



Public Service Commission

State of North Dakota

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Memorandum

TO: Mine Operators, Lignite Energy Council, and Other Interested Parties

FROM:  Dean K. Moos, Director-Reclamation Division

DATE: September 29, 2017

SUBJECT: Annual update of variable costs contained in Policy Memorandum No. 16 to Mine Operators - Reclamation Cost Estimating Guidelines

Attached is the July 2017 variable cost updates to the Reclamation Division's Reclamation Cost Estimating Guidelines used for calculating worst-case bond amounts for mining permits. This annual update contains the variable costs as of July 1, 2017. Several of the variable cost items changed with this update and the average hourly rates for equipment used at the large mines increased an average of 4.3% over the July 1, 2016 rates. The attachment includes a breakdown of the hourly equipment rates for 2017. A comparison of the 2016 and 2017 hourly equipment rates is also attached for your convenience.

Mining companies will not be required to update all current worst-case reclamation cost estimates using the July 2017 rates. However, for new and pending permit and revision applications that propose a new or revised worst-case reclamation scenario, these applications should use the updated variable costs attached to this memo.

The equipment list prices and suggested residual values were obtained from Butler Machinery. The fuel cost, an average weekly cost over the past 12 months, was obtained from Fleet Services with the North Dakota Department of Transportation. Average tire prices are based on information received from Firestone Tire and Lignite Tire Service. Seed prices are based on information received from Chesak Seed House and custom work farm rates are based on 2016 average rates published by the NDSU Extension Service.

For small mines, the \$1.20 per cubic yard rate remains unchanged based on the bids the Commission's AML Division received this year. No updates to the worst-case reclamation cost estimates will be required this year for small mines.

Attachments

Minedata/MemoIndustry/2017/Pmemo17_var_cost_update_pkg_9-29-17

Per Cubic Yard Earth-moving Cost for Small Mines

Costs for backfilling, grading, and suitable plant growth material respread where the total quantity to be moved is 500,000 cubic yards or less will be calculated at a rate of \$1.20 per yard. (This rate will be reviewed and updated on July 1 of each year.)

Equipment Prices and Replacement Tire Prices

The following equipment prices were furnished on August 14, 2017 by Greg O'Shea of Butler Machinery as the current list price delivered as commonly equipped for reclamation work. These prices include a 5% discount and no taxes.

<u>Item</u>	<u>List Price Discounted (\$)</u>
D11T Tractor w/U Dozer & Ripper	2,500,000
D10T Tractor w/U Dozer & Ripper	1,680,000
D9T Tractor w/U Dozer & Ripper	1,143,000
657G Scraper w/Push-Pull	2,000,000
637G Scraper w/Push-Pull	1,350,000
993K Wheel Loader with 15 CY Bucket	2,888,000
777F End Dump Truck	1,800,000
16M Motor Grader w/Ripper	1,050,000

The following average tire prices are based on information provided by Firestone Tire of Bismarck and Lignite Tire Service of Beulah.

<u>Equipment</u>	<u>Tire Size</u>	<u>Price Each (\$)</u>
657G Scraper	40.5/75 R39 (E-3)	16,650
637G Scraper	37.25R35 (E-3)	11,500
16M Motor Grader	23.5 R25 (E-4)	4,300
993K Wheel Loader	50/65 R51 (L-5)	40,850
777F End Dump Truck	27.00R49 (E-4)	12,600

Residual Values for Reclamation Equipment

The following are residual percentages and values to be used for determining the cost per hour of reclamation equipment. Values shown were obtained from Butler Machinery.

