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Company Name Doverspike Bros. Coal Co.

Project 33840111-MD1

Site Name Mowrey

AMD TREAT

AMD TREAT MAIN COST FORM

Costs

Passive Treatment	A	S	
Vertical Flow Pond			$0
Anoxic Limestone Drain			$0
Anaerobic Wetlands			$0
Aerobic Wetlands			$0
Manganese Removal Bed			$0
Oxic Limestone Channel			$0
Limestone Bed			$0
BIO Reactor			$0
Passive Subtotal:			**$0**
Active Treatment			
Caustic Soda			$0
Hydrated Lime			$0
Pebble Quick Lime			$0
Ammonia			$0
Oxidants			$0
Soda Ash			$0
Active Subtotal:			**$0**
Ancillary Cost			
Ponds	1	0	$14,010
Roads			$0
Land Access			$0
Ditching	1	0	$9,784
Engineering Cost	1	0	$4,759
Ancillary Subtotal:			**$28,553**
Other Cost (Capital Cost)			$0
Total Capital Cost:			**$28,553**
Annual Costs			
Sampling	1	0	$597
Labor	1	0	$910
Maintenance	1	0	$833
Pumping			$0
Chemical Cost			$0
Oxidant Chem Cost			$0
Sludge Removal			$0
Other Cost (Annual Cost)			$0
Land Access (Annual Cost)			$0
Total Annual Cost:			**$2,340**
Other Cost			

Water Quality

Calculated Acidity	18.80	mg/L
Alkalinity	11.60	mg/L

Calculate Net Acidity (Acid-Alkalinity)

Enter Net Acidity manually

Net Acidity (Hot Acidity)	7.20	mg/L
Design Flow	30.00	gpm
Typical Flow	25.00	gpm
Total Iron	0.30	mg/L
Aluminum	1.34	mg/L
Manganese	5.15	mg/L
pH	5.00	su
Ferric Iron	0.00	mg/L
Ferrous Iron	0.00	mg/L
Sulfate	0.00	mg/L
Filtered Fe	0.00	mg/L
Filtered Al	0.00	mg/L
Filtered Mn	0.00	mg/L
Specific Conductivity	0.00	uS/cm
Total Dissolved Solids	0.00	mg/L
Dissolved Oxygen	0.00	mg/L
Typical Acid Loading	1.0	tons/yr

Total Annual Cost: per 1000 Gal of H2O Treated **$0.177**

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COMMENTS:

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AMD TREAT

PONDS

AMDTREAT

Pond Name

Pond Design Based On:

- Retention Time
  - 1. Desired Retention Time ____ hours
  - ☐ 3. Sludge Removal Frequency ____ times/year
  - ☐ 4. Titration?
    - 5. Sludge Rate ____ gal sludge/ gal H2O
    - 6. Percent Solids ____ %
    - 7.Sludge Density ____ lbs./gal
- Pond Size
  - 8. Pond Length at Top of Freeboard 277.000 ft
  - 9. Pond Width at Top of Freeboard 80.000 ft

	Run		Rise
10. Slope Ratio of Pond Sides	2.0	:	1

- 11. Freeboard Depth 2.0 ft
- 12. Water Depth 4.0 ft
- 13. Excavation Unit Cost 5.50 $/yd3
- 14. Total Length of Effluent / Influent Pipe 0.00 ft
- 15. Unit Cost of Pipe 0.00 $/ft

Liner Cost

- No Liner
- Clay Liner
  - 16. Clay Liner Unit Cost ____ $/yd3
  - 17. Thickness of Clay Liner ____ ft
- Synthetic Liner
  - 18. Synthetic Liner Unit Cost ____ $/yd2

☐ 19. Clearing and Grubbing?

- ○ 20. Land Multiplier ____ ratio
- ○ 21. Clear/Grub Acres ____ acres
- 22. Clear and Grub Unit Cost ____ $/acre

☑ **Opening Screen Water Parameters**

Influent Water Parameters that Affect Ponds

Calculated Acidity 18.80 mg/L

Alkalinity 11.60 mg/L

- Calculate Net Acidity (Acid-Alkalinity)
- Enter Net Acidity manually

Net Acidity (Hot Acidity) 7.20 mg/L

Design Flow 30.00 gpm

Typical Flow 25.00 gpm

Total Iron 0.30 mg/L

Aluminum 1.34 mg/L

Manganese 5.15 mg/L

Record Number 1 of 1

- 23. Revegetation Cost 1500.00 $/acre
- 24. Cost of Baffles 0 $

Calculated Pond Dimensions per Pond

- 25. Length at Top of Freeboard 277 ft
- 26. Width at Top of Freeboard 80 ft
- 27. Freeboard Volume 4,015 yd3
- 28. Water Volume 2,477 yd3
- 29. Estimated Annual Sludge 0 yd3/yr
- 30. Volume of Sludge per Removal 0 yd3/ removal
- 31. Excavation Volume 1.53 acre ft
- 32. Excavation Volume 2,477 yd3
- 33. Clear and Grub Area 0.76 acres
- 34. Liner Area 0 yd2
- 35. Calculated Retention Time 278 hours

Ponds Sub-Totals per Pond

- 36. Excavation Cost 13,628 $
- 37. Pipe Cost 0 $
- 38. Liner Cost 0 $
- 39. Clearing and Grubbing Cost 0 $
- 40. Revegetation Cost 381 $
- 41. Baffle Cost 0 $

