

BONAR GROUP

ENGINEERS ARCHITECTS PLANNERS SURVEYORS

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April 30, 1996

Ms. Mylene Huybers
Office of Legal Council
Indiana Department of Environmental Management
100 North Senate Avenue
P O Box 6015
Indianapolis IN 46206-6015

Subject: **BEAR, HIGH, WOLF LAKES REGIONAL SEWER DISTRICT**

Dear Ms. Huybers:

Reference your letter of March 15, 1996, to this office, concerning the Noble Township Board petition. Since the public hearing held in February, parties involved have been working to find a resolution to address the concerns expressed. Actions have been taken which we believe have accomplished this objective.

Transmitted herewith for your information, is the following:

- Original copy of the resolution of the Noble County Board of Commissioners, with attached map. This is dated April 15, 1996.
- Original letter from the Noble Township Board, dated April 16, 1996. This amended their approval letter dated February 14, 1996, consistent with the Commissioners' resolution of April 15, 1996.
- A copy of the amendment to the Wastewater Collection Treatment System Engineering Feasibility Study, as prepared by Bonar Group, dated February, 1996.

We believe the above information addresses the concerns expressed by IDEM and will allow your office to proceed with making a decision on the petition for the formation of a Regional Sewer District for the Bear, High, Wolf Lakes area.

Sincerely,



Ronald L. Bonar, P.E.

President

Extension 226

enclosures

cc: Noble County Board of Commissioners, 101 North Orange Street, Albion IN 46701
East Shore Conservancy District



#49

NOBLE TOWNSHIP BOARD

April 16, 1996

Ms. Mylene Huybers
Office of Legal Counsel
Indiana Department of Environmental Management
100 North Senate Avenue
P O Box 6015
Indianapolis IN 46206-6015

Subject: **PETITION TO ESTABLISH THE BEAR, HIGH, WOLF LAKES REGIONAL
SEWER DISTRICT**

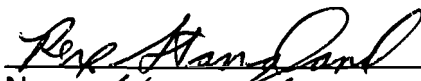

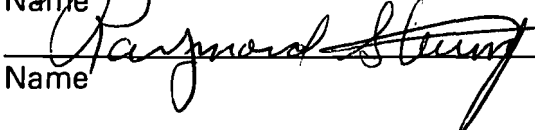
Dear Ms. Huybers:

We are writing this letter as an amendment to our letter to you dated February 14, 1996. This letter was concerning the establishment of the Bear, High, Wolf Lakes Regional Sewer District.

We have been in communication with Representatives of the County concerning this petition. Certain changes and modifications have been made which are described specifically in the attached Resolution of the Board of Commissioners of Noble County (copy attached).

Based upon this Resolution, we are giving our approval to this petition.

Sincerely,

	<u>4-16-96</u>
Name	Date
	<u>4-16-96</u>
Name	Date
	<u>4-16-96</u>
Name	Date

5. This resolution will be forwarded to IDEM for the purpose of modifying the petition request and requesting that these conditions be added to the final IDEM finding for the proposed district.

NOBLE COUNTY BOARD OF COMMISSIONERS

Ray G. Gilbert 4-15-96
Steven Jacob
Harold A. Troyer

ATTEST:

Anita L. Huff /tp

**AMENDMENT TO THE
WASTEWATER COLLECTION AND TREATMENT SYSTEM
FEASIBILITY STUDY**

FOR

- **THE EAST SHORE CONSERVANCY DISTRICT**
- **THE BEAR LAKE AREA**
- **THE HIGH LAKE AREA**
- **THE WOLF LAKE AREA**

Planning Funds Provided by:
NOBLE COUNTY COMMISSIONERS
EAST SHORE CONSERVANCY DISTRICT
MERRY LEA ENVIRONMENTAL CENTER
BEAR LAKE CHURCH CAMP
INDIANA DEPARTMENT OF COMMERCE

FEBRUARY, 1996

Prepared by:
Bonar & Associates, Inc.

616 South Harrison Street
Fort Wayne IN 46802
219/424-0318

3021 E. 98th Street
Indianapolis IN 46280
317/575-6939

158 S. Napoleon St.
Valparaiso IN 46383
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- B Cost Estimates
- C Project Cost Summary

Report Amendment Summary

The March, 1995, feasibility study for the Bear Lake, High Lake and Wolf Lake areas is amended to reflect changes in funding sources, preliminary environmental reviews, and additional experience gained from treatment system operations.

Item 1

Based on preliminary environmental review comments from the various agencies (IDNR, Fish & Wildlife), all pressure sewer and force main routes through the Merry Lea Environmental Center properties have been rerouted to existing right-of-way. The new routing requires an additional 3,800 feet of pipe for Phase 3.

Item 2

Preliminary environmental reviews have resulted in eliminating the lake crossing at High Lake and rerouting the pressure sewer force main around the lake on existing right-of-way. The new route results in an additional 10,000 feet of pipe and one lift station for Phase 3.

Item 3

Review of operation of the constructed wetlands treatment system has shown the need to add a controlled discharge storage basin to the process. While the constructed wetland system has been very effective in removing BOD and TSS, it is not as effective in meeting ammonia effluent limits that would be required for discharge to Thumma Ditch. In order to use the constructed wetland option, a controlled discharge storage basin would be required which would only allow discharge of the treated effluent when the required dilution ratio is met.

Adding additional storage volume for each phase could be a difficult process. Approximately 50 acres of land should be purchased initially to allow expansion in the future phases.

SUMMARY

The recommended collection system remains the same: Conventional gravity for Phases 1 and 2, and pressure sewers for Phases 3 and 4.

The treatment system recommendation is changed based on the following information:

- With the possibility of four phases of construction (due to limited funding), it would be very difficult to construct the natural treatment systems (constructed wetland or waste stabilization lagoons) in a phased approach and on the limited suitable acreage in the area. The Figure 1 in Appendix A has been modified to show the limited sites available near a stream for discharge of the treated effluent.
- A package plant would require only several acres compared to 40 - 50 acres for a natural treatment system. There is also a possibility of locating a package plant closer to the collection system, thereby reducing the amount of force main required to carry the flow to the treatment facility.

Based on this information, the recommended treatment system is the mechanical package plant.

The tables presented in Appendix A are revised cost estimates present worth evaluations.

The tables in Appendix B present project cost summaries for Phase 1 and Phases 1-4.

Tables 8-2 and 8-2a present estimated monthly rates for Phase 1 and Phases 1-4.

Appendix C presents a preliminary design summary for the Phase 1 project.

IDEM is currently working on developing subsurface discharge standards for the constructed wetlands treatment system. When these standards are developed, it is recommended that this alternative be re-evaluated for future phases.

APPENDIX A

FIGURE 1

APPENDIX B

COST ESTIMATES

Table 6-1(R)

Wastewater Collection and Treatment System

Feasibility Study

for the

East Shore Conservancy District

and Bear Lake Area

Gravity Sewer Collection System

Capital Cost Estimate

Phase 1

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Sanitary Sewer Lateral	9,400	Feet	\$10	\$94,000	\$56,400
Sanitary Sewer, 8-inch	7,300	Feet	\$35	\$255,500	\$153,300
Force Main, 4-inch	0	Feet	\$15	\$0	\$0
Abandon Septic Tank	94	Each	\$300	\$28,200	
B-borrow	7,600	C.Y.	\$10	\$76,000	
#53/73	540	C.Y.	\$20	\$10,800	
HAC Base	330	Ton	\$70	\$23,100	
HAC Surface	60	Ton	\$80	\$4,800	
Seeding	10,500	S.Y.	\$1	\$10,500	
Manholes, Standard	30	Each	\$1,500	\$45,000	\$27,000
Sanitary Sewer Wye	94	Each	\$100	\$9,400	
Lift Station	1	Each	\$35,000	\$35,000	\$17,500
Subtotal				\$592,300	\$254,200
Construction Contingency - 10%				\$59,230	
Total Construction Cost				\$651,530	
Non Construction Cost- 25%				\$162,883	
Total				\$814,413	

Table 6-7(R)

Wastewater Collection and Treatment System

Feasibility Study

for the

East Shore Conservancy District

and Bear Lake Area

Gravity Sewer Collection System

Capital Cost Estimate

Phase 3

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Sanitary Sewer Lateral	12,600	Feet	\$10	\$126,000	\$75,600
Sanitary Sewer, 8-inch	6,850	Feet	\$35	\$239,750	\$143,850
Force Main, 4-inch	20,540	Feet	\$15	\$308,100	\$184,860
Abandon Septic Tank	126	Each	\$300	\$37,800	
B-borrow	27,300	C.Y.	\$10	\$273,000	
#53/73	1,730	C.Y.	\$20	\$34,600	
HAC Base	2,430	Ton	\$70	\$170,100	
HAC Surface	490	Ton	\$80	\$39,200	
Seeding	6,200	S.Y.	\$1	\$6,200	
Manholes, Standard	27	Each	\$1,600	\$43,200	\$25,920
Sanitary Sewer Wye	126	Each	\$100	\$12,600	
Lift Station	6	Each	\$35,000	\$210,000	\$105,000
Subtotal				\$1,500,550	\$535,230
Construction Contingency - 10%				\$150,055	
Total Construction Cost				\$1,650,605	
Non Construction Cost- 25%				\$412,651	
Total				\$2,063,256	

Table 6-8(R)

Wastewater Collection and Treatment System

Feasibility Study

for the

East Shore Conservancy District

and Bear Lake Area

Pressure Sewer Collection System

Capital Cost Estimate

Phase 3

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Sanitary Sewer Lateral	10,080	Feet	\$10	\$100,800	\$60,480
Pressure Sewer, 4-inch	22,540	Feet	\$14	\$315,560	\$189,336
Pressure Sewer, 3-inch	1,950	Feet	\$13	\$25,350	\$15,210
Pressure Sewer, 2.5-inch	0	Feet	\$12	\$0	\$0
Pressure Sewer, 2-inch	0	Feet	\$11	\$0	\$0
Pressure Sewer, 1.5-inch	600	Feet	\$10	\$6,000	\$3,600
Pressure Sewer, 1.25-inch	700	Feet	\$9	\$6,300	\$3,780
Pressure Sewer Service 1.25-inch	1,580	Feet	\$9	\$14,220	\$8,532
Pressure Sewer Valve	25	Feet	\$1,500	\$37,500	
Sewage Relief Valve	25	Each	\$2,500	\$62,500	
Grinder Unit, #210	31	Each	\$3,500	\$108,500	\$54,250
Grinder Unit, #212	47	Each	\$3,900	\$183,300	\$91,650
Grinder Unit, #214	1	Each	\$10,000	\$10,000	\$5,000
Abandon Septic Tank	126	Each	\$300	\$37,800	
B-borrow	8,290	C.Y.	\$10	\$82,900	
#53/73	1,380	C.Y.	\$20	\$27,600	
HAC Base	1,960	Ton	\$70	\$137,200	
HAC Surface	380	Ton	\$80	\$30,400	
Seeding	6,900	S.Y.	\$1	\$6,900	
Lift Station	1	Each	\$40,000	\$40,000	\$20,000
Subtotal				\$1,232,830	\$451,838
Construction Contingency - 10%				\$123,283	
Total Construction Cost				\$1,356,113	
Non Construction Cost- 25%				\$339,028	
Total				\$1,695,141	