<u>Item</u>	<u>Percentage of Original Cost</u>	<u>Residual Value (\$)</u>
D11T Tractor w/U Dozer & Ripper	35	875,000
D10T Tractor w/U Dozer & Ripper	40	672,000
D9T Tractor w/U Dozer & Ripper	37	425,000
657G Scraper w/Push-Pull	27	540,000
637G Scraper w/Push-Pull	38	513,000
16M Motor Grader w/Ripper	47	493,500
993K Wheel Loader W/15 CY Bucket	38	1,097,000
777F End Dump Truck	38	684,000

Prime Interest Rate

The prime interest rate to be used for the calculation of interest on reclamation equipment is 4.25% for July 1, 2017 to June 30, 2018. The total interest rate to be used for calculations is 6.25% as determined according to item III(A) of this guideline.

Fuel Cost

The cost of fuel for reclamation equipment from July 1, 2017 to June 30, 2018 is based on the average retail price from July 1, 2016 to June 30, 2017 obtained from Fleet Services Division of the ND Department of Transportation is \$1.6333 per gallon. Price includes cost of fuel, an administrative fee of \$0.012 per gallon, and an oil fuel spill fee of \$0.0019 per gallon. Federal and state taxes are excluded from this price.

Wages and Benefits

The revised wage rates were obtained from The International Union of Operating Engineers Local 49 for Group 3 operators for Heavy Industrial. The updated base rates for workers compensation, unemployment benefits and social security were obtained from the respective agencies.

Hourly Rate for Labor - Group 3 Heavy Industrial	30.80
Pension, Health, Welfare, & Apprenticeship/Hour - Group	18.80
Insurance - Assumed 1% of Hourly Rate	0.31
Social Security - 7.65% of Hourly Rate	2.36
*Workers Compensation – 1.34% of Hourly Rate	0.41
[\$645.84 / (\$30.80 x 2080 hrs x 0.75)]	
*Unemployment – 8.35% of Hr. Labor	2.57
[(0.1143 x \$35,100 / (\$30.80 x 2080 hrs x 0.75)]	
 Total Hourly Operator Cost	 \$55.25

*Based on 40 hour week for 9 months of the year

Custom Farm Work Rates

The following custom farm rates are taken from the publication "Custom Farm Work Rates on North Dakota Farms, 2016" published by the NDSU Extension Service.

<u>Item</u>	<u>Rate/Acre (\$)</u>
Chisel Plowing	11.85
Small Grain Seeding	16.94
Application of Dry Fertilizer	6.39

Fertilizer

The cost of 11-52-0 fertilizer for use in reclamation is \$450 per ton. This price is based on the rate provided by Direct Ag on August 16, 2017.

Tree Prices

The cost of planting trees and shrubs on reclaimed land is based on rates from the Mercer County Soil Conservation District in Beulah, ND. Price includes planting.

Trees:	\$30/100 feet
Weed Fabric Barrier:	\$65/100 feet

Seed Prices

The seed prices on the following page were determined based on a quote from Chesak Seed House on June 26, 2017. (Seed prices are highly variable and may not reflect prices of seed later this year or next spring.)

June 2017 Seed Prices

<u>Native Grasses</u>	<u>Cost/lb PLS</u>	<u>Introduced Grasses</u>	<u>Cost/lb PLS</u>
Big bluestem	<u>13.50</u>	Crested wheatgrass	<u>4.00</u>
Blue grama	<u>8.75</u>	Intermediate wheatgrass	<u>2.25</u>
Canada wildrye	<u>12.25</u>	Pubescent wheatgrass	<u>3.00</u>
Green needlegrass	<u>13.00</u>	Russian wildrye	<u>4.20</u>
Indian grass	<u>13.00</u>	Smooth bromegrass	<u>4.00</u>
Little bluestem	<u>12.25</u>	Tall wheatgrass	<u>1.85</u>
Sand bluestem	<u>25.00</u>	Reed canarygrass	<u>7.50</u>
Sideoats grama	<u>9.50</u>	Legumes	
Slender wheatgrass	<u>2.00</u>	Alfalfa	<u>2.45</u>
Switchgrass	<u>8.00</u>	Sweetclover yellow-flowered	<u>1.55</u>
Thickspike wheatgrass	<u>4.75</u>	Sweetclover white-flowered	<u>3.50</u>
Western wheatgrass	<u>4.50</u>		
Prairie junegrass	<u>13.50</u>		
Buffalo grass	<u>10.00</u>		
Prairie sandreed	<u>25.00</u>		

