

K&J Trust calculations

General assumptions:

The combined post mining discharge treatment trust for the 4 treatment systems installed at the Gaber-Brown and Westover sites were calculated using actual costs to construct figures provided by Bob Hedin and were obtained from the contract with Stoy Excavating, the contractor. The annual O&M costs were derived from the O&M plan as detailed by Hedin Environmental and submitted to the Department as part of the CO&A with Seaboard, the surety for K&J.

Sampling is to be done quarterly with samples of the raw discharge, outfalls from the VFP's, and a final effluent.

Monthly maintenance is to include general treatment system inspections as well as flow measurements as detailed in the O&M plan. Monthly maintenance is also to be completed during the quarterly flush event and some of the costs were combined.

The recapitalization component of the trust only accounts for the replacement of the limestone in the VFP's. It is not anticipated that any other component of the 4 treatment systems will ever require replacement or reconstruction. Potential acts of vandalism or catastrophes are not accounted for.

Sludge removal frequency is detailed in the O&M plan. Even though the removal is not needed yearly the calculations were done on a yearly basis. The yearly cost for sludge removal is calculated from the provided sludge production values multiplied by an average removal cost of \$.05 per gallon.

Labor and travel costs for the quarterly flush and sampling and the monthly maintenance have been combined. Routine maintenance is to be done on the flush/sampling visit. This will still allow for monthly visits to the site but multitasking will be required. I accounted for 2 people to be present on each visit.

Specific values used can be obtained from the AMDTreat printouts.

Site-specific information:

Gaber-Brown

Quarterly samples = 5

Monthly maintenance + 2 flows

Sludge removal is approximately 3500 gallons per year x \$.05 = \$175.00

VFP limestone replacement: 6000 tons with a 15 year life expectancy

Stone cost = \$83,400.00 @\$22/ton = \$132,000.00

Placement cost = \$18,000.00 \$18,000.00

Total stone = \$101,400.00 \$150,000.00

Pond 4

Quarterly samples = 4
Monthly maintenance + 2 flows
Sludge removal is approximately 4300 gallons per year x \$.05 = \$215.00
VFP limestone replacement: 6000 tons with a 15 year life expectancy
Stone cost = \$83,400.00 @ \$22/ton = \$132,000.00
Placement cost = \$18,000.00 \$18,000.00
Total stone = \$101,400.00 \$150,000.00

Pond P

Quarterly samples = 4
Monthly maintenance + 3 flows
Sludge removal is approximately 4800 gallons per year x \$.05 = \$240.00
VFP limestone replacement: 6000 tons with a 15 year life expectancy
Stone cost = \$83,400.00 @ \$22/ton = \$132,000.00
Placement cost = \$18,000.00 \$18,000.00
Total stone = \$101,400.00 \$150,000.00

Pond 23

Quarterly samples = 4
Monthly maintenance + 2 flows
Sludge removal is approximately 250 gallons per year x \$.05 = \$15.00
VFP limestone replacement: 1200 tons with a 50 year life expectancy
Stone cost = \$16,680.00 @ \$22/ton = \$26,400.00
Placement cost = \$9,600.00 \$9,600.00
Total stone = \$26,280.00 \$36,000.00

Snow removal

2 plowing events per year at 8 hours per event @ \$100.00 per hour = \$1,600.00
Mob/Demob – 2 times at \$500.00 per = \$1,000.00
Total = \$2,600.00

With proper planning of sampling, flushing and maintenance snow removal could be unnecessary

Road maintenance

Grading and repairs will be required on various sections of access road especially the direct access to ponds P and 23. The roads to ponds 4 and Gaber-Brown should require very minimal maintenance.