Table 6-9(R)

Wastewater Collection and Treatment System

Feasibility Study

for the

East Shore Conservancy District

and Bear Lake Area

Vacuum Sewer Collection System

Capital Cost Estimate

Phase 3

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Sanitary Sewer Lateral	12,320	Feet	\$10	\$123,200	\$73,920
Vacuum Sewer, 6-inch	1,150	Feet	\$20	\$23,000	\$13,800
Vacuum Sewer, 4-inch	4,250	Feet	\$16	\$68,000	\$40,800
Vacuum Sewer Service, 3-inch	1,540	Feet	\$13	\$20,020	\$12,012
Force Main, 4-inch	21,940	Feet	\$15	\$329,100	\$197,460
Division Valve	2	Each	\$750	\$1,500	
Vacuum Valve Unit	77	Each	\$2,700	\$207,900	\$103,950
Buffer Tank- Single	2	Each	\$3,500	\$7,000	\$3,500
Abandon Septic Tank	126	Each	\$300	\$37,800	
B-borrow	15,700	C.Y.	\$10	\$157,000	
#53/73	1,570	C.Y.	\$20	\$31,400	
HAC Base	2,430	Ton	\$70	\$170,100	
HAC Surface	490	Ton	\$80	\$39,200	
Seeding	7,100	S.Y.	\$1	\$7,100	
Vacuum Station	1	Each	\$251,000	\$251,000	\$62,750
Subtotal				\$1,473,320	\$508,192
Construction Contingency - 10%				\$147,332	
Total Construction Cost				\$1,620,652	
Non Construction Cost- 25%				\$405,163	
Total				\$2,025,815	

Table 6-13(R)

Wastewater Collection and Treatment System Feasibility Study

for the East Shore Conservancy District and Bear Lake Area

Collection System Annual OM&R Phase 1

Collection System Alternative-	<u>Gravity</u>	<u>Pressure</u>	<u>Vacuum</u>
Labor	\$3,000	\$7,500	\$6,300
Energy	\$500	\$1,500	\$1,500
Material & Supplies	\$500	\$1,000	\$1,000
Repairs	\$500	\$2,000	\$2,000
Replacement	\$1,000	\$4,000	\$4,500
Outside Services	\$500	\$2,000	\$2,000
<u>Administration</u>	<u>\$2,000</u>	<u>\$2,000</u>	<u>\$2,000</u>
Total	\$8,000	\$20,000	\$19,300

Table 6-17(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area
Collection System Present Worth Analysis
Phase 1

Collection System Alternative-	<u>Gravity</u>	<u>Pressure</u>	<u>Vacuum</u>
Cost Summary			
Collection System Capital Cost	\$814,000	\$706,000	\$1,121,000
Collection System Annual OM&R Cost	\$10,000	\$20,000	\$19,000
Collection System Salvage Value	\$254,000	\$211,000	\$302,000
Present Worth Description			
20 years @	7.0% interest		
Present Worth- Capital Cost	\$814,000	\$706,000	\$1,121,000
Present Worth- Annual OM&R Cost	\$106,000	\$212,000	\$201,000
Present Worth- Salvage Value	(\$66,000)	(\$55,000)	(\$78,000)
Total	\$854,000	\$863,000	\$1,244,000

Table 6-19(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area
Collection System Present Worth Analysis
Phase 3

Collection System Alternative-	<u>Gravity</u>	<u>Pressure</u>	<u>Vacuum</u>
<u>Cost Summary</u>			
Collection System Capital Cost	\$2,063,000	\$1,695,000	\$2,026,000
Collection System Annual OM&R Cost	\$25,000	\$28,000	\$25,000
Collection System Salvage Value	\$535,000	\$452,000	\$508,000
Present Worth Description 20 years @ 7.0% interest			
Present Worth- Capital Cost	\$2,063,000	\$1,695,000	\$2,026,000
Present Worth- Annual OM&R Cost	\$265,000	\$297,000	\$265,000
Present Worth- Salvage Value	(\$138,000)	(\$117,000)	(\$131,000)
Total	\$2,190,000	\$1,875,000	\$2,160,000

Table 6-21(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Activated Sludge Treatment System, Surface Discharge
Capital Cost Estimate
Phase 1

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Site Clearing	1	Lump Sum	\$2,500	\$2,500	
Preliminary Treatment	1	Lump Sum	\$10,000	\$10,000	\$5,000
Package Plant	1	Lump Sum	\$50,000	\$50,000	
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$30,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Disinfection	1	Lump Sum	\$10,000	\$10,000	\$5,000
Sludge Storage	1	Lump Sum	\$6,000	\$6,000	\$3,000
Land Acquisition	1	Acres	\$2,500	\$2,500	\$2,500
Subtotal				\$273,000	\$114,000
Construction Contingency - 10%				\$27,300	
Total Construction Cost				\$300,300	
Non Construction Cost- 25%				\$75,075	
Total				\$375,375	

Table 6-22(R)

**Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area**

**Waste Stabilization Lagoon Treatment System with Controlled Discharge,
Surface Discharge**

Capital Cost Estimate

Phase 1

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Excavation/Fill	11,400	C.Y.	\$4.00	\$45,600	\$22,800
Pond Liner	148,000	S.F.	\$0.50	\$74,000	\$37,000
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Discharge Control Structure	1	Lump Sum	\$40,000	\$40,000	\$20,000
Land Acquisition	5	Acres	\$2,500	\$12,500	\$12,500
Subtotal				\$369,100	\$185,800
Construction Contingency -	10%			\$36,910	
Total Construction Cost				\$406,010	
Non Construction Cost-	25%			\$101,503	
Total				\$507,513	

Table 6-23(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Constructed Wetland Treatment System, Controlled Discharge, Surface Discharge
Capital Cost Estimate
Phase 1

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 12,000 gal.	3	Each	\$12,000	\$36,000	\$18,000
Wetlands					
Excavation/Fill	2,800	C.Y.	\$4.00	\$11,200	\$5,600
Synthetic Liner	37,500	S.F.	\$0.50	\$18,750	\$9,375
Gravel	2,200	C.Y.	\$20.00	\$44,000	\$22,000
Plants	30,000	Each	\$0.50	\$15,000	\$7,500
Stabilization	30,000	S.F.	\$0.25	\$7,500	\$3,750
Infiltration Basin					
Excavation/Fill	700	C.Y.	\$15.00	\$10,500	\$5,250
Piping	600	L.F.	\$5.00	\$3,000	\$1,500
Synthetic Liner	5,900	S.F.	\$0.50	\$2,950	\$1,475
Recirculation Pump	1	Each	\$5,000.00	\$5,000	\$2,500
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Flow Structures/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Controlled Discharge Basin, Excavation	2,400	C.Y.	\$4.00	\$9,600	\$4,800
Controlled Discharge Basin, Liner	29,000	S.F.	\$0.50	\$14,500	\$7,250
Controlled Discharge Structure	1	Lump Sum	\$20,000	\$20,000	\$10,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	2.0	Acres	\$2,500	\$5,000	\$5,000
Subtotal				\$400,000	\$197,500
Construction Contingency - 10%				\$40,000	
Total Construction Cost				\$440,000	
Non Construction Cost- 25%				\$110,000	
Total				\$550,000	

Table 6-24(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Facultative Lagoon Treatment System, Land Application
Capital Cost Estimate
Phase 1

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Lagoon					
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$10,000	\$10,000	\$5,000
Excavation/Fill	7,000	C.Y.	\$4.00	\$28,000	\$14,000
Pond Liner	94,500	S.F.	\$0.50	\$47,250	\$23,625
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	3	Acres	\$2,500	\$7,500	\$7,500
Land Application					
Excavation	4,900	C.Y.	\$4	\$19,600	\$9,800
Liner	50,000	S.F.	\$0.50	\$25,000	\$12,500
Irrigation, sprinklers and piping	62	Each	\$135.00	\$8,370	\$4,185
Irrigation, trenching and backfill	5,000	L.F.	\$1	\$5,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	6	Acres	\$2,500	\$15,000	
Subtotal				\$387,720	\$182,610
Construction Contingency - 10%				\$38,772	
Total Construction Cost				\$426,492	
Non Construction Cost- 25%				\$106,623	
Total				\$533,115	

Table 6-25(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Constructed Wetland Treatment System, Land Application
Capital Cost Estimate
Phase 1

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 12,000 gal.	3	Each	\$12,000	\$36,000	\$18,000
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	1.7	Acres	\$2,500	\$4,250	\$4,250
Wetlands					
Excavation/Fill	2,800	C.Y.	\$4.00	\$11,200	\$5,600
Synthetic Liner	37,500	S.F.	\$0.50	\$18,750	\$9,375
Gravel	2,200	C.Y.	\$20.00	\$44,000	\$22,000
Plants	30,000	Each	\$0.50	\$15,000	\$7,500
Stabilization	30,000	S.F.	\$0.25	\$7,500	\$3,750
Land Application					
Excavation	4,900	C.Y.	\$4	\$19,600	\$9,800
Liner	50,000	S.F.	\$0.50	\$25,000	\$12,500
Irrigation, sprinklers and piping	62	Each	\$135.00	\$8,370	\$4,185
Irrigation, trenching and backfill	5,000	L.F.	\$1	\$5,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	6	Acres	\$2,500	\$15,000	\$15,000
Subtotal				\$431,670	\$217,960
Construction Contingency - 10%				\$43,167	
Total Construction Cost				\$474,837	
Non Construction Cost- 25%				\$118,709	
Total				\$593,546	

Table 6-26(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Activated Sludge Treatment System, Surface Discharge
Capital Cost Estimate
Phase 2

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$12,000	\$12,000	\$6,000
Package Plant	1	Lump Sum	\$100,000	\$100,000	
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$30,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Disinfection	1	Lump Sum	\$15,000	\$15,000	\$7,500
Sludge Storage	1	Lump Sum	\$18,000	\$18,000	\$9,000
Land Acquisition	1	Acres	\$2,500	\$2,500	\$2,500
Subtotal				\$344,500	\$123,500
Construction Contingency - 10%				\$34,450	
Total Construction Cost				\$378,950	
Non Construction Cost- 25%				\$94,738	
Total				\$473,688	

Table 6-27(R)

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District

and Bear Lake Area

Waste Stabilization Lagoon Treatment System with Controlled Discharge, Surface Discharge

Capital Cost Estimate

Phase 2

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Excavation/Fill	44,100	C.Y.	\$4.00	\$176,400	\$88,200
Pond Liner	505,000	S.F.	\$0.50	\$252,500	\$126,250
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Discharge Control Structure	1	Lump Sum	\$40,000	\$40,000	\$20,000
Land Acquisition	17	Acres	\$2,500	\$42,500	\$42,500
Subtotal				\$708,400	\$370,450
Construction Contingency -	10%			\$70,840	
Total Construction Cost				\$779,240	
Non Construction Cost-	25%			\$194,810	
Total				\$974,050	

Table 6-28(R)

