

Company Name L&L  
 Project ABSBF - 1 *SP30*  
 Site Name Berkey



### AMD TREAT

#### Costs AMD TREAT MAIN COST FORM

AMDTREAT

<u>Passive Treatment</u>	<u>A</u>	<u>S</u>	
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
<b>Passive Subtotal:</b>			<b>\$0</b>
<u>Active Treatment</u>			
Caustic Soda			\$0
Hydrated Lime			\$0
Pebble Quick Lime			\$0
Ammonia			\$0
Oxidants			\$0
Soda Ash			\$0
<b>Active Subtotal:</b>			<b>\$0</b>
<u>Ancillary Cost</u>			
Ponds	1	0	\$5,000
Roads			\$0
Land Access			\$0
Ditching	1	0	\$426
Engineering Cost			\$0
<b>Ancillary Subtotal:</b>			<b>\$5,426</b>
Other Cost (Capital Cost)			\$0
<b>Total Capital Cost:</b>			<b>\$5,426</b>
<u>Annual Costs</u>			
Sampling	1	0	\$674
Labor	1	0	\$837
Maintenance	1	0	\$54
Pumping			\$0
Chemical Cost			\$0
Oxidant Chem Cost			\$0
Sludge Removal			\$0
Other Cost (Annual Cost)			\$0
Land Access (Annual Cost)			\$0
<b>Total Annual Cost:</b>			<b>\$1,565</b>
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

**Total Annual Cost: per  
 1000 Gal of H2O Treated \$0.039**

Company Name

Project

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# AMD TREAT PONDS

AMDTREAT

Pond Name

### Pond Design Based On:

Retention Time

1. Desired Retention Time  hours

2. Include Sludge Removal?

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  ft

9. Pond Width at Top of Freeboard  ft

	Run	Rise
10. Slope Ratio of Pond Sides	<input type="text" value="2.0"/> :	<input type="text" value="1"/>
11. Freeboard Depth	<input type="text" value="2.0"/>	ft
12. Water Depth	<input type="text" value="5.0"/>	ft
13. Excavation Unit Cost	<input type="text" value="2.50"/>	\$/yd3
14. Total Length of Effluent / Inlet Pipe	<input type="text" value="0.00"/>	ft
15. Unit Cost of Pipe	<input type="text" value="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

23. Revegetation Cost  \$/acre

24. Number of Ponds for this Design  number

25. Cost of Baffles  \$

### Calculated Pond Dimensions per Pond

26. Length at Top of Freeboard  ft

27. Width at Top of Freeboard  ft

28. Freeboard Volume  yd3

29. Water Volume  yd3

30. Estimated Annual Sludge  yd3/yr

31. Volume of Sludge per Removal  yd3/removal

32. Excavation Volume  acre ft

33. Excavation Volume  yd3

34. Clear and Grub Area  acres

35. Liner Area  yd2

36. Calculated Retention Time  hours

### Ponds Sub-Totals per Pond

37. Excavation Cost  \$

38. Pipe Cost  \$

39. Liner Cost  \$

40. Clearing and Grubbing Cost  \$

41. Revegetation Cost  \$

42. Baffle Cost  \$

43. Estimated Cost  \$

44. Accept Minimum Pond Cost?

The Recommended Minimum Construction Cost of Building a Pond is \$ 5,000

45. Recommended Minimum Cost  \$

46. Total Cost  \$

Opening Screen Water Parameters

### Influent Water Parameters that Affect Ponds

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

Record Number  
1 of 1

Company Name L&L  
Project ABSBF - 1  
Site Name Berkey

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## AMD TREAT DITCHING



AMDTREAT

Ditching Name

1. Ditch Length Rock  ft  
2. Ditch Length Grass  ft  
3. Bottom Width of Ditch  ft  
4. Ditch Depth  ft  
5. Geo Textile Unit Cost  \$/yd<sup>2</sup>  
6. Length of Geo Textile  ft  
7. Slope Ratio of Ditch Sides 

Run	Rise
<input type="text" value="2.00"/>	<input type="text" value="1.00"/>

  
 8. Surveying?  
9. Survey Rate  acres/day  
10. Survey Unit Cost  \$/day  
 11. Clearing and Grubbing?  
12. Clear and Grub Cost  \$/acre

