Printed on 03/20/2008

Company Name C & K Coal
Project DEP 1
Site Name Stroud

AMD TREAT

Costs AMD TREAT MAIN COST FORM

Passive Treatment	A	S	
Vertical Flow Pond			$0
Anoxic Limestone Drain			$0
Anaerobic Wetlands			$0
Aerobic Wetlands	1	0	$14,401
Manganese Removal Bed			$0
Oxic Limestone Channel			$0
Limestone Bed			$0
BIO Reactor			$0
Passive Subtotal:			**$14,401**
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			$0
Roads			$0
Land Access			$0
Ditching			$0
Engineering Cost			$0
Ancillary Subtotal:			**$0**
Other Cost (Capital Cost)			$0
Total Capital Cost:			**$14,401**
Annual Costs			
Sampling	1	0	$674
Labor	1	0	$837
Maintenance	1	0	$144
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:			**$1,655**
Other Cost			

Water Quality

Calculated Acidity	0.00	mg/L
Alkalinity	0.00	mg/L

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

Net Acidity (Hot Acidity)	12.60	mg/L
Design Flow	20.00	gpm
Typical Flow	10.00	gpm
Total Iron	2.55	mg/L
Aluminum	1.79	mg/L
Manganese	5.89	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

Total Annual Cost: per 1000 Gal of H2O Treated **$0.314**

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AEROBIC WETLANDS

AMDTREAT

Aerobic Wetlands Name

☑ **Opening Screen Water Parameters**

Influent Water Parameters that Affect Aerobic Wetlands

Calculated Acidity: 0.00 mg/L

Alkalinity: 0.00 mg/L

○ Calculate Net Acidity (Acid-Alkalinity)

○ Enter Net Acidity manually

Net Acidity (Hot Acidity): 12.60 mg/L

Design Flow: 20.00 gpm

Typical Flow: 0.00 gpm

Total Iron: 2.55 mg/L

Aluminum: 0.00 mg/L

Manganese: 5.89 mg/L

pH: 5.00 su

SIZING METHODS Select One

◉ Aerobic Wetland Based on Metal Removal Rates	1. Iron Removal Rate	5.0	g/m2/day	2. Mn Removal Rate	0.5 g/m2/day
○ Aerobic Wetland Based on Dimensions	3. Top Length at Freeboard		ft	4. Top Width at Freeboard	ft
○ Aerobic Wetland Based on Iron Oxidation Kinetics	5. Rate Constant		moles/sec	6. Effluent Fe Concentration	mg/l
	7. Dissolved Oxygen		mg/l	8. H2O Temperature	°C

	Length		Width
9. Length to Width Ratio	2.0	:	1.000

	Run of Slope		Rise of Slope
10. Slope of Wetland Sides	2.0	:	1.000

11. Freeboard Depth	1.50	ft
12. Free Standing Water Depth	0.50	ft
13. Organic Matter Depth	1.00	ft
14. Organic Matter Unit Cost	19.00	$/yd3
15. Organic Matter Spreading Unit Cost	3.50	$/yd3
16. Excavation Unit Cost	2.50	$/yd3
17. Wetland Planting Unit Cost	3600	$/acre

Liner Cost

◉ No Liner

○ Clay Liner

18. Clay Liner Unit Cost: $/yd3

19. Thickness of Clay Liner: ft

○ Synthetic Liner

20. Synthetic Liner Unit Cost: $/yd2

☐ 21. Clearing and Grubbing?

○ 22. Land Multiplier: ratio

○ 23. Clear/Grub Acres: acres

24. Clear and Grub Unit Cost: $/acre

Aerobic Wetland Sizing Summaries

25. Length at Top of Freeboard	175.82	ft
26. Width at Top of Freeboard	90.91	ft
27. Freeboard Volume	844	yd3
28. Water Surface Area	14,420	ft2
29. Water Volume	262	yd3
30. Organic Matter Volume	497	yd3
31. Excavation Volume	759	yd3
32. Clear and Grub Area	0.0	acres
33. Liner Area	0	ft2
34. Retention Time	44	hrs

Aerobic Cost Summaries

35. Organic Matter Cost	11,182	$
36. Excavation Cost	1,898	$
37. Liner Cost	0	$
38. Clear and Grub Cost	0	$
39. Wetland Planting Cost	1,321	$
40. Total Cost	14,401	$

Record Number 1 of 1

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SAMPLING

Sampling Name QUARETERLY - RAW, FINAL, UPSTR, DOWNSTR

Estimate Sampling Cost

1. Unit Labor Cost	35.00	$/hr
2. Collection Time per Sample	0.25	hours/sample
3. Travel Time	1.00	hr
4. Sample Frequency	0.33	samples/mo
5. Lab Cost Per Sample	25.00	$/sample
6. Number of Sample Points	4	points

Enter Established Annual Sampling Cost

7. Actual Annual Sampling Cost		$

Sampling Sub-Totals

8. Yearly Sample Analysis Cost	396	$
9. Yearly Travel Cost	139	$
10. Yearly Collection Cost	139	$

11. Sampling Cost	674	$

Record Number 1 of 1

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LABOR

Labor Name MONTHLY

(•) **Estimate Labor Cost**

1. Site Visits per Week	0.23	
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	837	$

Record Number 1 of 1

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MAINTANENCE

Estimate Maintenance Cost

1. Percent of Active Cost	3.00	%
2. Percent of Passive Cost	1.00	%
3. Percent of Ancillary Cost *	0.00	%
4. Percent of Other Capital Cost	0.00	%

Enter Established Annual Maintenance Cost

5. Annual Maintenance Cost		$

Maintenance Sub-Totals

6 Total Maintenance Active Cost	0	$
7. Total Maintenance Passive Cost	144	$
8. Total Maintenance Ancillary Cost	0	$
9. Total Maintenance Other Capital Cost	0	$
10. Total Maintenance Cost	144	$

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

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AMD TREAT
RECAPITIZALITION COST

AMDTREAT

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

Recapitizalition Name DEP 1 -bond

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. rebuild aerobic wetland	14,401	1	14,401	10	7	38,585
2.	0	0	0	0	0	0
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 14,401 $ PV Grand Total 38,585 $