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District and Bear Lake Area

Constructed Wetland Treatment System, Controlled Discharge, Surface Discharge Capital Cost Estimate Phase 2

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	5	Each	\$20,000	\$100,000	\$50,000
Wetlands					
Excavation/Fill	9,000	C.Y.	\$4.00	\$36,000	\$18,000
Synthetic Liner	121,875	S.F.	\$0.50	\$60,938	\$30,469
Gravel	7,200	C.Y.	\$20.00	\$144,000	\$72,000
Plants	97,500	Each	\$0.50	\$48,750	\$24,375
Stabilization	97,500	S.F.	\$0.25	\$24,375	\$12,188
Infiltration Basin					
Excavation	2,200	C.Y.	\$15.00	\$33,000	\$16,500
Piping	1,700	L.F.	\$5.00	\$8,500	\$4,250
Synthetic Liner	18,700	S.F.	\$0.50	\$9,350	\$4,675
Recirculation Pump	1	Each	\$7,500.00	\$7,500	\$3,750
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Flow Structures/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Controlled Discharge Basin, Excavation	12,400	C.Y.	\$4.00	\$49,600	\$24,800
Controlled Discharge Basin, Liner	125,000	S.F.	\$0.50	\$62,500	\$31,250
Controlled Discharge Structure	1	Lump Sum	\$20,000	\$20,000	\$10,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	6.5	Acres	\$2,500	\$16,250	\$16,250
Subtotal				\$817,763	\$412,006
Construction Contingency - 10%				\$81,776	
Total Construction Cost				\$899,539	
Non Construction Cost- 25%				\$224,885	
Total				\$1,124,423	

Table 6-29(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Facultative Lagoon Treatment System, Land Application
Capital Cost Estimate
Phase 2

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Lagoon					
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$10,000	\$10,000	\$5,000
Excavation/Fill	29,900	C.Y.	\$4.00	\$119,600	\$59,800
Pond Liner	276,100	S.F.	\$0.50	\$138,050	\$69,025
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	10	Acres	\$2,500	\$25,000	\$25,000
Land Application					
Excavation	15,300	C.Y.	\$4	\$61,200	\$30,600
Liner	136,000	S.F.	\$0.50	\$68,000	\$34,000
Irrigation, sprinklers and piping	199	Each	\$135.00	\$26,865	\$13,433
Irrigation, trenching and backfill	13,000	L.F.	\$1	\$13,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	20	Acres	\$2,500	\$50,000	
Subtotal				\$733,715	\$342,858
Construction Contingency - 10%				\$73,372	
Total Construction Cost				\$807,087	
Non Construction Cost- 25%				\$201,772	
Total				\$1,008,858	

Table 6-30(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Constructed Wetland Treatment System, Land Application
Capital Cost Estimate
Phase 2

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	5	Each	\$20,000	\$100,000	\$50,000
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	5.6	Acres	\$2,500	\$14,000	\$14,000
Wetlands					
Excavation/Fill	9,000	C.Y.	\$4.00	\$36,000	\$18,000
Synthetic Liner	121,875	S.F.	\$0.50	\$60,938	\$30,469
Gravel	7,200	C.Y.	\$20.00	\$144,000	\$72,000
Plants	97,500	Each	\$0.50	\$48,750	\$24,375
Stabilization	97,500	S.F.	\$0.25	\$24,375	\$12,188
Land Application					
Excavation	15,300	C.Y.	\$4	\$61,200	\$30,600
Liner	136,000	S.F.	\$0.50	\$68,000	\$34,000
Irrigation, sprinklers and piping	199	Each	\$135.00	\$26,865	\$13,433
Irrigation, trenching and backfill	13,000	L.F.	\$1	\$13,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	20	Acres	\$2,500	\$50,000	\$50,000
Subtotal				\$869,128	\$455,064
Construction Contingency - 10%				\$86,913	
Total Construction Cost				\$956,040	
Non Construction Cost- 25%				\$239,010	
Total				\$1,195,050	

Table 6-31(R)

Wastewater Collection and Treatment System Feasibility Study

for the East Shore Conservancy District and Bear Lake Area

Activated Sludge Treatment System, Surface Discharge

Capital Cost Estimate

Phase 3

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$15,000	\$15,000	\$7,500
Package Plant	1	Lump Sum	\$150,000	\$150,000	
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$80,000	\$80,000	\$48,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Disinfection	1	Lump Sum	\$20,000	\$20,000	\$10,000
Sludge Storage	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	1	Acres	\$2,500	\$2,500	\$2,500
Subtotal				\$439,500	\$149,000
Construction Contingency - 10%				\$43,950	
Total Construction Cost				\$483,450	
Non Construction Cost- 25%				\$120,863	
Total				\$604,313	

Table 6-32(R)

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District

and Bear Lake Area

Waste Stabilization Lagoon Treatment System with Controlled Discharge, Surface Discharge

Capital Cost Estimate

Phase 3

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Excavation/Fill	66,000	C.Y.	\$4.00	\$264,000	\$132,000
Pond Liner	760,000	S.F.	\$0.50	\$380,000	\$190,000
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Discharge Control Structure	1	Lump Sum	\$40,000	\$40,000	\$20,000
Land Acquisition	26	Acres	\$2,500	\$65,000	\$65,000
Subtotal				\$946,000	\$500,500
Construction Contingency - 10%				\$94,600	
Total Construction Cost				\$1,040,600	
Non Construction Cost- 25%				\$260,150	
Total				\$1,300,750	

Table 6-33(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Constructed Wetland Treatment System, Controlled Discharge, Surface Discharge
Capital Cost Estimate
Phase 3

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	7	Each	\$20,000	\$140,000	\$70,000
Wetlands					
Excavation/Fill	12,600	C.Y.	\$4.00	\$50,400	\$25,200
Synthetic Liner	169,625	S.F.	\$0.50	\$84,813	\$42,406
Gravel	10,100	C.Y.	\$20.00	\$202,000	\$101,000
Plants	135,700	Each	\$0.50	\$67,850	\$33,925
Stabilization	135,700	S.F.	\$0.25	\$33,925	\$16,963
Infiltration Basin					
Excavation	3,100	C.Y.	\$15.00	\$46,500	\$23,250
Piping	7,500	L.F.	\$5.00	\$37,500	\$18,750
Synthetic Liner	26,500	S.F.	\$0.50	\$13,250	\$6,625
Recirculation Pump	1	Each	\$10,000.00	\$10,000	\$5,000
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Controlled Discharge Basin, Excavation	20,200	C.Y.	\$4.00	\$80,800	\$40,400
Controlled Discharge Basin, Liner	203,000	S.F.	\$0.50	\$101,500	\$50,750
Controlled Discharge Structure	1	Lump Sum	\$20,000	\$20,000	\$10,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	9.0	Acres	\$2,500	\$22,500	\$22,500
Subtotal				\$1,108,038	\$560,269
Construction Contingency - 10%				\$110,804	
Total Construction Cost				\$1,218,841	
Non Construction Cost- 25%				\$304,710	
Total				\$1,523,552	

Table 6-34(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Facultative Lagoon Treatment System, Land Application
Capital Cost Estimate
Phase 3

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Lagoon					
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$10,000	\$10,000	\$5,000
Excavation/Fill	43,000	C.Y.	\$4.00	\$172,000	\$86,000
Pond Liner	392,000	S.F.	\$0.50	\$196,000	\$98,000
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	13	Acres	\$2,500	\$32,500	\$32,500
Land Application					
Excavation	21,500	C.Y.	\$4	\$86,000	\$43,000
Liner	186,000	S.F.	\$0.50	\$93,000	\$46,500
Irrigation, sprinklers and piping	282	Each	\$135.00	\$38,070	\$19,035
Irrigation, trenching and backfill	18,000	L.F.	\$1	\$18,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	28	Acres	\$2,500	\$70,000	
Subtotal				\$937,570	\$436,035
Construction Contingency - 10%				\$93,757	
Total Construction Cost				\$1,031,327	
Non Construction Cost- 25%				\$257,832	
Total				\$1,289,159	

Table 6-35(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Constructed Wetland Treatment System, Land Application
Capital Cost Estimate
Phase 3

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	7	Each	\$20,000	\$140,000	\$70,000
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	7.8	Acres	\$2,500	\$19,500	\$19,500
Wetlands					
Excavation/Fill	12,600	C.Y.	\$4.00	\$50,400	\$25,200
Synthetic Liner	169,625	S.F.	\$0.50	\$84,813	\$42,406
Gravel	10,100	C.Y.	\$20.00	\$202,000	\$101,000
Plants	135,700	Each	\$0.50	\$67,850	\$33,925
Stabilization	135,700	S.F.	\$0.25	\$33,925	\$16,963
Land Application					
Excavation	21,500	C.Y.	\$4	\$86,000	\$43,000
Liner	186,000	S.F.	\$0.50	\$93,000	\$46,500
Irrigation, sprinklers and piping	282	Each	\$135.00	\$38,070	\$19,035
Irrigation, trenching and backfill	18,000	L.F.	\$1	\$18,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	28	Acres	\$2,500	\$70,000	\$70,000
Subtotal				\$1,125,558	\$593,529
Construction Contingency - 10%				\$112,556	
Total Construction Cost				\$1,238,113	
Non Construction Cost- 25%				\$309,528	
Total				\$1,547,642	

Table 6-36(R)

Wastewater Collection and Treatment System Feasibility Study

for the East Shore Conservancy District and Bear Lake Area

Activated Sludge Treatment System, Surface Discharge Capital Cost Estimate Phase 4

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$20,000	\$20,000	\$10,000
Package Plant	1	Lump Sum	\$250,000	\$250,000	
Force Main	7,800	Feet	\$15	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$85,000	\$85,000	\$51,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Disinfection	1	Lump Sum	\$25,000	\$25,000	\$12,500
Sludge Storage	1	Lump Sum	\$55,000	\$55,000	\$27,500
Land Acquisition	1	Acres	\$2,500	\$2,500	\$2,500
Subtotal				\$584,500	\$172,000
Construction Contingency - 10%				\$58,450	
Total Construction Cost				\$642,950	
Non Construction Cost- 25%				\$160,738	
Total				\$803,688	

Table 6-37(R)

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District

and Bear Lake Area

Waste Stabilization Lagoon Treatment System with Controlled Discharge, Surface Discharge

Capital Cost Estimate

Phase 4

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Excavation/Fill	108,200	C.Y.	\$4.00	\$432,800	\$216,400
Pond Liner	1,265,000	S.F.	\$0.50	\$632,500	\$316,250
Force Main	7,800	L.F.	\$15.00	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Discharge Control Structure	1	Lump Sum	\$40,000	\$40,000	\$20,000
Land Acquisition	44	Acres	\$2,500	\$110,000	\$110,000
Subtotal				\$1,412,300	\$756,150
Construction Contingency -	10%			\$141,230	
Total Construction Cost				\$1,553,530	
Non Construction Cost-	25%			\$388,383	
Total				\$1,941,913	

Table 6-38(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Constructed Wetland Treatment System, Controlled Discharge, Surface Discharge
Capital Cost Estimate
Phase 4

