is calculated as the cost to permanently reseed areas without the cost of seedbed preparation (Cost per acre from Table 20).

Table 22
Bond Contingency Calculation

Item:		Cost:
12.a.	Cost for an independent firm to design the final reclamation project: (LQD in discussions with the WMA, has agreed to a flat $200,000 for project design regardless of project size.	$250,000
12.b.	Contractor profit, overhead, mobilization, and demobilization cost: (Guideline 12 - 13.5%)	$12,627,536
12.c.	Preconstruction investigation and stabilization: (Guideline 12 - 1.5% bond cost.)	$1,403,060
12.d.	Costs for an independent firm to manage the final reclamation project: (Guideline 21 outlines that sliding scale in Appendix R should be used for calculation.)	$1,870,746
12.e.	Costs for on site monitoring programs for ten years after completion of the final reclamation project (includes such items as utilities and ground water sampling) (Guideline 12 - 1% bond cost)	$935,373
12.f.	Costs for site security during the final reclamation project and liability insurance costs during the final reclamation project and over the full bonding period: (Guideline 12 - LQD and WMA agreed that $200,000 per year of project life.) *Project life (years): 2.61*	$651,594
12.g.	Long-term administration and accounting costs:	$350,000
	ITEM 12 TOTAL:	$18,088,308

Table 23
Stream and Lake Reconstruction

Bond Cost Summary

Item	Estimated cost
Caballo Creek AVF reclamation	$ 717,763
Duck Nest Creek AVF reclamation	$ 544,319
Bone Pile Creek AVF reclamation	$ 547,824
Caballo Creek pools and runs outside AVFs	$ -
Caballo Creek pools and runs inside AVFs	$ 5,719
Caballo Lake reclamation	$ 48,157
Total estimated cost:	**$ 1,863,782**

Notes: See 1998 CABALLO CREEK GENERALIZED VIEWS OF RECLAIMED CONDITIONS, EXHIBIT 1, and
Figure 1, CABALLO CREEK AVF RECLAMATION CROSS SECTIONS, and
Figure 2, CABALLO CREEK NON-AVF RECLAMATION CROSS SECTIONS.
Means unit cost is item 300-5020, page 51, Site Work and Landscape Cost Data, R.S. Means, 2002
These estimates include contractor profit (see spreadsheet).

Caballo Creek AVF Channel Reclamation - 92.5 ac

A	Total area (sq ft):	4007841
B	Centerline length (ft):	19230
C	Average width - entire Caballo Creek AVF (ft):	208
D	Area of excavation/linear ft (sq ft):	1200
E	Area of alluvium/linear ft (sq ft):	984
F	Area of clay/linear ft (sq ft):	336
G	Volume of excavation (B*D) (cy):	854667
H	Volume of placed alluvium (B*E) (cy):	700827
I	Volume of placed clay (B*F) (cy):	239307
J	Percentage Remaining from Previous Years of Reclamation	41%

Reclamation cost estimate:

Item	Description	Unit	Quantity	Adj. Quantity	Unit cost	Source of unit cost	Total cost
1	Excavation in existing channel - 657 scrapers - 1000 ft haul, 0% slope	cy	854667	350,413.47	$ 0.755	Guideline 12	$ 264,652
2	Place clay liner - 657 scrapers - 1000 ft haul, 0% slope	cy	239307	98,115.87	$ 0.755	Guideline 12	$ 74,103
3	Compact clay liner - vibrating roller - 3 passes - 6 inch lifts	cy	239307	98,115.87	$ 1.630	Means-2018	$ 159,929
4	Place alluvium - 657 scraper - 1000 ft haul, 0% slope	cy	700827	287,339.07	$ 0.755	Guideline 12	$ 217,015
5	Grade AVF	ac	92	37.72	$ 54.730	Guideline 12	$ 2,064
						Total:	**$ 717,763**

