STATE OF INDIANA) BEFORE THE INDIANA DEPARTMENT
) SS: OF ENVIRONMENTAL MANAGEMENT
COUNTY OF MARION)

IN THE MATTER OF:)
THE FORMATION OF THE)
BEAN BLOSSOM REGIONAL)
SEWER DISTRICT)

FINDINGS OF FACT AND RECOMMENDED ORDER

OF THE HEARING OFFICER

FINDINGS OF FACT

1. On or about June 24, 2004, the Brown County Council petitioned the Indiana Department of Environmental Management (IDEM) for an Order to establish a regional sewer district (RSD) in Brown County.

2. The submitted petition complies with the provisions of IC 13-26-2.

3. The proposed name of the regional sewer district is the Bean Blossom Regional Sewer District (RSD).

4. A public hearing was held on October 19th, 2005 at the Fruitdale Fire Department, 5200 North State Road 135, Morgantown, Indiana.

5. Notice of the hearing was given during the weeks of October 3-7, October 10-14, and October 17-23, 2005, by publication in the following newspapers of general circulation: 1) The Brown County Democrat and 2) The Herald Times. Notice was given by mail to each eligible entity involved.

6. The principle office of the Bean Blossom RSD shall be located at Jackson Township Trustee's office, at 5076 North State Road 135, Morgantown, Indiana 46160. The mailing address is P.O. Box 297, Morgantown, Indiana 46160. The Bean Blossom RSD Board of Trustees (Bean Blossom RSD Board), upon formation, may relocate the office upon written notice to IDEM.

7. The sanitary sewage needs of those residents now residing within such Bean Blossom RSD are currently being met with septic systems, many of which are failing.

8. The residents of the Bean Blossom RSD currently obtain their water for drinking and other purposes from public water supplies, cisterns, or individual wells. Contamination from failing septic systems may detrimentally affect the water quality and public health in the Bean Blossom RSD.

9. The current method of collection and disposal of the sanitary sewage of some of the residents of the Bean Blossom RSD detrimentally affects the water quality and public health within the proposed district.

10. Upon formation, the Bean Blossom RSD may construct and operate a system that will collect and treat the sanitary sewage of the residents of the Bean Blossom RSD. The Bean Blossom RSD may contract with a district or municipality to meet the sewage treatment needs of the residents of the Bean Blossom RSD. The RSD may implement a septic maintenance/management program as needed.

11. The purposes to be accomplished by the formation of the Bean Blossom RSD are to provide for the collection, treatment, and disposal of sewage within the district pursuant to IC 13-26-1-1.

12. The Bean Blossom RSD did not incur debt when it organized.

13. The Bean Blossom RSD shall be governed by three (3) board members.

    A. The Brown County Council shall appoint one (1) member that owns property or resides in Jackson Township, Brown County, Indiana. The term shall expire December 31st, 2009.

    B. The Brown County Council shall appoint one (1) member that owns property or resides in Jackson Township, Brown County, Indiana. The term shall expire December 31st, 2008.

    C. The Brown County Council shall appoint one (1) member that owns property or resides in Jackson Township, Brown County, Indiana. The term shall expire December 31st, 2007.

    D. All appointment terms, subsequent to expiration of the initial terms described above shall be for a period of four (4) years.

    E. In the event a vacancy occurs on the Bean Blossom RSD Board, the appointing authority for that trustee shall appoint a new board member within thirty (60) days to complete the term of the vacant board member position(s).

14. The estimated monthly sewage rate is projected to be approximately $40.00 to $65.00, provided the Bean Blossom RSD pursues and receives all public funding.

15. The Bean Blossom RSD shall apply for available public funding as needed.

16. The source of funds to provide for the operating and maintaining costs of the Bean Blossom RSD will be derived from monthly user fees.

17. The Bean Blossom RSD appears capable of accomplishing the purposes for which it was formed, in an economically feasible manner, provided it maximizes all practicable public funding options and receives anticipated grants.