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	11	Each	\$20,000	\$220,000	\$110,000
Wetlands					
Excavation/Fill	18,800	C.Y.	\$4.00	\$75,200	\$37,600
Synthetic Liner	253,438	S.F.	\$0.50	\$126,719	\$63,359
Gravel	15,000	C.Y.	\$20.00	\$300,000	\$150,000
Plants	202,800	Each	\$0.50	\$101,400	\$50,700
Stabilization	202,800	S.F.	\$0.25	\$50,700	\$25,350
Infiltration Basin					
Excavation	4,700	C.Y.	\$15.00	\$70,500	\$35,250
Piping	3,500	L.F.	\$5.00	\$17,500	\$8,750
Synthetic Liner	39,600	S.F.	\$0.50	\$19,800	\$9,900
Recirculation Pump	1	Each	\$15,000.00	\$15,000	\$7,500
Force Main	7,800	L.F.	\$15.00	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Controlled Discharge Basin, Excavation	41,600	C.Y.	\$4.00	\$166,400	\$83,200
Controlled Discharge Basin, Liner	393,000	S.F.	\$0.50	\$196,500	\$98,250
Controlled Discharge Structure	1	Lump Sum	\$20,000	\$20,000	\$10,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	13.5	Acres	\$2,500	\$33,750	\$33,750
Subtotal				\$1,610,469	\$817,109
Construction Contingency - 10%				\$161,047	
Total Construction Cost				\$1,771,516	
Non Construction Cost- 25%				\$442,879	
Total				\$2,214,395	

Table 6-39(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Facultative Lagoon Treatment System, Land Application
Capital Cost Estimate
Phase 4

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Lagoon					
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$10,000	\$10,000	\$5,000
Excavation/Fill	63,000	C.Y.	\$4.00	\$252,000	\$126,000
Pond Liner	570,000	S.F.	\$0.50	\$285,000	\$142,500
Force Main	7,800	L.F.	\$15.00	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	20	Acres	\$2,500	\$50,000	\$50,000
Land Application					
Excavation	32,000	C.Y.	\$4	\$128,000	\$64,000
Liner	268,000	S.F.	\$0.50	\$134,000	\$67,000
Irrigation, sprinklers and piping	421	Each	\$135.00	\$56,835	\$28,418
Irrigation, trenching and backfill	27,000	L.F.	\$1	\$27,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	41	Acres	\$2,500	\$102,500	
Subtotal				\$1,267,335	\$588,918
Construction Contingency - 10%				\$126,734	
Total Construction Cost				\$1,394,069	
Non Construction Cost- 25%				\$348,517	
Total				\$1,742,586	

Table 6-40(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Constructed Wetland Treatment System, Land Application
Capital Cost Estimate
Phase 4

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	11	Each	\$20,000	\$220,000	\$110,000
Force Main	7,800	L.F.	\$15.00	\$117,000	\$58,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	11.6	Acres	\$2,500	\$29,000	\$29,000
Wetlands					
Excavation/Fill	18,800	C.Y.	\$4.00	\$75,200	\$37,600
Synthetic Liner	253,438	S.F.	\$0.50	\$126,719	\$63,359
Gravel	15,000	C.Y.	\$20.00	\$300,000	\$150,000
Plants	202,800	Each	\$0.50	\$101,400	\$50,700
Stabilization	202,800	S.F.	\$0.25	\$50,700	\$25,350
Land Application					
Excavation	32,000	C.Y.	\$4	\$128,000	\$64,000
Liner	268,000	S.F.	\$0.50	\$134,000	\$67,000
Irrigation, sprinklers and piping	421	Each	\$135.00	\$56,835	\$28,418
Irrigation, trenching and backfill	27,000	L.F.	\$1	\$27,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	41	Acres	\$2,500	\$102,500	\$102,500
Subtotal				\$1,573,354	\$833,927
Construction Contingency - 10%				\$157,335	
Total Construction Cost				\$1,730,689	
Non Construction Cost- 25%				\$432,672	
Total				\$2,163,361	

Table 6-41(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Treatment System Annual Operation, Maintenance & Replacement Cost
Phase 1

Treatment System Alternative-	<u>Activated</u> <u>Sludge</u>	<u>Waste</u> <u>Stabilization</u> <u>Lagoon</u>	<u>Constructed</u> <u>Wetland</u>	<u>Facultative</u> <u>Lagoon - Land</u> <u>Application</u>	<u>Constructed</u> <u>Wetland - Land</u> <u>Application</u>
Labor	\$10,000	\$3,120	\$3,120	\$8,370	\$8,370
Energy	\$3,500	\$500	\$500	\$4,000	\$4,000
Material & Supplies	\$2,000	\$500	\$500	\$1,000	\$1,000
Repairs	\$2,000	\$1,500	\$1,000	\$2,500	\$2,000
Replacement	\$2,500	\$500	\$500	\$1,000	\$1,000
Sludge/Septage	\$2,000	\$1,500	\$1,050	\$1,500	\$2,100
Outside Services	\$5,000	\$4,000	\$4,000	\$2,000	\$2,000
Administration	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$5,000</u>
Total	\$32,000	\$16,620	\$15,670	\$25,370	\$25,470

Table 6-45(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area
Treatment System Present Worth Analysis
Phase 1

Treatment System Alternative-	<u>Activated</u> <u>Sludge</u>	<u>Waste</u> <u>Stabilization</u> <u>Lagoon</u>	<u>Constructed</u> <u>Wetland</u>	<u>Facultative</u> <u>Lagoon - Land</u> <u>Application</u>	<u>Constructed</u> <u>Wetland - Land</u> <u>Application</u>
<u>Cost Summary</u>					
Treatment System Capital Cost	\$375,000	\$508,000	\$550,000	\$533,000	\$594,000
Treatment System Annual OM&R Cost	\$32,000	\$17,000	\$16,000	\$25,000	\$25,000
Treatment System Salvage Value	\$114,000	\$186,000	\$198,000	\$183,000	\$218,000
Present Worth Description 20 years @ 7.0% interest					
Present Worth- Capital Cost	\$375,000	\$508,000	\$550,000	\$533,000	\$594,000
Present Worth- Annual OM&R Cost	\$339,000	\$180,000	\$170,000	\$265,000	\$265,000
Present Worth- Salvage Value	(\$29,000)	(\$48,000)	(\$51,000)	(\$47,000)	(\$56,000)
Total	\$685,000	\$640,000	\$669,000	\$751,000	\$803,000

Table 6-46(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area
Treatment System Present Worth Analysis
Phase 2

Treatment System Alternative-	<u>Activated Sludge</u>	<u>Waste Stabilization Lagoon</u>	<u>Constructed Wetland</u>	<u>Facultative Lagoon - Land Application</u>	<u>Constructed Wetland - Land Application</u>
Cost Summary					
Treatment System Capital Cost	\$474,000	\$974,000	\$1,124,000	\$1,009,000	\$1,195,000
Treatment System Annual OM&R Cost	\$69,000	\$21,000	\$19,000	\$28,000	\$27,000
Treatment System Salvage Value	\$124,000	\$370,000	\$412,000	\$343,000	\$455,000
Present Worth Description 20 years @ 7.0% interest					
Present Worth- Capital Cost	\$474,000	\$974,000	\$1,124,000	\$1,009,000	\$1,195,000
Present Worth- Annual OM&R Cost	\$731,000	\$222,000	\$201,000	\$297,000	\$286,000
Present Worth- Salvage Value	(\$32,000)	(\$96,000)	(\$106,000)	(\$89,000)	(\$118,000)
	\$1,173,000	\$1,100,000	\$1,219,000	\$1,217,000	\$1,363,000

Table 6-47(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area
Treatment System Present Worth Analysis
Phase 3

Treatment System Alternative-	<u>Activated Sludge</u>	<u>Waste Stabilization Lagoon</u>	<u>Constructed Wetland</u>	<u>Facultative Lagoon - Land Application</u>	<u>Constructed Wetland - Land Application</u>
<u>Cost Summary</u>					
Treatment System Capital Cost	\$604,000	\$1,301,000	\$1,524,000	\$1,289,000	\$1,548,000
Treatment System Annual OM&R Cost	\$82,000	\$24,000	\$20,000	\$31,000	\$28,000
Treatment System Salvage Value	\$149,000	\$501,000	\$560,000	\$436,000	\$594,000
Present Worth Description 20 years @ 7.0% interest					
Present Worth- Capital Cost	\$604,000	\$1,301,000	\$1,524,000	\$1,289,000	\$1,548,000
Present Worth- Annual OM&R Cost	\$869,000	\$254,000	\$212,000	\$328,000	\$297,000
Present Worth- Salvage Value	(\$39,000)	(\$129,000)	(\$145,000)	(\$113,000)	(\$154,000)
	\$1,434,000	\$1,426,000	\$1,591,000	\$1,504,000	\$1,691,000

Table 6-48(R)
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area
Treatment System Present Worth Analysis
Phase 4

Treatment System Alternative-	<u>Activated</u>	<u>Waste</u>	<u>Constructed</u>	<u>Facultative</u>	<u>Constructed</u>
	<u>Sludge</u>	<u>Stabilization</u>	<u>Wetland</u>	<u>Lagoon - Land</u>	<u>Wetland - Land</u>
		<u>Lagoon</u>		<u>Application</u>	<u>Application</u>
<u>Cost Summary</u>					
Treatment System Capital Cost	\$804,000	\$1,942,000	\$2,214,000	\$1,743,000	\$2,163,000
Treatment System Annual OM&R Cost	\$105,000	\$27,000	\$23,000	\$34,000	\$30,000
Treatment System Salvage Value	\$172,000	\$756,000	\$817,000	\$589,000	\$834,000
<u>Present Worth Description</u>					
20 years @	7.0% interest				
Present Worth- Capital Cost	\$804,000	\$1,942,000	\$2,214,000	\$1,743,000	\$2,163,000
Present Worth- Annual OM&R Cost	\$1,112,000	\$286,000	\$244,000	\$360,000	\$318,000
Present Worth- Salvage Value	(\$44,000)	(\$195,000)	(\$211,000)	(\$152,000)	(\$216,000)
	\$1,872,000	\$2,033,000	\$2,247,000	\$1,951,000	\$2,265,000

Table 8-1(R)

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District and Bear Lake Area

Project Cost Summary

Construction Costs

Phase 1	Wastewater Collection System	\$590,000
<u>Phase 1</u>	<u>Wastewater Treatment System</u>	<u>\$270,000</u>
Sub Total, Construction Costs		\$860,000

Non Construction Costs

Engineering		
	Preliminary Engineering	\$20,000
	Engineering Design / Construction Administration	\$70,000
Additional Services	Soils Investigation O & M Manual Operator Training	\$18,000
	Project Inspection	\$85,000
Legal		
	Local Attorney	\$5,000
	Bond Counsel	\$10,000
Rate Consultant		\$10,000
Land Acquisition		\$20,000
Easement and right-of-way acquisition		\$5,000
Equipment	Billing System & Equipment Vehicle Office Furnishings	\$10,000
<u>Contingency</u>		<u>\$87,000</u>
Total Project Cost		\$1,200,000

Table 8-2
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Estimated Monthly Sewer Rates Phase 1