1 event per year for 2 days at 8 hours per day @ \$100.00 per hour = 1,600.00
Mob/Demob = \$500.00
Total = \$2,100.00

Total annual O&M = \$17,573.00

Present value of recap in 7 years = \$758,164.00 @ \$22/ton LS = \$1,114,947.00

Total trust = \$1,187,614.78 **total trust = \$1,552,576.53**

@ 3.1% inflation, 8.43% return, 16% volatility, 1.5% trustee fee

3/20/08 NOTE: Values in red are for a Limestone cost of \$22/ton + \$3.00/ton placement

Company Name K&J

Project Pond 4 K&J

Site Name Combined trust



AMDTREAT

AMD TREAT AMD TREAT MAIN COST FORM

Costs

<u>Passive Treatment</u>	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
<u>Active Treatment</u>			
Caustic Soda			\$0
Hydrated Lime			\$0
Pebble Quick Lime			\$0
Ammonia			\$0
Oxidants			\$0
Soda Ash			\$0
Active Subtotal:			\$0
<u>Ancillary Cost</u>			
Ponds			\$0
Roads			\$0
Land Access			\$0
Ditching			\$0
Engineering Cost			\$0
Ancillary Subtotal:			\$0
Other Cost (Capital Cost)			\$0
Total Capital Cost:			\$0
<u>Annual Costs</u>			
Sampling	1	0	\$1,782
Labor	2	0	\$10,446
Maintenance			\$0
Pumping			\$0
Chemical Cost			\$0
Oxidant Chem Cost			\$0
Sludge Removal	1	0	\$645
Other Cost (Annual Cost)			\$4,700
Land Access (Annual Cost)			\$0
Total Annual Cost:			\$17,573
Other Cost	1	0	

Water Quality

Calculated Acidity mg/L

Alkalinity mg/L

Calculate Net Acidity (Acid-Alkalinity)

Enter Net Acidity manually

Net Acidity (Hot Acidity) mg/L

Design Flow gpm

Typical Flow gpm

Total Iron mg/L

Aluminum mg/L

Manganese mg/L

pH su

Ferric Iron mg/L

Ferrous Iron mg/L

Sulfate mg/L

Filtered Fe mg/L

Filtered Al mg/L

Filtered Mn mg/L

Specific Conductivity uS/cm

Total Dissolved Solids mg/L

Dissolved Oxygen mg/L

← **4 SYSTEMS COMBINED**

Total Annual Cost: per
1000 Gal of H2O Treated \$0.000

Company Name K&J
Project Pond 4 K&J
Site Name Combined trust

Printed on 03/17/2008

AMD TREAT SAMPLING



Sampling Name Quarterly sampling - all sites combined

Estimate Sampling Cost

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

Enter Established Annual Sampling Cost

7. Actual Annual Sampling Cost \$

Sampling Sub-Totals

8. Yearly Sample Analysis Cost \$
9. Yearly Travel Cost \$
10. Yearly Collection Cost \$

11. Sampling Cost \$

Record Number 1 of 1

18 Samples/QTR

**LABOR COSTS & TRAVEL TIME ARE INCLUDED WITH
THE MONTHLY MAINTENANCE CALCULATIONS**

Company Name K&J
Project Pond 4 K&J
Site Name Combined trust

Printed on 03/17/2008



AMDTREAT

AMD TREAT

LABOR

Labor Name

Estimate Labor Cost

- 1. Site Visits per Week
- 2. Site Labor Time per Visit hours
- 3. Travel Time per Visit hours
- 4. Unit Labor Cost \$/hour

Enter Established Annual Labor Cost

5. Actual Annual Labor Cost \$

6. Total Cost \$

Record Number 1 of 2

MONTHLY MAINTENANCE

2 men for an 8 hr day - includes taking flow measurements

The Quarterly sampling event will occur on this visit once / QTR. Some costs were combined and some multitasking during the sampling event may be required.

Company Name K&J
Project Pond 4 K&J
Site Name Combined trust

Printed on 03/17/2008



AMDTREAT

AMD TREAT

LABOR

Labor Name

Estimate Labor Cost

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

Enter Established Annual Labor Cost

5. Actual Annual Labor Cost \$

6. Total Cost \$

Record Number 2 of 2

Quarterly Flush
2 men for a 10 hr day (20 man hours) to
flush the 4 systems. Travel time included in
the 20 hrs.