18. The territory to be included in the District is;

    Includes land within the northeast quarter section of Section 36, Township 10 N., Range 2 E; the northwest quarter section of Section 31, Township 10 N., Range 3 E.; the southwest quarter section of Section 30, Township 10 N., Range 3 E., and; the southeast quarter section of Section 25 Township 10 N., Range 2 E. of Jackson Township, Brown County, Indiana.

19. The District must promote public health, safety, convenience, and welfare in its territory.

20. The Bean Blossom RSD Board shall provide sufficient bond for all officers, Trustees or employees who have any power to disburse funds of the Bean Blossom RSD.

21. On or before July 15th, 2007, the Bean Blossom RSD shall file with the Commissioner of IDEM, a detailed plan for the construction and operation of Bean Blossom RSD's facilities known as the District Plan.

22. Options for the treatment and collection of wastewater have been preliminary studied and further studies will be prepared after the formation of the district.

23. Establishment of the District will be conducive to the public health, safety, convenience and welfare of the residents of the District as the District plans to collect, dispose and treat sewage that is currently being provided by individual septic tanks or other on-site systems.

24. The plan for financing the cost of operations of the Bean Blossom RSD until it is in receipt of revenue from its operation or proceeds from the sale of bonds may include a 40 year loan from U.S.D.A. Rural Utility Services or the Indiana State Revolving Fund (SRF) and private contributions.

25. There are no eligible entities providing sewers in the current territory of the Bean Blossom RSD.

26. Upon formation, the District may construct or contract for treatment, pumping, transmission, and storage and distribution systems for the municipal and rural supply needs.

RECOMMENDED ORDER

The Hearing Officer recommends the following:

1. That a Regional Sewer District, to be known as the Bean Blossom Regional Sewer District (Bean Blossom RSD) be organized as an independent political entity of the State of Indiana as a body corporate and politic.

2. The purposes to be accomplished by the formation of the Bean Blossom RSD are to provide for the collection, treatment, and disposal of sewage within the district pursuant to IC 13-26-1-1.

3. The territory to be included in the District is;

   Includes land within the northeast quarter section of Section 36, Township 10 N., Range 2 E; the northwest quarter section of Section 31, Township 10 N., Range 3 E.; the southwest quarter section of Section 30, Township 10 N., Range 3 E., and; the southeast quarter section of Section 25 Township 10 N., Range 2 E. of Jackson Township, Brown County, Indiana.

4. The Bean Blossom RSD shall be governed by three (3) board members.

   A. The Brown County Council shall appoint one (1) member that owns property or resides in Jackson Township, Brown County, Indiana. The term shall expire December 31st, 2009.

   B. The Brown County Council shall appoint one (1) member that owns property or resides in Jackson Township, Brown County, Indiana. The term shall expire December 31st, 2008.

   C. The Brown County Council shall appoint one (1) member that owns property or resides in Jackson Township, Brown County, Indiana. The term shall expire December 31st, 2007.

   D. All appointment terms, subsequent to expiration of the initial terms described above shall be for a period of four (4) years.

   E. In the event a vacancy occurs on the Bean Blossom RSD Board, the appointing authority for that trustee shall appoint a new board member within thirty (60) days to complete the term of the vacant board member position(s).

5. The Bean Blossom RSD Board shall provide sufficient bond for all officers, trustees or employees who have any power to disburse funds of the Bean Blossom RSD.

6. On or before July 15th, 2007, the Bean Blossom RSD shall file with the Commissioner of IDEM, a detailed plan for the construction and operation of Bean Blossom RSD's facilities known as the District Plan.

7. The Bean Blossom RSD shall apply for all available public funding as needed.

8. Establishment of the District will be conducive to the public health, safety, convenience and welfare of the residents of the District as the District plans to collect, dispose and treat sewage that is currently being provided by individual septic tanks or other on-site systems.

9. The District must promote public health, safety, convenience, and welfare in its territory.

10. Upon formation, the District may construct or contract for treatment, pumping, transmission, and storage and distribution systems for the municipal and rural supply needs.