Capital Costs \$1,200,000 Treatment System:
Annual O, M & R Cost \$40,000 Activated Sludge

Scenario #1	<u>Grant Amount</u>
RECD Grant	\$0
DOC Grant	\$0
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$0
Bond Coverage, %	10%
# of ERC's **	90

<u>Estimated Monthly Payment / ERC</u>			
Debt Service	O & M	Bond Coverage	Total
\$70	\$37	\$7	\$114

Scenario #2	<u>Grant Amount</u>
RECD Grant	\$0
DOC Grant	\$500,000
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$0
Bond Coverage, %	10%
# of ERC's **	90

<u>Estimated Monthly Payment / ERC</u>			
Debt Service	O & M	Bond Coverage	Total
\$41	\$37	\$4	\$82

Scenario #3	<u>Grant Amount</u>
RECD Grant	\$250,000
DOC Grant	\$500,000
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$0
Bond Coverage, %	10%
# of ERC's **	90

<u>Estimated Monthly Payment / ERC</u>			
Debt Service	O & M	Bond Coverage	Total
\$26	\$37	\$3	\$66

Scenario #4	<u>Grant Amount</u>
RECD Grant	\$350,000
DOC Grant	\$500,000
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$0
Bond Coverage, %	10%
# of ERC's **	90

<u>Estimated Monthly Payment / ERC</u>			
Debt Service	O & M	Bond Coverage	Total
\$20	\$37	\$2	\$59

Scenario #5	<u>Grant Amount</u>
RECD Grant	\$550,000
DOC Grant	\$500,000
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$0
Bond Coverage, %	10%
# of ERC's **	90

<u>Estimated Monthly Payment / ERC</u>			
Debt Service	O & M	Bond Coverage	Total
\$9	\$37	\$1	\$47

* Payment made by user before connection to system to reduce the debt service

** ERC = Equivalent residential connection = total flow divided by
average daily flow from residential user

Table 8-2
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Estimated Monthly Sewer Rates
Phase 1

Capital Costs \$1,200,000 Treatment System:
Annual O, M & R Cost \$40,000 Activated Sludge

Scenario #1	Grant Amount
RECD Grant	\$0
DOC Grant	\$0
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$2,000
Bond Coverage, %	10%
# of ERC's **	90

<i>Estimated Monthly Payment / ERC</i>			
Debt Service	O & M	Bond Coverage	Total
\$60	\$37	\$6	\$102

Scenario #2	Grant Amount
RECD Grant	\$0
DOC Grant	\$500,000
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$2,000
Bond Coverage, %	10%
# of ERC's **	90

<i>Estimated Monthly Payment / ERC</i>			
Debt Service	O & M	Bond Coverage	Total
\$30	\$37	\$3	\$70

Scenario #3	Grant Amount
RECD Grant	\$250,000
DOC Grant	\$500,000
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$2,000
Bond Coverage, %	10%
# of ERC's **	90

<i>Estimated Monthly Payment / ERC</i>			
Debt Service	O & M	Bond Coverage	Total
\$16	\$37	\$2	\$54

Scenario #4	Grant Amount
RECD Grant	\$350,000
DOC Grant	\$500,000
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$2,000
Bond Coverage, %	10%
# of ERC's **	90

<i>Estimated Monthly Payment / ERC</i>			
Debt Service	O & M	Bond Coverage	Total
\$10	\$37	\$1	\$48

Scenario #5	Grant Amount
RECD Grant	\$550,000
DOC Grant	\$500,000
Term, Years	35
Annual Interest Rate, %	5.25%
Connection Fee *	\$2,000
Bond Coverage, %	10%
# of ERC's **	90

<i>Estimated Monthly Payment / ERC</i>			
Debt Service	O & M	Bond Coverage	Total
(\$2)	\$37	(\$0)	\$35

*Payment made by user before connection to system to reduce the debt service

** ERC = Equivalent residential connection = total flow divided by
average daily flow from residential user

CHAPTER 8 SELECTED PLAN

A. INTRODUCTION

The selected plan is based on the lowest cost alternative from the present worth analysis. The project phases were selected based on meetings with the Environmental Infrastructure Working Group. The decision by the Bear Lake group was to proceed with the project in two segments.

The first segment will consist of Phases 1 and 2. The second segment will complete the project and includes Phases 3 and 4.

B. COLLECTION SYSTEM

The most cost-effective collection system for Phases 1 and 2 is the gravity sewer system. The system will consist of 8-inch and 10-inch gravity sewers located primarily in existing rights-of-way and easements. At least four lift stations will be required at various locations to overcome terrain conditions.

The most cost-effective system for Phases 3 and 4 is the pressure system. With this system, grinder pump units will be shared with two connections wherever possible to reduce construction costs. The pressure sewers will consist of 1 1/4-inch through 4-inch diameter pipe located primarily in rights-of-way or easements. The most notable exception to this is where the pressure sewer is proposed to cross High Lake at its narrowest point (approximately 300 feet) and where the High Lake system crosses the Merry Lea Environmental Center property to transport the sewage to the treatment facility. The proposed collection system is shown in Appendix I.

C. TREATMENT FACILITIES

The most cost-effective treatment system for Phase 1-2 and Phase 1-4 is the constructed wetlands system. The proposed layout is shown in Appendix I. Site C was selected as the most favorable site, based on setbacks and other siting criteria.

The treatment process will include pretreatment tanks, subsurface constructed wetlands, soil basin and an outfall sewer to the receiving stream. The main lift station will be located near the intersection of County Road 200 South and State Road 109.

D. PRELIMINARY DESIGN SUMMARY

1. Treatment Units

A. Main Lift Station

1. Location: Near the intersection of County Road 200 South and State Road 109.
2. Type of Pump: Centrifugal
3. Capacity of Pumps: 600 gpm

B. Primary Treatment

1. Septic Tanks: 48 hours detention time
14 tanks at 20,000 gallons each

C. Secondary Treatment

1. Subsurface Flow Constructed Wetland
 - a. Detention Time: 7 days
2. Soil Basin with Collection System
 - a. Application Rate: 0.6 inches/hour

2. Collection System

A. Lift Stations

1. Number of stations: 4
2. Location: see map in Appendix I
3. Size:
Lift Station 1: 400 gpm
Lift Station 2: 220 gpm
Lift Station 3: 160 gpm

Lift Station 4: 130 gpm

- B. Gravity System
 - 1. 8" - 10" Sewers: 18,100 feet
 - 2. Force Main: 4,350 feet
- C. Pressure Grinder Pumps
 - 1. No. of Pump Units: 108
 - 2. Type: Centrifugal or semi-positive displacement
- D. Pressure Sewers
 - 1. 4-Inch: 4,600 feet
 - 2. 3-Inch: 5,400 feet
 - 3. 1 1/2-Inch: 600 feet
 - 4. 1 1/4-Inch: 3,080 feet

E. COST ESTIMATES

A summary of the estimated project costs associated with the proposed wastewater collection and treatment systems is presented in Table 8-1.

The total project costs as developed in Table 8-1 are preliminary estimates and are subject to change as progress is made through the design and construction phases of project implementation. The cost estimates presented in this report are preliminary in nature and presented for the sole purpose of determining the financial feasibility of the proposed project and establishing an estimate of the financing requirements. The actual project costs, as well as the resulting sewage rates, will be dependent on the chosen method of financing and the actual design and construction costs.

Estimated sewage rates are determined by two factors: user charges and debt service charges. User charges include treatment costs, operation and maintenance (O&M) costs, and replacement costs. The O&M costs include the daily costs for running the system. The replacement charge can also be used as a reserve in the event of financial difficulty. The debt service and bond

coverage is the amount of financing necessary to repay loans, interest, insurance and other charges included in the financing package. Table 8-2 presents the estimated average monthly sewer rate for the selected alternative project based upon RECD (FmHA) funding using two different grant amounts and two different connection fees.

Table 8-1

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District and Bear Lake Area

Collection & Treatment System Present Worth Analysis Project Cost Summary

Construction Costs

* Phase 1-2 Wastewater Collection System	\$1,860,000
* Phase 3-4 Wastewater Collection System	\$1,980,000
** <u>Phase 1-4 Wastewater Treatment System</u>	<u>\$1,260,000</u>
Sub Total, Construction Costs	\$5,100,000

Non Construction Costs

Engineering		
Preliminary Engineering		\$30,000
Engineering Design / Construction Administration		\$404,000
Additional Services	<div style="border: 1px solid black; padding: 5px; text-align: center;"> Soils Investigation O & M Manual Operator Training </div>	\$25,000
Project Inspection		\$180,000
Legal		
Local Attorney		\$15,000
Bond Counsel		\$20,000
Rate Consultant		\$25,000
Land Acquisition		\$35,000
Easement and right-of-way acquisition		\$15,000
Equipment	<div style="border: 1px solid black; padding: 5px; text-align: center;"> Billing System & Equipment Vehicle Office Furnishings </div>	\$25,000
<u>Contingency</u>		<u>\$226,000</u>
Total Project Cost		\$6,100,000

Table 8-2

Wastewater Collection and Treatment System Feasibility Study for the

East Shore Conservancy District and Bear Lake Area

Collection & Treatment System Present Worth Analysis Estimated Monthly Sewer Rates

Capital Costs \$6,100,000

Annual O,M & R Cost \$106,000

Scenario #1				Grant Amount
RECD Grant	30%			\$1,830,000
Term, Years				35
Annual Interest Rate, %				5.25%
Connection Fee *				\$0
Bond Coverage, %				10%
# of ERC's **				657
Estimated Monthly Payment / ERC				
Debt Service	O & M	Bond Coverage	Total	
\$34	\$13	\$3	\$51	

Scenario #3				Grant Amount
RECD Grant	45%			\$2,745,000
Term, Years				35
Annual Interest Rate, %				5.25%
Connection Fee *				\$0
Bond Coverage, %				10%
# of ERC's **				657
Estimated Monthly Payment / ERC				
Debt Service	O & M	Bond Coverage	Total	
\$27	\$13	\$3	\$43	

Scenario #2				Grant Amount
RECD Grant	30%			\$1,830,000
Term, Years				35
Annual Interest Rate, %				5.25%
Connection Fee *				\$2,000
Bond Coverage, %				10%
# of ERC's **				657
Estimated Monthly Payment / ERC				
Debt Service	O & M	Bond Coverage	Total	
\$24	\$13	\$2	\$39	

Scenario #4				Grant Amount
RECD Grant	45%			\$2,745,000
Term, Years				35
Annual Interest Rate, %				5.25%
Connection Fee *				\$2,000
Bond Coverage, %				10%
# of ERC's **				657
Estimated Monthly Payment / ERC				
Debt Service	O & M	Bond Coverage	Total	
\$16	\$13	\$2	\$31	

*Payment made by user before connection to system to reduce the debt service

** ERC = Equivalent residential connection= total flow divided by average daily flow from residential user

CHAPTER 9 LEGAL, FINANCIAL AND INSTITUTIONAL CAPABILITIES

A. LEGAL ENTITY

In order to implement the selected plan, there must be some legal entity in place. The East Shore Conservancy District is already an established legal entity. If Phase 1 is the selected plan, no further action would be required to establish the entity. However, if Phase 2 through 4 is selected, then formation of a new or expanded legal entity may be required.