Company Name K&J
 Project Pond 4 K&J
 Site Name Combined trust



AMDTREAT

AMD TREAT SLUDGE REMOVAL

Opening Screen Water Parameters

Sludge Removal Name

Influent Water Parameters that Affect Sludge Removal

Calculated Acidity mg/L

Alkalinity mg/L

Calculate Net Acidity (Acid-Alkalinity)

Enter Net Acidity manually

Net Acidity (Hot Acidity) mg/L

Design Flow gpm

Typical Flow gpm

Total Iron mg/L

Aluminum mg/L

Manganese mg/L

Selection for Method of Removing Sludge

1. Select One

Sludge Removal by \$ per Gallon

2. Sludge Removal Unit Cost \$/gal

Sludge Removal by Vacuum Truck

3. Vacuum Truck Unit Cost \$/hr

4. Mobilization Cost \$

5. Hours to be Used hr

Sludge Removal by Mechanical Excavation

6. Mechanical Excavation Unit Rate \$/hr

7. Mobilization Cost \$

8. Hours to be Used hr

Sludge Removal by Lagoon Cleaner

9. Lagoon Cleaning Unit Rate \$/hr

10. Mobilization Cost \$

11. Hours to be Used hr

Actual Sludge Removal Cost

12. Actual Sludge Removal Cost \$

13. Off Site Disposal Cost \$

14. Iron Concentration mg/L

15. Manganese Concentration mg/L

16. Aluminum Concentration mg/L

17. Total Miscellaneous Concentration mg/L

18. Percent Solids %

19. Sludge Density lbs/gal

20 Titration?

21. Gal. of Sludge per Gal of Water Treated gal

22. Estimated Sludge Volume yd³/yr

Cost for Sludge Removal Types

23. Removal by \$ per Gallon \$

24. Removal by Vacuum Truck \$

25. Removal by Mechanical Excavation \$

26. Removal by Lagoon Cleaner \$

27. Actual Sludge Removal Cost \$

Sludge Removal Sub-Totals

28. Currently Selected Removal Cost Plus Off Site Disposal Cost \$

Record Number 1 of 1

*Calculated From The Consultants Estimated annual sludge removal x \$.05/gallon
 Gaber Brown: \$175/yr : Pond 4: \$215/yr : Pond P: \$240/yr : Pond 23: \$15/yr*

Company Name K&J
 Project Pond 4 K&J
 Site Name Combined trust



**AMD TREAT
 OTHER COST**

AMDTREAT

Other Cost Name

A. Description of Item	B. Unit Cost Per Item	C. Quantity	D. Total Item Cost	E. Capital Cost Annual Cost
1. snow removal 8hrs @ \$100/hr	800.00	2	1,600	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
2. snow removal mob/demob	500.00	2	1,000	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
3. road maintenance 2-8hr days @ \$100/hr	1,600.00	1	1,600	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
4. road maintenance mob/demob	500.00	1	500	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
5.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
6.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
7.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
8.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
9.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
10.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
11.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
12.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
13.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
14.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost
15.	0.00	0	0	<input type="checkbox"/> Capital Cost <input checked="" type="checkbox"/> Annual Cost

Record Number
 1 of 1

Current Capital Cost \$
 Current Annual Cost \$

Total Capital Cost \$
 Total Annual Cost \$

Company Name K&J

Project combined trust

Site Name @ \$22/ton limestone



AMD TREAT RECAPITIALIZATION COST

AMDTREAT

Calculation Period yrs Inflation Rate % Net Return Rate %

Recapitalization Name

A. Description of Item	B Unit Cost Per Item	C Quantity	D Total Item Cost	E Life Cycle	F Number of Periods	G Total PV
1. Gaber Brown VFP stone	150,000	1	150,000	7	10	599,512
2. Pond 4 VFP stone	150,000	1	150,000	7	10	599,512
3. Pond P VFP stone	150,000	1	150,000	7	10	599,512
4. Pond 23 VFP stone	36,000	1	36,000	7	10	143,883
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 \$ PV Grand Total \$