Dated: June 14, 2006 Hearing Officer Lynne L. Newton

STATE OF INDIANA) BEFORE THE INDIANA DEPARTMENT
) SS: OF ENVIRONMENTAL MANAGEMENT
COUNTY OF MARION)

IN THE MATTER OF:)
THE FORMATION OF THE)
BEAN BLOSSOM REGIONAL)
SEWER DISTRICT)

ORDER ADOPTING THE FINDINGS OF FACT
AND RECOMMENDED ORDER OF THE HEARING OFFICER
FOR THE ORGANIZATION OF THE
BEAN BLOSSOM REGIONAL SEWER DISTRICT

Notice is hereby given that the Hearing Officer has filed with the Commissioner of the Indiana Department of Environmental Management (Commissioner) the "FINDINGS OF FACT AND RECOMMENDED ORDER" relative to the petition requesting organization of the Bean Blossom Regional Sewer District (RSD). Said FINDINGS and RECOMMENDED ORDER is attached to this ORDER, and consists of five (5) pages.

And the Commissioner, having reviewed the attached "FINDINGS OF FACT AND RECOMMENDED ORDER" of the Hearing Officer, now determines that the organization of the proposed RSD complies with the conditions of Indiana Code 13-26 et seq., and that the proposed RSD appears capable of accomplishing its purpose in an economically feasible manner.

IT IS NOW ORDERED BY THE COMMISSIONER that the Bean Blossom Regional Sewer District be organized as an independent municipal corporation pursuant to the terms and conditions set forth in the attached "FINDINGS OF FACT AND RECOMMENDED ORDER" which are adopted and approved, and deemed incorporated in this ORDER, as though set out in full.

Pursuant to IC 13-26-2-11, IC 4-21.5-3-2 and IC 4-21.5-5-5, this ORDER becomes effective thirty-three (33) days after service through the United States mail, unless a petition for judicial review is filed before or on the thirty-third (33^{rd}) day. Standing and substantive requirements of the verified petition for review are specified in IC 4-21.5-5-3 and IC 4-21.5-5-7, respectively. Pursuant to IC 4-21.5-5-9, a person seeking judicial review of this ORDER may, by filing a verified petition, request an order of the court staying this ORDER, pending a decision by the court.

All of which is ORDERED at Indianapolis, Indiana this 21st day of July, 2006.

Thomas W. Easterly, Commissioner
Indiana Department of
Environmental Management

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

Notice of Decision

You are hereby notified that the Commissioner of the Indiana Department of Environmental Management signed on July 21, 2006, the final Order creating the Bean Blossom Regional Sewer District pursuant to IC 13-26-2-10, and based upon the Findings of Fact and Recommended Order of the hearing officer in this matter.

The Final Order, as well as the hearing officer's Findings of Fact and Recommended Order, are on file at the Brown County Public Library, 205 Locust Lane, Nashville, Indiana. Additionally, upon effectiveness of the Final Order, these documents will be on file at the principal office of the District: Jackson Township Trustee's office, 5076 North State Road 135, Morgantown, Indiana.

Pursuant to IC 13-26-2-11, IC 4-21.5-3-2, and IC 4-21.5-5-5, the Final Order becomes effective thirty-three (33) days after service through the United States mail, unless a petition for judicial review is filed before or on the thirty-third (33rd) day. If you wish to challenge this decision, standing and substantive requirements of the verified petition for review are specified in IC 4-21.5-5-3 and IC 4-21.5-5-7, respectively. Pursuant to IC 4-21.5-5-9, a person seeking judicial review of the final Order may, by filing a verified petition, request an order of the court staying the Order pending a decision by the court.

Contact person:

Mrs. Lynne Newlon

800 – 451 – 6027 (Within Indiana)

Direct # 317-233-0476

INDIANA
Rural Community
Assistance Program

1845 West 18th Street
Indianapolis, IN 46202

317 638.9302
Indiana only 1 800 382.9895
fax: 317 634.7947

OFFICE OF WATER MANAGEMENT IDEM

JUN 18 11 01 AM '04

To: Lynne Newlon
IDEM

From: Sarah Reymann
Indiana Rural Community Assistance Program

Date: June 16, 2004

RE: Bean Blossom Regional Sewer District petition

Dear Lynne:

Enclosed is the Bean Blossom Regional Sewer District petition for your review and approval. The petition was mailed to the following government entities with territory in the proposed district:

Brown County Commissioners
County Office Building
201 Locust Lane
Nashville, IN 47448

Brown County Council
County Office Building
201 Locust Lane
Nashville, IN 47448

Brown County Public Schools
P.O. Box 38
357 E. Main Street
Nashville, IN 47448

Brown County Public Library
205 Locust Lane
Nashville, IN 47448

Fruitdale Volunteer Fire Company
5200 State Road 135 N
Morgantown, IN 46160

Brown County Soil and Water District
P.O. Box 308
46 E. Gould Street
Nashville, IN 47448

Brown County Solid Waste District
P.O. Box 1308
Nashville, IN 47448

Jackson Township Trustee
P.O. Box 297
Morgantown, IN 46160

Jackson Township Advisory Board
P.O. Box 297
Morgantown, IN 46160

INDIANA Rural Community Assistance Program

1845 West 18th Street
Indianapolis, IN 46202

317 638.9302
Indiana only 1 800 382.9895
fax: 317 634.7947

Here is the information for the two newspapers and library in the area:

Brown County Democrat (weekly)
147 E. Main St.
Nashville, IN 47448
812-988-2221

The Herald Times (daily)
1900 S. Walnut St.
Bloomington, IN 47401
812-332-4401

Brown County Public Library
205 Locust Lane
Nashville, IN 47448
812-988-2850

The list of freeholders within the proposed district will be sent to you within a few weeks.

Please direct questions to Mark Davis (RCAP) or the designated petition contact person, Jim Drum (812-988-9573).

Thanks for all your help!!

Sarah

Sarah Reymann

Prepared by Indiana RCAP
June 14, 2004

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
STATE OF INDIANA

IN THE MATTER OF THE PETITION	)	
OF BROWN COUNTY, INDIANA	)	
TO FORM A REGIONAL SEWER	)	BEFORE THE COMMISSIONER
DISTRICT PURSUANT TO IC § 13-26	)	IDEM, STATE OF INDIANA

PETITION

Brown County Council petitions the Commissioners, Indiana Department of Environmental Management (IDEM), pursuant to IC § 13-26, for an order directing that a regional sewer district be organized as body corporate and politic. In support of this Petition alleges:

1. The proposed name of the regional sewer district shall be the Bean Blossom Regional Sewer District (RSD) of Brown County.

2. The designated contact person for the Petitioner for amendments and items relative to this Petition shall be Jim Drum (telephone: 812-988-9573), the Petitioner herein.

3. The principal office of the district shall be located at the Jackson Township Trustee's office. The mailing address is P.O. Box 297, Morgantown, IN 46160; the physical address is 5075 North State Road 135, Morgantown, IN 46160.

4. The following political subdivisions are in the proposed district or have jurisdiction in the district: Brown County Commissioners, Brown County Council, Jackson Township Trustee, Jackson Township Advisory Board, Brown County School District, Brown County Public Library, Brown County Solid Waste Management District, Brown County Soil and Water Conservation District, and the Fruitdale Volunteer Fire Department.

5. There is no state park or recreation area, forestland or a reservoir, nor any land owned by the State of Indiana in the proposed district.

6. The residents of Bean Blossom and the Brown County Health Department have long recognized the need for the proposed district. Sanitary sewage disposal in Bean Blossom is provided by the use of onsite residential septic systems, in varying degrees of working order. All of the homes and buildings are served by one of two public water systems providing service to Bean Blossom, either Nashville Water Utility or Brown County Water Utility, Inc.

   Contamination of surface water with *E. coli* has been well documented by the Brown County Health Department and the Indiana Department of Environmental Management. Samples taken from Bear Creek, Bean Blossom Creek, East and

North forks of Bean Blossom Creek, Lick Creek, Plum Creek, and Hoppers Branch all have samples that exceed the level (230 *E. coli*/100ml) that closes a public beach. Water sampling data and map is attached as **Exhibit A.**

Many property owners have attempted to repair systems and bring them into compliance with current state and local requirements, but are unable to do so due to small lot size or unfavorable soil and/or terrain conditions. This situation has forced some residences to utilize temporary means of disposal until a permanent solution can be found. However, a significant number of residences allow their untreated wastewater to surface discharge because no other option is available to them.