The options available for unincorporated areas include:

- Regional Sewer District
- Conservancy District

A summary of the purpose, organization procedure, powers and sources of funds are summarized below for each type of legal entity:

I. Purposes

A. Regional Water and/or Sewer Districts

1. Water supply
2. Sewage

B. Conservancy Districts

1. Flood control
2. Drainage
3. Irrigation
4. Water supply
5. Sewage
6. Recreation
7. Soil erosion

II. Organization Procedure

A. Regional Sewer Districts

1. Petition filed with the Commissioners of IDEM
2. Hearing
3. Findings of fact and recommendations to the Commissioners
4. Order directing that the District be organized (preliminary)
5. Board of Trustees elected
6. District plan filed with IDEM within 6 months from date of preliminary order
7. Approval, authorization for District to proceed

B. Conservancy Districts

1. Petition filed with Clerk of Circuit Court
2. Court hearing
3. Court order referring petition to Natural Resources Commission
4. Commission hearings as necessary
5. Fact-finding report from Commission to Court within 120 days of the referral of the petition to them
6. Court hearing
7. Court order establishing District
8. Board of Directors appointed
9. District plan filed with Commission within 120 days from date of appointment of Board
10. Commission approval
11. District plan filed with Court
12. Court hearing
13. Court approval

III. Powers

A. Regional Sewer Districts

1. Sue or be sued
2. Make contracts
3. Adopt by-laws and regulations
4. Construct, acquire, lease, operate or manage sanitary sewage works or plants
5. Fix, alter, charge and collect reasonable rates and other charges in the area serviced by its facilities
6. Require any property producing sewage to connect to its sewer system provided there is an available sanitary sewer within 300 feet of the property line
7. Exercise jurisdiction, control, possession and supervision over all property, plants and other interests conveyed, delivered, transferred or assigned to such District
8. Merge or combine with any other District (2/3 Board majority)
9. Enter into contracts
10. Adopt and affix a seal
11. Assume liability for failure to perform any agreement
12. Purchase, condemn and sell real property
13. Provide for joint construction by agreement with any other political subdivision
14. Remove or add structures
15. Procure insurance against loss
16. Make provision for contract for or sell any of its by-products or waste
17. Exercise power of eminent domain
18. Employ and compensate the professional and maintenance expertise necessary for accomplishment of its purpose
19. Exercise powers of District without consent of other political subdivisions

B. Conservancy Districts

1. Exercise general supervision and make regulations
2. Prescribe uniform rules pertaining to investigations and hearings
3. Supervise fiscal affairs and responsibilities of District
4. Prescribe qualifications, employ and compensate
5. Keep an accurate record of departmental proceedings

6. Make an annual report to the court of income and expenses
7. Adopt a seal
8. Sue and be sued
9. Establish an advisory committee or committees
10. Exercise powers granted for accomplishing purposes of district
11. Protect and guard against encroachment by any stream
12. Insure property, personnel and operations of district
13. Establish just and equitable rates and charges for sewage disposal
14. Collect and enforce such rates
15. Establish rules and regulations
16. Require any sewage-producing property to connect to its sewer system
17. Provide for and collect a connection charge to its system
18. Contract for treatment
19. Levy taxes on real property within district
20. Make assessments on real property within district for exceptional benefits
21. Issue bonds and short- and long-term notes
22. Incur debts and liabilities
23. Exercise power of eminent domain both inside and outside boundaries of district
24. Institute civil legal proceedings
25. Purchase or rent property
26. Sell services or property
27. Make contracts or agreements
28. Receive and disburse funds
29. Lease land
30. Do construction and maintenance outside district and even outside the State of Indiana

IV. Sources of Funds for Establishment of District and Preparation of District Plan

A. Regional Sewer Districts

1. Gifts or loans from any local, state or federal agency or persons

B. Conservancy Districts

1. Gifts or loans from any local, state or federal agency
2. Collection of special benefits tax
3. Borrow from the Flood Control Revolving Fund

V. Selected Legal Entity

The following scenarios are possible for the establishment of a legal entity:

Phase 1 - No action

- Dissolve Conservancy District and form RSD

Phase 2-4 - Form New Conservancy District for remaining areas and create agreement with East Shore

- Expand ESCD to include remaining areas (rename)

- Dissolve ESCD and form RSD for entire area

After considerable input from the East Shore Conservancy District, the Noble County Board of Commissioners and the general public, it was decided that formation of a Regional Sewer District would be the best option for the entire study area. The ESCD will be dissolved after the Regional Sewer District is

operational. A petition for creation of the Regional Sewer District was prepared and submitted to IDEM on March 1, 1995. The petition, legal description, and proposed District boundaries are included in Appendix J.

B. FINANCIAL ARRANGEMENTS

1. Funding Sources

Traditionally, funding for wastewater collection and treatment systems has come from a combination of federal, state and local sources. The primary source of the federal funds for sanitary sewer projects has been the Environmental Protection Agency's (EPA) "Construction Grants Program", with participation by the Indiana Department of Environmental Management. Local funds were raised generally through municipal utility bonds paid back through increased user rates.

The EPA grant program is now being replaced by a revolving loan program. The following is a list of potential funding sources that would apply to wastewater collection and treatment systems:

a. Revenue Bonds

1. Source of Funds: Municipalities
2. Type of Program: Bonds sold at market interest rates.
3. Description: Utility bond issues are revenue bonds for municipally owned utilities. They can be used to finance improvements and expansions, and the bonds are retired by payments from the utilities. This comes from users whose rates are increased to cover the debt retirement and other costs required in a bond issue.
4. Restrictions or Conditions: The debt service on these bonds is paid off entirely from the rates paid by the users of the system.

b. Indiana State Revolving Loan Fund (EPA Program)

1. Source of Funds: Indiana Dept. of Environmental Management
2. Type of Program: Loan program, lower than market rate
3. Description: The State Revolving Loan Fund (EPA Program) is the replacement for the former EPA grant program. It is a revolving loan program for which the Indiana Dept. of Environmental Management (IDEM) is currently developing procedures. In most cases, the loan would cover the entire cost of the project with interest rates being dependent upon hardship. To be eligible for a loan, a municipality must

agree to locate and remove cost-effective sources of excessive infiltration and inflow.

4. Restrictions or Conditions: The project must follow the guidelines outlined in Program Rules of Title II. Projects with the most significant environmental impact will be given priority.

c. Community Focus Funds Grant (CFF)

1. Source of Funds: Indiana Dept. of Commerce (Small Cities CDBG Program)
2. Type of Program: Grant
3. Description: CFF grants are used to assist communities with significant low and moderate income populations on long-term development projects. Eligible activities include housing, commercial revitalization, public facilities such as water lines, sanitary sewers, and treatment facilities, drainage projects, park facilities, fire stations and other community development activities. The grant program has three competitive application and award cycles each year.
4. Restrictions or Conditions: Maximum grant amount is \$500,000. The program requires a 10% local match in funds (cash or debt). The project must meet the Federal Act goal to benefit low/moderate income persons (at least 51% of total number of persons), prevent or eliminate slums or blight, or meet an urgent need. The project should be able to be completed within 18 months.

d. Rural Economic & Community Development (RECD) Grants/Loans

1. Source of Funds: RECD
2. Type of Program: Grant/Loan Combination
3. Description: The RECD has grants and loans available to assist communities in installing or upgrading water and wastewater utilities.
4. Restrictions or Conditions: The amount of the grants is tied to the median income of the community as well as the user charge rate necessary to finance the proposed improvements. Loan interest rates are also tied to these factors and are typically 5 to 8%. Both a grant and a loan may be used on an individual project. Projects are funded on a priority basis.

2. FINANCIAL ANALYSIS

Two meetings were held with the Environmental Infrastructure Working Group (EIWG) in December, 1994, and January, 1995, to assist the Bear Lake representatives in determining the most favorable funding options. The EIWG consists of staff from the following agencies:

- State Budget Agency
- Department of Commerce
- Department of Environmental Management (SRF)
- Rural Economic and Community Development (RECD) formerly FmHA

The results of the meetings led to the group selecting the following financing option:

First Segment: Phase 1-2, combination RECD/DOC

Second Segment: Phase 3-4, RECD and investigate potential for DOC

The costs associated with completion of the recommended work have been outlined in a previous section of this report.

The possibility exists for capital cost reductions during the design phases of the project. It is anticipated that the estimated costs as given in this report are higher than those which will actually occur. Additionally, various options for the purpose of cost control will be considered by the engineer and the District Board during the design phase.

C. IMPLEMENTATION SCHEDULE

The implementation schedule for the proposed project will be very dependent on the legal entity established and the method of financing selected. Three preliminary schedules are presented listing the necessary steps to implement

the recommended project. The first schedule is based entirely on local funding requiring a bond sale. The second schedule is based upon the application for a loan through the IDEM's State Revolving Fund. The third option is based on RECD financing.

1. Local Financing

- Establish legal entity July, 1995
- Begin Design August, 1995
- Submission of plans & specs to IDEM January, 1996
- Advertise for construction bids March, 1996
- Notice to proceed to contractor June, 1996
- Substantial completion of construction June, 1997
- Initiation of operation July, 1997

2. IDEM State Revolving Fund/DOC CFF Grant

- Establish legal entity July, 1995
- Submission of Feasibility Study to IDEM August, 1995
- Submission of Facilities Plan to IDEM September, 1995
- Begin Design November, 1995
- Submit CFF Application May, 1996
- Submission of plans & specs to IDEM May, 1996
- Notice of CFF Grant Award June, 1996
- Advertise for construction bids August, 1996
- Notice to proceed to contractor December, 1996
- Substantial completion of construction October, 1997
- Initiation of operation November, 1997
- Certification of project performance November, 1998

3. RECD Grant and Loan Financing

- | | |
|--|----------------|
| ● Establish legal entity | July, 1995 |
| ● Submit Pre-Application Permit | August, 1995 |
| ● Begin Design | December, 1995 |
| ● Submission of plans & specs to IDEM | May, 1996 |
| ● Advertise for construction bids | August, 1996 |
| ● Notice to proceed to contractor | December, 1996 |
| ● Substantial completion of construction | October, 1997 |
| ● Initiation of operation | November, 1997 |
| ● Certification of project performance | November, 1998 |

CHAPTER 10 PUBLIC PARTICIPATION

The Bear Lake Wastewater Collection and Treatment Feasibility Study represents a collaborative effort between the Noble County government, the East Shore Conservancy District, independent area residents, and two institutional establishments:

- Merry Lea Environmental Center
- Bear Lake Church Camp

This study analyzes the various means of mitigating the problems associated with the ESCD's failing wastewater treatment facility and investigates the feasibility of including the Bear Lake, High Lake, and Wolf Lake area in a sewer system. A Community Planning Fund Grant was obtained to assist in addressing these concerns.

The first of two public meetings took place at the Wolf Lake Elementary School on September 22. It was attended by over 100 people. Appendix J includes an agenda, attendance list, minutes, comment cards, and various newspaper articles from this successful meeting. All comments were addressed where possible. Comments and questions concerning costs, etc. could not be addressed until the study phase is completed.