Table 23
Stream and Lake Reconstruction

Duck Nest Creek AVF Channel Reclamation - 15.8 ac

A	Total area (sq ft):	689632
B	Centerline length (ft):	2690
C	Average width (ft):	256
D	Area of excavation/linear ft (sq ft):	3071
E	Area of alluvium/linear ft (sq ft):	2430
F	Area of clay/linear ft (sq ft):	545
G	Volume of excavation (B*D) (cy):	305963
H	Volume of placed alluvium (B*E) (cy):	242100
I	Volume of placed clay (B*F) (cy):	54298
J	Percentage Remaining from Previous Years of Reclamation	100%

Reclamation cost estimate:

Item	Description	Unit	Quantity	Adj. Quantity	Unit cost	Source of unit cost	Total cost
1	Excavation in existing channel - 657 scrapers - 1000 ft haul, 0% slope	cy	305963	305,962.59	$ 0.755	Guideline 12	$ 231,080
2	Place clay liner - 657 scrapers - 1000 ft haul, 0% slope	cy	54298	54,298.15	$ 0.755	Guideline 12	$ 41,009
3	Compact clay liner - vibrating roller - 3 passes - 6 inch lifts	cy	54298	54,298.15	$ 1.630	Means-2018	$ 88,506
4	Place alluvium - 657 scraper - 1000 ft haul, 0% slope	cy	242100	242,100.00	$ 0.755	Guideline 12	$ 182,848
5	Grade AVF	ac	16	16.00	$ 54.730	Guideline 12	$ 876
						Total:	$ 544,319

Table 23
Stream and Lake Reconstruction

Bone Pile Creek AVF Channel Reclamation - 16 ac

A	Total area (sq ft):	695273
B	Centerline length (ft):	4652
C	Average width (ft):	149
D	Area of excavation/linear ft (sq ft):	1788
E	Area of alluvium/linear ft (sq ft):	1414
F	Area of clay/linear ft (sq ft):	317
G	Volume of excavation (B*D) (cy):	308066
H	Volume of placed alluvium (B*E) (cy):	243627
I	Volume of placed clay (B*F) (cy):	54618
J	Percentage Remaining from Previous Years of Reclamation	100%

Reclamation cost estimate:

Item	Description	Unit	Quantity	Adj. Quantity	Unit cost	Source of unit cost		Total cost
1	Excavation in existing channel - 657 scrapers - 1000 ft haul, 0% slope	cy	308066	308,065.78	$ 0.755	Guideline 12	$	232,669
2	Place clay liner - 657 scrapers - 1000 ft haul, 0% slope	cy	54618	54,617.93	$ 0.755	Guideline 12	$	41,251
3	Compact clay liner - vibrating roller - 3 passes - 6 inch lifts	cy	54618	54,617.93	$ 1.630	Means-2018	$	89,027
4	Place alluvium - 657 scraper - 1000 ft haul, 0% slope	cy	243627	243,626.96	$ 0.755	Guideline 12	$	184,001
5	Grade AVF	ac	16	16.00	$ 54.730	Guideline 12	$	876
						Total:	$	547,824

Table 23
Stream and Lake Reconstruction

Caballo Creek Pools and Runs Outside AVFs

A	Number of pools/runs:		1
B	Total length of pools/runs (ft):		11430
C	Pool/run ratio:	1	0.71
D	Total length of pools (0.42*B)		4801
E	Average pool width (ft):		12.5
F	Average pool depth (ft):		3.25
G	Area of excavation/linear foot - pools (sq ft):		189
H	Volume of pool excavation (D*G) (cy):		33540
I	Volume of clay in pools (D*359 sq ft/lin ft) (cy):		63836
J	Volume of alluvium in pools (D*1092 sq ft/lin ft) (cy):		194174
K	Total length of runs (0.58*B):		6629
L	Average run width (ft):		3
M	Average run depth (ft):		2.5
N	Area of excavation/linear foot - runs (sq ft):		156
O	Volume of run excavation (K*N) (cy):		38178
P	Volume of clay in runs (K*37 sq ft/lin ft) (cy):		9084
Q	Volume of alluvium in runs (K*14 sq ft/lin ft) (cy):		3437
R	Volume of large rock per pool/run sequence (65 x 5 x 3/27) (cy):		36
S	Volume of crushed rock per pool/run sequence (10 x 10 x 2/27) (cy):		7
T	Percentage Remaining from Previous Years of Reclamation		0%