Hourly Cost Estimation 2017 - Large Mine Fleet

Estimated Ownership yrs =	7	Insurance rate =	0.0075	Fuel Cost/gal \$ =	1.63
Annual Use hrs =	3,000	Sales Tax rate =	0.05	Union Labor - Group 3 base =	30.80
Total Life hrs/years =	20,000	Unemploymt constructn rate	0.1143	Union Labor - Group 3 total =	49.60
Interest rate =	0.0625	Unemploymt salary cap =	35,100	WSI Premium Charge =	645.84

Equipment Type	Dozers			Scrapers		Grader	Water wagon	Loader	Truck
	D11T	D10T	D9T	657G	637G	16M		993K	777F
<i>Ownership Costs:</i>									
Delivered price \$	2,500,000	1,680,000	1,143,000	2,000,000	1,350,000	1,050,000	1,050,000	2,888,000	1,800,000
Tire replacement \$	0	0	0	66,600	46,000	25,800	25,800	163,400	75,600
Adjusted price \$	2,500,000	1,680,000	1,143,000	1,933,400	1,304,000	1,024,200	1,024,200	2,724,600	1,724,400
Residual Value \$	875,000	672,000	425,000	540,000	513,000	493,500	493,500	1,097,000	684,000
Residual Value %	35.0	40.0	37.2	27.0	38.0	47.0	47.0	38.0	38.0
Value to be recovered \$	1,625,000	1,008,000	718,000	1,393,400	791,000	530,700	530,700	1,627,600	1,040,400
Equipment cost per hour \$	81.25	50.40	35.90	69.67	39.55	26.54	26.54	81.38	52.02
Interest cost \$/hr	29.76	20.00	13.61	23.81	16.07	12.50	12.50	34.38	21.43
Insurance cost \$/hr	3.57	2.40	1.63	2.86	1.93	1.50	1.50	4.13	2.57
Sales tax cost \$/hr	6.25	4.20	2.86	5.00	3.38	2.63	2.63	7.22	4.50
<i>Hourly ownership cost</i>	120.83	77.00	54.00	101.34	60.93	43.16	43.16	127.11	80.52
<i>Operating Costs:</i>									
Fuel consumption gal/hr	23.0	15.5	12.5	30.5	23.0	6.5	6.5	22.0	14.0
Fuel cost \$/hr	37.57	25.32	20.42	49.82	37.57	10.62	10.62	35.93	22.87
Lubricants + labor \$/hr	28.34	15.09	11.49	30.16	24.42	8.25	8.25	21.77	19.67
Tire life hrs	0	0	0	5,000	5,000	10,000	10,000	10,000	10,000
Tire cost \$/hr	0.00	0.00	0.00	13.32	9.20	2.58	2.58	16.34	7.56
Overhaul + repair reserve \$	35.16	23.55	19.93	25.99	22.58	12.60	12.60	13.90	24.95
Repair + maintenance	37.98	23.94	20.42	29.87	26.42	9.25	9.25	15.70	15.37
Wear items, GEC	16.66	8.22	6.59	2.61	2.11	1.78	1.78	4.54	0.00
<i>Hourly operating cost</i>	155.71	96.12	78.85	151.77	122.30	45.08	45.08	108.18	90.42
Operators hourly wage (\$)	55.25	55.25	55.25	55.25	55.25	55.25	55.25	55.25	55.25
Total hourly rate	331.79	228.37	188.09	308.35	238.47	143.49	143.49	290.54	226.19
Overhead and profit @15%	49.77	34.25	28.21	46.25	35.77	21.52	21.52	43.58	33.93
Total Estimated Hourly Cost:	381.56	262.62	216.31	354.60	274.24	165.01	165.01	334.12	260.11