A second public meeting was held on February 13, 1995, after completion of the study. A presentation of findings was made at this meeting along with discussion of costs and funding options. The study was then finalized to include recommendations and further action steps.

Documentation from this second public meeting, including advertisements, attendance sheets, comment cards, and newspaper articles, are also presented in Appendix J. The petition to form the Regional Sewer District was presented at the completion of the meeting.

**WASTEWATER COLLECTION AND TREATMENT SYSTEM
FEASIBILITY STUDY**

FOR

- **THE EAST SHORE CONSERVANCY DISTRICT**
- **THE BEAR LAKE AREA**
- **THE HIGH LAKE AREA**
- **THE WOLF LAKE AREA**

**Planning Funds Provided by:
NOBLE COUNTY COMMISSIONERS
EAST SHORE CONSERVANCY DISTRICT
MERRY LEA ENVIRONMENTAL CENTER
BEAR LAKE CHURCH CAMP
INDIANA DEPARTMENT OF COMMERCE**

MARCH, 1995

**Prepared by:
Bonar & Associates, Inc.**

**616 South Harrison Street
Fort Wayne IN 46802
219/424-0318**

**3021 E. 98th Street
Indianapolis IN 46280
317/575-6939**

**158 S. Napoleon St.
Valparaiso IN 46383
219/462-1158**

BONAR GROUP

ENGINEERS ARCHITECTS PLANNERS SURVEYORS

616 South Harrison Street
Fort Wayne, IN 46802
(219)424-0318
Fax (219)424-0410

May 6, 1996

Ms. Linda Schultz, Librarian
Noble County Public Library
813 East Main Street
Albion IN 46701

MAY 08 1996

SUBJECT: Additional Information Regarding the Petition for
Establishment of the Bear Lake, High Lake
& Wolf Lake Regional Sewer District

Dear Ms. Schultz:

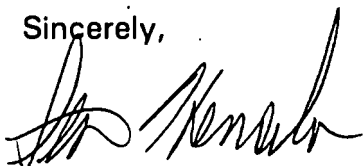
In January, I submitted a copy of a petition and report for the above subject project to your library. Your library was identified by the County Commissioners as a location to make the documents available to the public.

Enclosed find three additional items to be placed with the original submittal. The items are:

- Amendment to the Wastewater Collection & Treatment System Feasibility Study
- County Commissioners' Resolution
- Revised District boundary map

Please call me if you have any questions.

Sincerely,



Steven Henschen, P.E.
Engineer
Extension 245

Encs.

cc: Noble County Board of Commissioners
Mr. Jim Bowser, East Shore Conservancy District
Ms. Mylene Huybers, IDEM



BONAR GROUP

To: Greg Glauer

ENGINEERS ARCHITECTS PLANNERS SURVEYORS

OFFICE
OF
WATER MANAGEMENT
IDEM

May 20 11:43 AM '96

616 South Harrison Street
Fort Wayne, IN 46802
(219)424-0318
Fax (219)424-0410

3021 East 98th St. Suite 110
Indianapolis, IN 46280
(317)575-6939
Fax (317)575-6936

158 So. Napoleon St. Suite 100
Valparaiso, IN 46383
(219)462-1158
Fax (219)462-0329

May 17, 1996

Mr. Jan Henley
Indiana Department of Environmental Management
PO Box 6015
Government Center North, Room 1255
100 North Senate Avenue
Indianapolis IN 46206-6015

SUBJECT: Bear Lake Regional Sewer District

Dear Mr. Henley:

Please find enclosed the legal description for the boundary of the proposed sewer district.

Call if you have any questions.

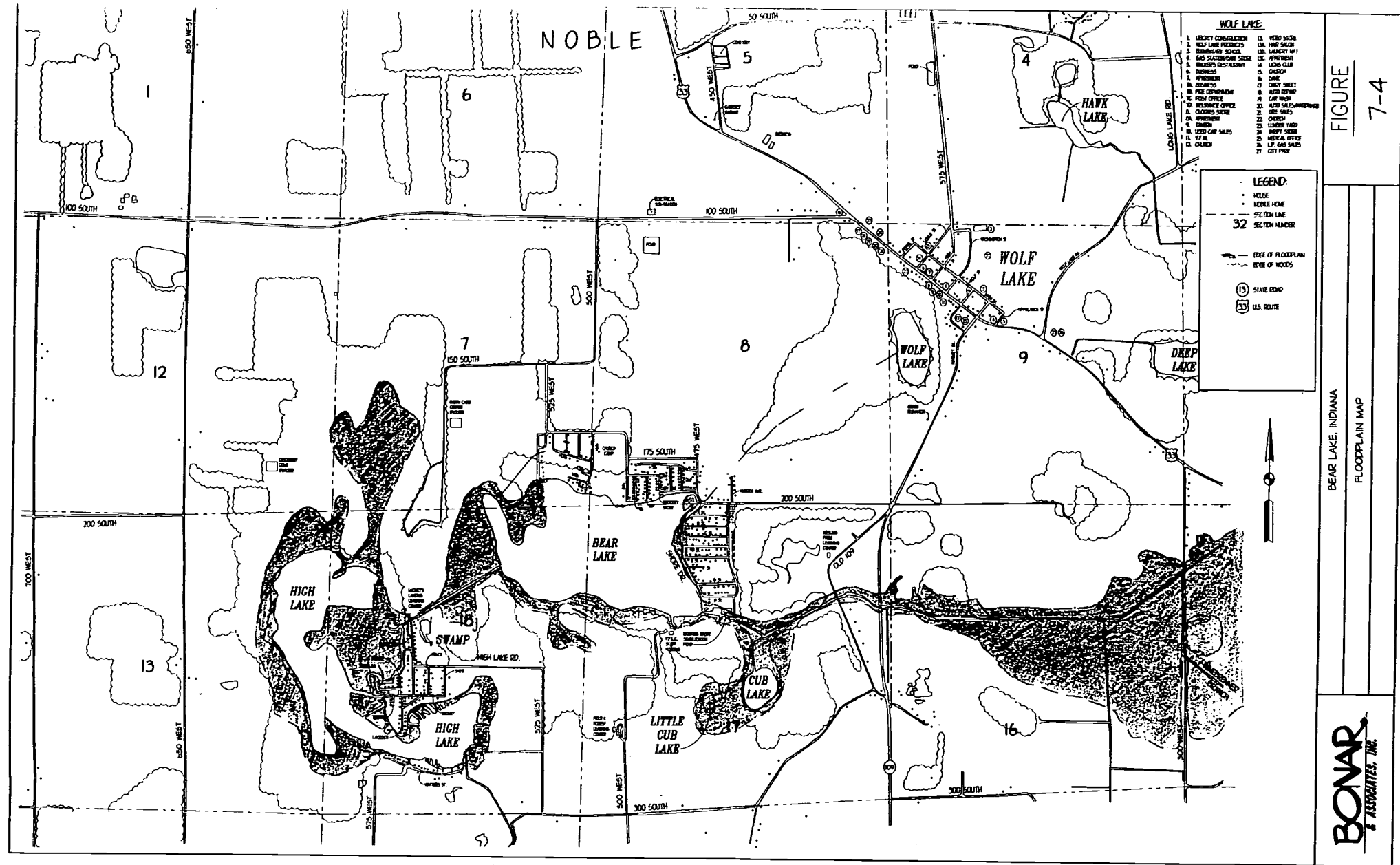
Sincerely,

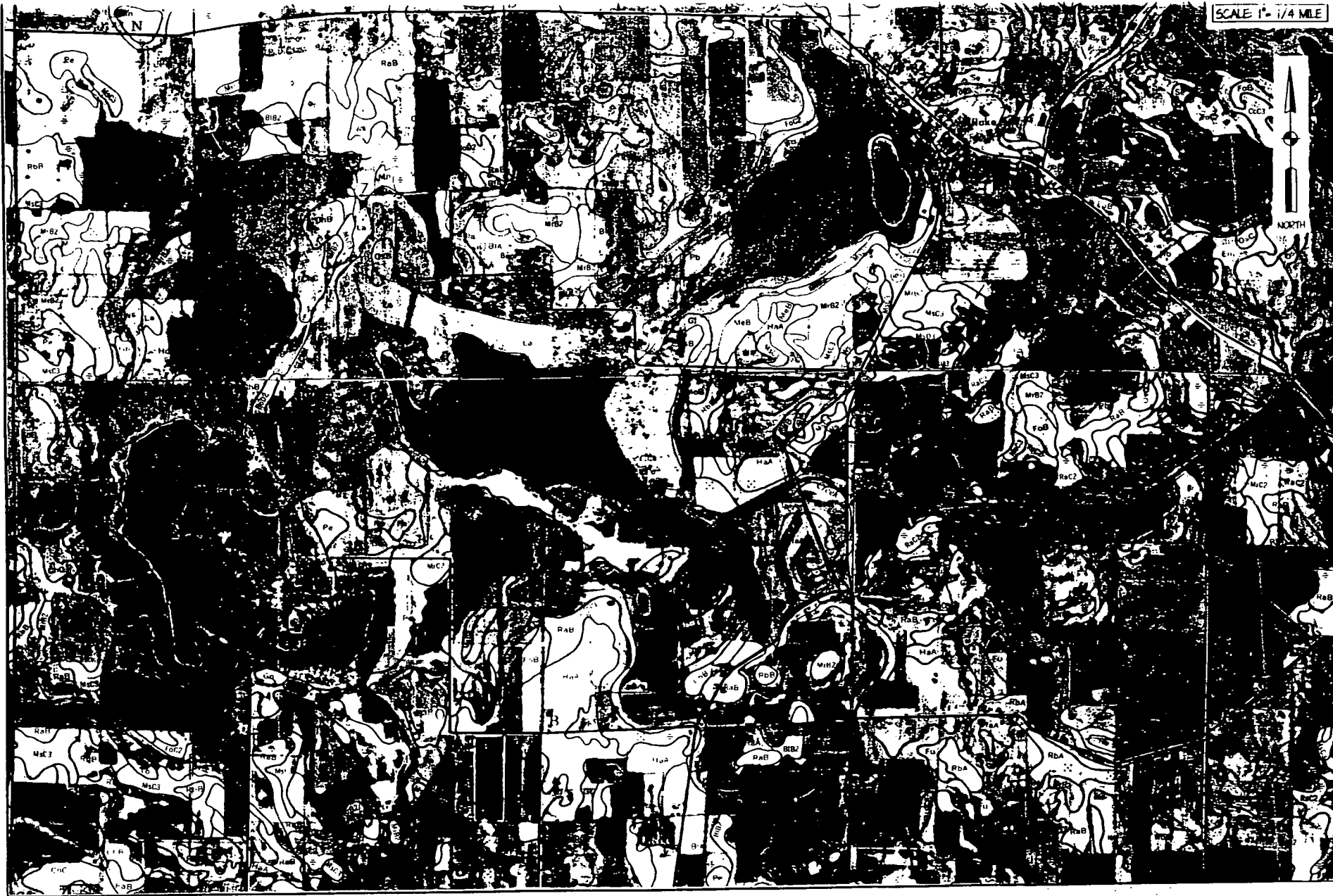
Mark B. Jesse

Mark B. Jesse, Manager
Environmental Division
Fort Wayne Office
Extension 239

rs
Encs.