13. Ditch Depth of Rock  ft  
14. Cost of Ditch Surface Rock  \$/yd<sup>3</sup>  
15. Cost to Place Rock  \$/yd<sup>3</sup>  
16. Excavation Unit Cost  \$/yd<sup>3</sup>  
17. Length of Silt Fence  ft  
18. Unit Cost of Silt Fence  \$/ft  
19. Revegetation Unit Cost  \$/acre

### Ditching Sub-Totals

20. Excavation Cost  \$  
21. Survey Cost  \$  
22. Clear and Grub Cost  \$  
23. Aggregate Cost  \$  
24. Filter Fabric Cost  \$  
25. Silt Fence Cost  \$  
26. Revegetation Cost  \$

Record Number 1 of 1

27. Total Cost  \$

Company Name L&L  
Project ABSBF - 1  
Site Name Berkey

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AMDTREAT

## AMD TREAT SAMPLING

Sampling Name

**Estimate Sampling Cost**

- |                               |                                    |              |
|-------------------------------|------------------------------------|--------------|
| 1. Unit Labor Cost            | <input type="text" value="35.00"/> | \$/hr        |
| 2. Collection Time per Sample | <input type="text" value="0.25"/>  | hours/sample |
| 3. Travel Time                | <input type="text" value="1.00"/>  | hr           |
| 4. Sample Frequency           | <input type="text" value="0.33"/>  | samples/mo   |
| 5. Lab Cost Per Sample        | <input type="text" value="25.00"/> | \$/sample    |
| 6. Number of Sample Points    | <input type="text" value="4"/>     | points       |

**Enter Established Annual Sampling Cost**

- |                                |                      |    |
|--------------------------------|----------------------|----|
| 7. Actual Annual Sampling Cost | <input type="text"/> | \$ |
|--------------------------------|----------------------|----|

### Sampling Sub-Totals

- |                                |                                  |    |
|--------------------------------|----------------------------------|----|
| 8. Yearly Sample Analysis Cost | <input type="text" value="396"/> | \$ |
| 9. Yearly Travel Cost          | <input type="text" value="139"/> | \$ |
| 10. Yearly Collection Cost     | <input type="text" value="139"/> | \$ |

\$

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Project ABSBF - 1

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## 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 1

Company Name L&L

Project ABSBF - 1

Site Name Berkey



**AMDTREAT**

**AMD TREAT**

**MAINTENANCE**

**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 not include Cost for Land Access and Engineering Cost

Company Name L&L

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## 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. Discharge #1	5,426	1	5,426	20	3	5,932
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  \$    PV Grand Total  \$

Company Name L&L

SP 31

Project L&L #2

Site Name Berkey



**AMD TREAT**

**AMD TREAT MAIN COST FORM**

AMDTREAT

**Costs**

<u>Passive Treatment</u>	<u>A</u>	<u>S</u>	
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:			<b>\$0</b>
<u>Active Treatment</u>			
Caustic Soda			\$0
Hydrated Lime			\$0
Pebble Quick Lime			\$0
Ammonia			\$0
Oxidants			\$0
Soda Ash			\$0
Active Subtotal:			<b>\$0</b>
<u>Ancillary Cost</u>			
Ponds	1	0	\$5,000
Roads			\$0
Land Access			\$0
Ditching	1	0	\$426
Engineering Cost			\$0
Ancillary Subtotal:			<b>\$5,426</b>
Other Cost (Capital Cost)			\$0
Total Capital Cost:			<b>\$5,426</b>
<u>Annual Costs</u>			
Sampling	1	0	\$267
Labor			\$0
Maintenance	1	0	\$54
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:			<b>\$321</b>
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

**Total Annual Cost: per  
1000 Gal of H2O Treated \$0.015**



Company Name

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Project

Site Name



# AMD TREAT PONDS

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Pond Name

### Pond Design Based On:

Retention Time

1. Desired Retention Time  hours

2. Include Sludge Removal?

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  ft

9. Pond Width at Top of Freeboard  ft

	Run	Rise
10. Slope Ratio of Pond Sides	<input type="text" value="2.0"/>	<input type="text" value="1"/>
11. Freeboard Depth	<input type="text" value="2.0"/>	ft
12. Water Depth	<input type="text" value="5.0"/>	ft
13. Excavation Unit Cost	<input type="text" value="2.50"/>	\$/yd3
14. Total Length of Effluent / Inlet Pipe	<input type="text" value="0.00"/>	ft
15. Unit Cost of Pipe	<input type="text" value="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