42. Estimated Cost 14,010 $

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AMD TREAT

DITCHING

AMDTREAT

Ditching Name

1. Ditch Length Rock	125	ft
2. Ditch Length Grass	100	ft
3. Bottom Width of Ditch	4.0	ft
4. Ditch Depth	3.00	ft
5. Geo Textile Unit Cost	3.00	$/yd2
6. Length of Geo Textile	100	ft
7. Slope Ratio of Ditch Sides (Run : Rise)	2.00 : 1.00	
☐ 8. Surveying?		
9. Survey Rate		acres/day
10. Survey Unit Cost		$/day
☐ 11. Clearing and Grubbing?		
12. Clear and Grub Cost		$/acre

Record Number 1 of 1

13. Ditch Depth of Rock	3.00	ft
14. Cost of Ditch Surface Rock	20.00	$/yd3
15. Cost to Place Rock	12.00	$/yd3
16. Excavation Unit Cost	5.50	$/yd3
17. Length of Silt Fence	0.00	ft
18. Unit Cost of Silt Fence	1.00	$/ft
19. Revegetation Unit Cost	1500.00	$/acre

Ditching Sub-Totals

20. Excavation Cost	1,375	$
21. Survey Cost	0	$
22. Clear and Grub Cost	0	$
23. Aggregate Cost	7,741	$
24. Filter Fabric Cost	581	$
25. Silt Fence Cost	0	$
26. Revegetation Cost	87	$
27. Total Cost	9,784	$

Company Name Doverspike Bros. Coal Co.

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AMD TREAT

ENGINEERING COST

1. Capital Cost *	23,794	$
(•) 2. Per Cent of Capital Cost	20.00	%
( ) 3. Actual Engineering Cost		$
4. Total Engineering Cost	4,759	$

*** Total Capital Cost minus Engineering and Land Access Capital Cost**

Company Name Doverspike Bros. Coal Co.

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AMD TREAT

SAMPLING

AMDTREAT

Sampling Name

Estimate Sampling Cost

1. Unit Labor Cost	35.00	$/hr
2. Collection Time per Sample	0.33	hours/sample
3. Travel Time	1.00	hr
4. Sample Frequency	0.33	samples/mo
5. Lab Cost Per Sample	27.00	$/sample
6. Number of Sample Points	3	points

Enter Established Annual Sampling Cost

7. Actual Annual Sampling Cost		$

Sampling Sub-Totals

8. Yearly Sample Analysis Cost	321	$
9. Yearly Travel Cost	139	$
10. Yearly Collection Cost	137	$

11. Sampling Cost	597	$

Record Number 1 of 1

Company Name Doverspike Bros. Coal Co.

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AMD TREAT

LABOR

Labor Name

Estimate Labor Cost

1. Site Visits per Week	0.25	
2. Site Labor Time per Visit	1.00	hours
3. Travel Time per Visit	1.00	hours
4. Unit Labor Cost	35.00	$/hour

Enter Established Annual Labor Cost

5. Actual Annual Labor Cost		$

6. Total Cost	910	$

Record Number 1 of 1

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Company Name Doverspike Bros. Coal Co.

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AMD TREAT

MAINTANENCE

Estimate Maintenance Cost

1. Percent of Active Cost	3.50	%
2. Percent of Passive Cost	3.50	%
3. Percent of Ancillary Cost *	3.50	%
4. Percent of Other Capital Cost	3.50	%

Enter Established Annual Maintenance Cost

5. Annual Maintenance Cost		$

Maintenance Sub-Totals

6 Total Maintenance Active Cost	0	$
7. Total Maintenance Passive Cost	0	$
8. Total Maintenance Ancillary Cost	832	$
9. Total Maintenance Other Capital Cost	0	$
10. Total Maintenance Cost	833	$

* Ancillary Cost does int include Cost for Land Access and Engineering Cost

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Company Name Doverspike Bros. Coal Co.

Project 33840111-MD1

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AMD TREAT
RECAPITIZALITION COST

AMDTREAT

Calculation Period 75 yrs Inflation Rate 3.10 % Net Return Rate 6.00 %

Recapitizalition Name

A.	B	C	D	E	F	G
Description of Item	**Unit Cost Per Item**	**Quantity**	**Total Item Cost**	**Life Cycle**	**Number of Periods**	**Total PV**
1. Pond	14,010	1	14,010	20	3	15,316
2. Limestone Ditch	9,784	1	9,784	20	3	10,696
3.	0	0	0	0	0	0
4.	0	0	0	0	0	0
5.	0	0	0	0	0	0
6.	0	0	0	0	0	0
7.	0	0	0	0	0	0
8.	0	0	0	0	0	0
9.	0	0	0	0	0	0
10.	0	0	0	0	0	0
11.	0	0	0	0	0	0
12.	0	0	0	0	0	0
13.	0	0	0	0	0	0
14.	0	0	0	0	0	0
15.	0	0	0	0	0	0
16.	0	0	0	0	0	0
17.	0	0	0	0	0	0
18.	0	0	0	0	0	0
19.	0	0	0	0	0	0
20.	0	0	0	0	0	0

Total Capital Cost 23,794 $ PV Grand Total 26,011 $