BEAR LAKE, INDIANA

SOILS MAP

FIGURE

7-1

BONAR
ASSOCIATES, INC.

Table 6-27

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District

and Bear Lake Area

Waste Stabilization Lagoon Treatment System with Controlled Discharge, Surface Discharge

Capital Cost Estimate

Phase 2

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Excavation/Fill	36,100	C.Y.	\$4.00	\$144,400	\$72,200
Pond Liner	461,400	S.F.	\$0.50	\$230,700	\$115,350
Force Main	5,300	L.F.	\$10.00	\$53,000	\$26,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Discharge Control Structure	1	Lump Sum	\$40,000	\$40,000	\$20,000
Land Acquisition	16	Acres	\$2,500	\$40,000	\$40,000
Subtotal				\$588,100	\$309,050
Construction Contingency - 10%				\$58,810	
Total Construction Cost				\$646,910	
Non Construction Cost- 25%				\$161,728	
Total				\$808,638	

Table 6-28

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District

and Bear Lake Area

Constructed Wetland Treatment System, Surface Discharge Capital Cost Estimate Phase 2

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	5	Each	\$20,000	\$100,000	\$50,000
Wetlands					
Excavation/Fill	9,000	C.Y.	\$4.00	\$36,000	\$18,000
Synthetic Liner	121,875	S.F.	\$0.50	\$60,938	\$30,469
Gravel	7,200	C.Y.	\$20.00	\$144,000	\$72,000
Plants	97,500	Each	\$0.50	\$48,750	\$24,375
Stabilization	97,500	S.F.	\$0.25	\$24,375	\$12,188
Infiltration Basin					
Excavation	2,200	C.Y.	\$15.00	\$33,000	\$16,500
Piping	1,700	L.F.	\$5.00	\$8,500	\$4,250
Synthetic Liner	18,700	S.F.	\$0.50	\$9,350	\$4,675
Recirculation Pump	1	Each	\$7,500.00	\$7,500	\$3,750
Force Main	1,200	L.F.	\$10.00	\$12,000	\$6,000
Site Piping/Flow Structures/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	6.5	Acres	\$2,500	\$16,250	\$16,250
Subtotal				\$580,663	\$293,456
Construction Contingency - 10%				\$58,066	
Total Construction Cost				\$638,729	
Non Construction Cost- 25%				\$159,682	
Total				\$798,411	

Table 6-29

**Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area**

**Facultative Lagoon Treatment System, Land Application
Capital Cost Estimate
Phase 2**

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Lagoon					
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$10,000	\$10,000	\$5,000
Excavation/Fill	29,900	C.Y.	\$4.00	\$119,600	\$59,800
Pond Liner	276,100	S.F.	\$0.50	\$138,050	\$69,025
Force Main	5,300	L.F.	\$10.00	\$53,000	\$26,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	10	Acres	\$2,500	\$25,000	\$25,000
Land Application					
Excavation	15,300	C.Y.	\$4	\$61,200	\$30,600
Liner	136,000	S.F.	\$0.50	\$68,000	\$34,000
Irrigation, sprinklers and piping	199	Each	\$135.00	\$26,865	\$13,433
Irrigation, trenching and backfill	13,000	L.F.	\$1	\$13,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	20	Acres	\$2,500	\$50,000	
Subtotal				\$669,715	\$310,858
Construction Contingency - 10%				\$66,972	
Total Construction Cost				\$736,687	
Non Construction Cost- 25%				\$184,172	
Total				\$920,858	

Table 6-30
Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area

Constructed Wetland Treatment System, Land Application
Capital Cost Estimate
Phase 2

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	5	Each	\$20,000	\$100,000	\$50,000
Force Main	1,200	L.F.	\$10.00	\$12,000	\$6,000
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	5.6	Acres	\$2,500	\$14,000	\$14,000
Wetlands					
Excavation/Fill	9,000	C.Y.	\$4.00	\$36,000	\$18,000
Synthetic Liner	121,875	S.F.	\$0.50	\$60,938	\$30,469
Gravel	7,200	C.Y.	\$20.00	\$144,000	\$72,000
Plants	97,500	Each	\$0.50	\$48,750	\$24,375
Stabilization	97,500	S.F.	\$0.25	\$24,375	\$12,188
Land Application					
Excavation	15,300	C.Y.	\$4	\$61,200	\$30,600
Liner	136,000	S.F.	\$0.50	\$68,000	\$34,000
Irrigation, sprinklers and piping	199	Each	\$135.00	\$26,865	\$13,433
Irrigation, trenching and backfill	13,000	L.F.	\$1	\$13,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	20	Acres	\$2,500	\$50,000	\$50,000
Subtotal				\$764,128	\$402,564
Construction Contingency - 10%				\$76,413	
Total Construction Cost				\$840,540	
Non Construction Cost- 25%				\$210,135	
Total				\$1,050,675	

Table 6-31

**Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area**

**Activated Sludge Treatment System, Surface Discharge
Capital Cost Estimate
Phase 3**

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$15,000	\$15,000	\$7,500
Package Plant	1	Lump Sum	\$150,000	\$150,000	
Site Piping/Lift Station	1	Lump Sum	\$80,000	\$80,000	\$48,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Disinfection	1	Lump Sum	\$20,000	\$20,000	\$10,000
Sludge Storage	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	1	Acres	\$2,500	\$2,500	\$2,500
Subtotal				\$322,500	\$90,500
Construction Contingency - 10%				\$32,250	
Total Construction Cost				\$354,750	
Non Construction Cost- 25%				\$88,688	
Total				\$443,438	

Table 6-32

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District

and Bear Lake Area

Waste Stabilization Lagoon Treatment System with Controlled Discharge, Surface Discharge

Capital Cost Estimate

Phase 3

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Excavation/Fill	58,000	C.Y.	\$4.00	\$232,000	\$116,000
Pond Liner	717,000	S.F.	\$0.50	\$358,500	\$179,250
Force Main	5,300	L.F.	\$10.00	\$53,000	\$26,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Discharge Control Structure	1	Lump Sum	\$40,000	\$40,000	\$20,000
Land Acquisition	25	Acres	\$2,500	\$62,500	\$62,500
Subtotal				\$826,000	\$439,250
Construction Contingency -	10%			\$82,600	
Total Construction Cost				\$908,600	
Non Construction Cost-	25%			\$227,150	
Total				\$1,135,750	

Table 6-33

**Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area**

**Constructed Wetland Treatment System, Surface Discharge
Capital Cost Estimate
Phase 3**

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	7	Each	\$20,000	\$140,000	\$70,000
Wetlands					
Excavation/Fill	12,600	C.Y.	\$4.00	\$50,400	\$25,200
Synthetic Liner	169,625	S.F.	\$0.50	\$84,813	\$42,406
Gravel	10,100	C.Y.	\$20.00	\$202,000	\$101,000
Plants	135,700	Each	\$0.50	\$67,850	\$33,925
Stabilization	135,700	S.F.	\$0.25	\$33,925	\$16,963
Infiltration Basin					
Excavation	3,100	C.Y.	\$15.00	\$46,500	\$23,250
Piping	7,500	L.F.	\$5.00	\$37,500	\$18,750
Synthetic Liner	26,500	S.F.	\$0.50	\$13,250	\$6,625
Recirculation Pump	1	Each	\$10,000.00	\$10,000	\$5,000
Force Main	1,200	L.F.	\$10.00	\$12,000	\$6,000
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	9.0	Acres	\$2,500	\$22,500	\$22,500
Subtotal				\$800,738	\$406,619
Construction Contingency - 10%				\$80,074	
Total Construction Cost				\$880,811	
Non Construction Cost- 25%				\$220,203	
Total				\$1,101,014	

Table 6-34

**Wastewater Collection and Treatment System
Feasibility Study
for the
East Shore Conservancy District
and Bear Lake Area**

**Facultative Lagoon Treatment System, Land Application
Capital Cost Estimate
Phase 3**

<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>	<u>Salvage</u>
Lagoon					
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Preliminary Treatment	1	Lump Sum	\$10,000	\$10,000	\$5,000
Excavation/Fill	43,000	C.Y.	\$4.00	\$172,000	\$86,000
Pond Liner	392,000	S.F.	\$0.50	\$196,000	\$98,000
Force Main	5,300	L.F.	\$10.00	\$53,000	\$26,500
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	13	Acres	\$2,500	\$32,500	\$32,500
Land Application					
Excavation	21,500	C.Y.	\$4	\$86,000	\$43,000
Liner	186,000	S.F.	\$0.50	\$93,000	\$46,500
Irrigation, sprinklers and piping	282	Each	\$135.00	\$38,070	\$19,035
Irrigation, trenching and backfill	18,000	L.F.	\$1	\$18,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	28	Acres	\$2,500	\$70,000	
Subtotal				\$873,570	\$404,035
Construction Contingency - 10%				\$87,357	
Total Construction Cost				\$960,927	
Non Construction Cost- 25%				\$240,232	
Total				\$1,201,159	

Table 6-35

Wastewater Collection and Treatment System Feasibility Study for the East Shore Conservancy District and Bear Lake Area

Constructed Wetland Treatment System, Land Application Capital Cost Estimate Phase 3

Description	Quantity	Unit	Unit Cost	Cost	Salvage
Site Clearing	1	Lump Sum	\$5,000	\$5,000	
Pretreatment Tanks, 20,000 gal.	7	Each	\$20,000	\$140,000	\$70,000
Force Main	1,200	L.F.	\$10.00	\$12,000	\$6,000
Site Piping/Lift Station	1	Lump Sum	\$50,000	\$50,000	\$25,000
Maintenance Building	1	Lump Sum	\$20,000	\$20,000	\$10,000
Site Work	1	Lump Sum	\$5,000	\$5,000	
Land Acquisition	7.8	Acres	\$2,500	\$19,500	\$19,500
Wetlands					
Excavation/Fill	12,600	C.Y.	\$4.00	\$50,400	\$25,200
Synthetic Liner	169,625	S.F.	\$0.50	\$84,813	\$42,406
Gravel	10,100	C.Y.	\$20.00	\$202,000	\$101,000
Plants	135,700	Each	\$0.50	\$67,850	\$33,925
Stabilization	135,700	S.F.	\$0.25	\$33,925	\$16,963
Land Application					
Excavation	21,500	C.Y.	\$4	\$86,000	\$43,000
Liner	186,000	S.F.	\$0.50	\$93,000	\$46,500
Irrigation, sprinklers and piping	282	Each	\$135.00	\$38,070	\$19,035
Irrigation, trenching and backfill	18,000	L.F.	\$1	\$18,000	
Irrigation, controls and pumps	1	Lump Sum	\$25,000	\$25,000	\$12,500
Land Acquisition	28	Acres	\$2,500	\$70,000	\$70,000
Subtotal				\$1,020,558	\$541,029
Construction Contingency - 10%				\$102,056	
Total Construction Cost				\$1,122,613	
Non Construction Cost- 25%				\$280,653	
Total				\$1,403,267	