23. Revegetation Cost  \$/acre

24. Number of Ponds for this Design  number

25. Cost of Baffles  \$

### Calculated Pond Dimensions per Pond

26. Length at Top of Freeboard  ft

27. Width at Top of Freeboard  ft

28. Freeboard Volume  yd3

29. Water Volume  yd3

30. Estimated Annual Sludge  yd3/yr

31. Volume of Sludge per Removal  yd3/removal

32. Excavation Volume  acre ft

33. Excavation Volume  yd3

34. Clear and Grub Area  acres

35. Liner Area  yd2

36. Calculated Retention Time  hours

### Ponds Sub-Totals per Pond

37. Excavation Cost  \$

38. Pipe Cost  \$

39. Liner Cost  \$

40. Clearing and Grubbing Cost  \$

41. Revegetation Cost  \$

42. Baffle Cost  \$

43. Estimated Cost  \$

44. Accept Minimum Pond Cost?

The Recommended Minimum Construction Cost of Building a Pond is \$ 5,000

45. Recommended Minimum Cost  \$

46. Total Cost  \$

Opening Screen Water Parameters

### Influent Water Parameters that Affect Ponds

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

Record Number  
1 of 1

Company Name L&L  
Project L&L #2  
Site Name Berkey

Printed on 03/11/2008

## AMD TREAT DITCHING



Ditching Name

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

13. Ditch Depth of Rock  ft  
14. Cost of Ditch Surface Rock  \$/yd3  
15. Cost to Place Rock  \$/yd3  
16. Excavation Unit Cost  \$/yd3  
17. Length of Silt Fence  ft  
18. Unit Cost of Silt Fence  \$/ft  
19. Revegetation Unit Cost  \$/acre

### Ditching Sub-Totals

20. Excavation Cost  \$  
21. Survey Cost  \$  
22. Clear and Grub Cost  \$  
23. Aggregate Cost  \$  
24. Filter Fabric Cost  \$  
25. Silt Fence Cost  \$  
26. Revegetation Cost  \$

Record Number 1 of 1

27. Total Cost  \$

Company Name L&L  
Project L&L #2  
Site Name Berkey

Printed on 03/11/2008



AMDTREAT

## AMD TREAT SAMPLING

Sampling Name

**Estimate Sampling Cost**

- |                               |                                    |              |
|-------------------------------|------------------------------------|--------------|
| 1. Unit Labor Cost            | <input type="text" value="35.00"/> | \$/hr        |
| 2. Collection Time per Sample | <input type="text" value="0.25"/>  | hours/sample |
| 3. Travel Time                | <input type="text" value="0.00"/>  | hr           |
| 4. Sample Frequency           | <input type="text" value="0.33"/>  | samples/mo   |
| 5. Lab Cost Per Sample        | <input type="text" value="25.00"/> | \$/sample    |
| 6. Number of Sample Points    | <input type="text" value="2"/>     | points       |

**Enter Established Annual Sampling Cost**

- |                                |                      |    |
|--------------------------------|----------------------|----|
| 7. Actual Annual Sampling Cost | <input type="text"/> | \$ |
|--------------------------------|----------------------|----|

### Sampling Sub-Totals

- |                                |                                  |    |
|--------------------------------|----------------------------------|----|
| 8. Yearly Sample Analysis Cost | <input type="text" value="198"/> | \$ |
| 9. Yearly Travel Cost          | <input type="text" value="0"/>   | \$ |
| 10. Yearly Collection Cost     | <input type="text" value="69"/>  | \$ |

11. Sampling Cost  \$

Record Number 1 of 1

Company Name L&L  
Project L&L #2  
Site Name Berkey



AMDTREAT

### AMD TREAT

### 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

Company Name L&L

Project L&L #2

Site Name Berkey



## 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. L&L #2	5,426	1	5,426	20	3	5,932
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  \$    PV Grand Total  \$