Reclamation cost estimate:

Item	Description	Unit	Quantity	Adj. Quantity	Unit cost	Source of unit cost	Total cost
1	Excavation of pools - 657 scrapers - 1000 ft haul, 0% slope	cy	33540	0	$ 0.755	Guideline 12	$ -
2	Place clay liner in pools - 657 scrapers - 1000 ft haul, 0% slope	cy	63836	0	$ 0.755	Guideline 12	$ -
3	Compact pools clay liner - vibrating roller - 3 passes - 6 inch lifts	cy	63836	0	$ 1.630	Means-2018	$ -
4	Place pool alluvium - 657 scrapers - 1000 ft haul, 0% slope	cy	194174	0	$ 0.755	Guideline 12	$ -
5	Grade 160-ft wide pools	ac	18	0	$ 54.730	Guideline 12	$ -
6	Excavation of runs - 657 scrapers - 1000 ft haul, 0% slope	cy	38178	0	$ 0.755	Guideline 12	$ -
7	Place clay liner in runs - 657 scrapers - 1000 ft haul, 0% slope	cy	9084	0	$ 0.755	Guideline 12	$ -
8	Compact runs clay liner - vibrating roller - 3 passes - 6 inch lifts	cy	9084	0	$ 1.630	Means-2018	$ -
9	Place run alluvium - 657 scrapers - 1000 ft haul, 0% slope	cy	3437	0	$ 0.755	Guideline 12	$ -
10	Grade 50-ft wide run	ac	8	0	$ 54.730	Guideline 12	$ -
11	Large rock for 4 pool/run sequences	cy	144	0	$ 35.000	WWC	$ -
12	Crushed rock for 4 pool/run sequences	cy	28	0	$ 35.000	WWC	$ -
						Total:	$ -

Table 23
Stream and Lake Reconstruction

Caballo Creek Pools and Runs Within AVFs

A	Number of pools/runs:		1
B	Total length of pools/runs (ft):		19230
C	Pool/run ratio:	1	0.71
D	Total length of pools (0.42*B)		8077
E	Average pool width (ft):		12.5
F	Average pool depth (ft):		3.25
G	Area of excavation/linear foot - pools - below AVF (sq ft):		41
H	Volume of pool excavation (D*G) (cy):		12152
I	Volume of clay in pools not already in AVF (cy)		0
J	Volume of alluvium in pools not already in AVF:		0
K	Total length of runs (0.58*B):		11153
L	Average run width (ft):		3
M	Average run depth (ft):		2.5
N	Area of excavation/linear foot - runs (sq ft):		8
O	Volume of run excavation (K*N) (cy):		3305
P	Volume of clay in runs not already in AVF (cy):		0
Q	Volume of alluvium in runs not already in AVF (cy):		0
R	Volume of large rock per pool/run sequence (65 x 5 x 3/27) (cy):		36
S	Volume of crushed rock per pool/run sequence (10 x 10 x 2/27) (cy):		7
T	Percentage Remaining from Previous Years of Reclamation		41%

Reclamation cost estimate:

Item	Description	Unit	Quantity	Adj. Quantity	Unit cost	Source of unit cost	Total cost
1	Excavation of pools - 657 scrapers - 1000 ft haul, 0% slope	cy	12152	4,982.44	$ 0.755	Guideline 12	$ 3,763
2	Place clay liner in pools - 657 scrapers - 1000 ft haul, 0% slope	cy	0	-	$ 0.755	Guideline 12	$ -
3	Compact pools clay liner - vibrating roller - 2 passes - 6 inch lifts	cy	0	-	$ 1.630	Means-2018	$ -
4	Place pool alluvium - 657 scrapers - 1000 ft haul, 0% slope	cy	0	-	$ 0.755	Guideline 12	$ -
5	Grade 160-ft wide pools	ac	1	0.41	$ 54.730	Guideline 12	$ 22
6	Excavation of runs - 657 scrapers - 1000 ft haul, 0% slope	cy	3305	1,354.93	$ 0.755	Guideline 12	$ 1,023
7	Place clay liner in runs - 657 scrapers - 1000 ft haul, 0% slope	cy	0	-	$ 0.755	Guideline 12	$ -
8	Compact runs clay liner - vibrating roller - 2 passes - 6 inch lifts	cy	0	-	$ 1.630	Means-2018	$ -
9	Place run alluvium - 657 scrapers - 1000 ft haul, 0% slope	cy	0	-	$ 0.755	Guideline 12	$ -
10	Grade 50-ft wide run	ac	13	5.25	$ 54.730	Guideline 12	$ 287
11	Large rock for 12 pool/run sequences	cy	36	14.81	$ 35.000	WWC	$ 518
12	Crushed rock for 12 pool/run sequences	cy	7	3.04	$ 35.000	WWC	$ 106
						Total:	$5,719

Table 23
Stream and Lake Reconstruction

Caballo Lake Reclamation - see Appendix 4.6-1, Sheets 2 and 3 of 4

A	Quantity of concrete - bypass ditch diversion structure	
	base - 0.5 ft x 19.5 ft x 40 ft (cy)	14.5
	base fottings - 2 x 0.5 ft x 1.5 ft x 40 ft (cy)	2.3
	overflow dam - 2 ft x 9.5 ft x 40 ft (cy)	28.2
	Total (cy):	45.0
	Assumed total w/ 15 percent contingency (cy):	51.8
B	Earthwork associated w/concrete structure - 60 ft x 70 ft x 6 ft (cy)	933
C	Quantity of riprap - 1 ft thick	
	1 ft x 10 ft x 25 ft (cy)	9.3
	1 ft x 20 ft x 25 ft (cy)	18.6
	1 ft x 25 ft x 25 ft (cy)	23.2
	Total (cy):	51.1
	Assumed total w/ 15 percent contingency (cy):	58.8
D	Quantity of woven geotextile under riprap	
	10 ft x 25 ft (sy)	27.8
	20 ft x 25 ft (sy)	55.6
	25 ft x 25 ft (sy)	69.5
	Total (sy):	152.9
	Assumed total w/ 15 percent contingency (sy):	175.9
E	Length of 3-ft deep V-ditch (ft)	3000
F	Quantity of earth - 1 ft of V-ditch - 18 ft top width x 3 ft deep (cy)	1
G	Estimated length of 36-inch dia CMP pipe - diversion to ditch (ft)	100
H	Area to be fine graded - assume 100 percent of HWL surface area (ac)	77
I	Percentage Remaining from Previous Years of Reclamation	100%

Reclamation cost estimate:

Item	Description	Unit	Quantity	Adj. Quantity	Unit cost	Source of unit cost	Total cost
1	Reinforced concrete - cast-in-place	cy	52	52	$ 275.34	Means-2018	$ 14,263
2	Unclassified excavation - concrete diversion structure, riprap - backhoe	cy	933	933	$ 9.09	Means-2018	$ 8,481
3	Backfill - concrete diversion structure, riprap - FE loader	cy	933	933	$ 5.30	Means-2018	$ 4,945
4	Riprap	cy	59	59	$ 28.27	Means-2018	$ 1,662
5	Woven geotextile filter fabric (under riprap)	sy	176	176	$ 2.35	Means-2018	$ 413
6	Turnout head gate - 3 x cost of 36-inch dia steel turnout	ls	1	1	$ 750.00	ROSCO	$ 750
7	V-ditch (3 ft deep) - constructed using dozer	cy	3000	3000	$ 2.63	Means-2018	$ 7,890
8	36-inch x 12 ga CMP pipe, in place	lf	100	100	$ 55.39	Means-2018	$ 5,539
9	Fine grading	ac	77	77	$ 54.73	Guideline 12	$ 4,214
						Total:	$ 48,157