

Company Name LOBB INC
 Project NARCO TRUST
 Site Name NARCO 1 MINE



AMDTREAT

AMD TREAT

Costs AMD TREAT MAIN COST FORM

<u>Passive Treatment</u>	<u>A</u>	<u>S</u>	
Vertical Flow Pond			\$0
Anoxic Limestone Drain	1	0	\$18,319
Anaerobic Wetlands			\$0
Aerobic Wetlands			\$0
Manganese Removal Bed			\$0
Oxic Limestone Channel			\$0
Limestone Bed			\$0
BIO Reactor			\$0
Passive Subtotal:			\$18,319
<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	1	0	\$1,832
Ancillary Subtotal:			\$1,832
Other Cost (Capital Cost)			\$0
Total Capital Cost:			\$20,151
<u>Annual Costs</u>			
Sampling	1	0	\$1,174
Labor	1	0	\$1,820
Maintenance	1	0	\$641
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:			\$3,635
Other Cost			

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

Typical Acid Loading tons/yr

**Total Annual Cost: per
 1000 Gal of H2O Treated \$0.046**

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COMMENTS:

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AMD TREAT ANOXIC LIMESTONE DRAIN (ALD)

AMDTREAT

ALD Name

SIZING METHODS Select One

- | | | | |
|-----------------------------|-------|--|--|
| 1. Tons of Limestone Needed | 537 | <input checked="" type="radio"/> ALD Based on Acidity Neutralization | |
| 2. Tons of Limestone Needed | 1,978 | <input type="radio"/> ALD Based on Retention Time | 5. Retention Time <input style="width: 80px; height: 15px;" type="text"/> hours |
| 3. Tons of Limestone Needed | 0 | <input type="radio"/> ALD Based on Tons Limestone Entered | 6. Limestone Needed <input style="width: 80px; height: 15px;" type="text"/> tons |
| 4. Tons of Limestone Needed | 3,772 | <input type="radio"/> ALD Based on Dimensions Entered | 7. Top Length ALD <input style="width: 80px; height: 15px;" type="text"/> ft |
| | | | 8. Top Width ALD <input style="width: 80px; height: 15px;" type="text"/> ft |

Opening Screen Water Parameters

Influent Water Parameters that Affect ALD

Calculated Acidity
 0.00 mg/L
 Alkalinity
 0.00 mg/L

- Calculate Net Acidity (Acid-Alkalinity)
- Enter Net Acidity manually
 Net Acidity (Hot Acidity)
 41.78000 mg/L

Design Flow
 150.00 gpm
 Typical Flow
 150.00 gpm
 Total Iron
 0.25 mg/L
 Aluminum
 1.14 mg/L
 Manganese
 12.33 mg/L

- | | | |
|--|-------|--|
| 9. System Life | 20.0 | years |
| 10. Limestone Purity | 85.00 | % |
| 11. Limestone Efficiency | 60.00 | % |
| 12. % Void Space of Limestone Bed | 43.00 | % |
| 13. Limestone Depth | 4.00 | ft |
| 14. Density of Loose Limestone | 94.30 | lbs/ft3 |
| 15. Limestone Unit Cost | 22.00 | \$/ton |
| 16. Limestone Placement Unit Cost | 0.00 | \$/yd3 |
| 17. Soil Cover Depth | 2.00 | ft |
| 18. Length to Width Ratio | 4.00 | Length : <input style="width: 20px; text-align: center;" type="text"/> 1 Width |
| 19. Excavation Unit Cost | 5.50 | \$/yd3 |
| 20. Soil Replacement Unit Cost | 4.50 | \$/yd3 |
| 21. Liner Unit Cost | 2.60 | \$/yd2 |
| 22. Total Length of Effluent / Influent Pipe | 0.00 | ft |
| 23. Unit Cost of Pipe | 15.00 | \$/ft |

24. Clearing and Grubbing?

- 25a. Land Multiplier ratio
- 25b. Clear/Grub Acres acres
26. Clear and Grub Unit Cost \$/acre

ALD Sizing Summaries

- | | | |
|--------------------------------|---------|-------|
| 27. Top Width | 26.70 | ft |
| 28. Top Length | 106.80 | ft |
| 29. Limestone Surface Area | 2,851.9 | ft2 |
| 30. Limestone Volume | 422 | yd3 |
| 31. Excavation Volume | 633.7 | yd3 |
| 32. Clear & Grub Area | 0.00 | acres |
| 33. Liner Area | 788 | ft2 |
| 34. Theoretical Retention Time | 4.07 | hrs |

ALD Cost Summaries

- | | | |
|------------------------------|--------|----|
| 35. Limestone Cost | 11,833 | \$ |
| 36. Excavation Cost | 3,485 | \$ |
| 37. Limestone Placement Cost | 0 | \$ |
| 38. Pipe Cost | 0 | \$ |
| 39. Liner Cost | 2,049 | \$ |
| 40. Clear and Grub Cost | 0 | \$ |
| 41. Soil Replacement Cost | 950 | \$ |

42. Total Cost 18,319 \$

Record Number 1 of 1

Company Name LOBB INC

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**AMD TREAT
ENGINEERING COST**



AMD TREAT

1. Capital Cost * \$

2. Per Cent of Capital Cost %

3. Actual Engineering Cost

4. Total Engineering Cost \$

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

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AMD TREAT SAMPLING

Sampling Name

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

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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 1

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MAINTANENCE

☛ Estimate Maintenance Cost

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

☛ Enter Established Annual Maintenance Cost

5. Annual Maintenance Cost \$

Maintenance Sub-Totals

- 6 Total Maintenance Active Cost \$
- 7. Total Maintenance Passive Cost \$
- 8. Total Maintenance Ancillary Cost \$
- 9. Total Maintenance Other Capital Cost \$

10. Total Maintenance Cost \$

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

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AMD TREAT RECAPITIALIZATION COST

AMDTREAT

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

Recapitalization 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. ALD Replacement	18,319	1	18,319	20	3	20,026
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 18,319 \$ PV Grand Total 20,026 \$

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