A letter of support from the Brown County Health Department is attached as **Exhibit B**. The water quality report referred to in the letter is **Exhibit A.**

7. The purpose to be accomplished by forming the district is the reduction of the public health hazard and pollution of the environment due to improper sewage disposal practices, by constructing a central sanitary sewer collection system and sending wastewater to a sewage treatment facility subject to final conclusions drawn from the review and approval of the Preliminary Engineering Report. A copy of the Preliminary Engineering Report, the recommendations and conclusions of the firm, is hereto attached as **Exhibit C** and is herein incorporated by reference.

8. Creation of the district will be conducive to the public health, safety, convenience and welfare of the residents of the district for the following reasons:
   A. No sanitary sewer system exists in the proposed district.
   B. Sewage collection, treatment, and disposal in the proposed district are currently being provided by individual septic systems that vary from properly functioning to failing to failed. In many instances, the repair or replacement of inadequate and failing septic systems is not feasible due to unfavorable soil and/or terrain conditions, small lot sizes, well locations, and other limiting factors.
   C. The only wastewater treatment facilities in Brown County are located in Nashville, Gnawbone, and Helmsburg; there are no other public or privately owned treatment works in the proposed district for treatment of sanitary sewage in Bean Blossom. To comply with IC 13-26-2-10(b)(3), the Bean Blossom RSD will notify Nashville, Gnawbone, and Helmsburg of any expansions of the Bean Blossom RSD boundaries by certified mail. The Bean Blossom RSD will also notify Nashville Water and Brown County Water Utility of changes to district boundaries.

9. There is no outstanding indebtedness for the proposed purpose of the district. A group of concerned citizens, organized as the "Friends of Bean Blossom", creatively financed a Preliminary Engineering Report by volunteer and local effort. Through their work, Bean Blossom was selected as a senior design project

by Rose-Hulman Civil Engineering Department to receive a no cost student engineering study. The Friends of Bean Blossom financed the rest of the study with local funds from the Brown County Community Foundation and South Central Indiana REMC. The absence of sanitary sewers has limited residential growth due to requirements of Brown County and the Indiana State Department of Health that prohibit additions to existing housing when proper sanitary disposal cannot be provided. Furthermore, the current situation of failing septic systems and discharging of untreated wastewater is contributing to the pollution of the environment in Bean Blossom and Jackson Township, and creating a hazard to welfare of the residents there.

10. The Bean Blossom RSD includes land within the northeast quarter section of Section 36, Township 10N, Range 2E; the northwest quarter section of Section 31, Township 10N, Range 3E; the southwest quarter section of Section 30, Township 10N, Range 3E, and; the southeast quarter section of Section 25 Township 10N, Range 2E of Jackson Township, Brown County, Indiana. The proposed boundary of the Bean Blossom RSD is shown on the attached parcel map **(Exhibit D)** and USGS topographical map **(Exhibit E)**. The Bean Blossom RSD Board must approve any change to the boundary.

11. Upon receiving the IDEM order that confers formation, the Brown County Council shall appoint three (3) Trustees to serve as The Bean Blossom Regional Sewer District Board of Trustees until the Board decides to choose either **Treatment Option A** or **B** below.
    A. **Treatment Option A:** If sewage treatment is provided by a facility owned and operated by the district, the three (3) Trustees shall remain in office, and will serve a three (3) year term. Thereafter the Brown County Council shall appoint three (3) Trustees, all with four (4) year terms. Appointments shall take place on the first January meeting of the Board in the year of the appointment. Any vacancy caused by death, chronic illness, removal or resignation of a Trustee, prior to the expiration of the term, shall be filled within sixty (60) days by an appointment from the Brown County Council. All members of the Bean Blossom Regional Sewer District Board of Trustees must own property in Jackson Township, Brown County, Indiana.
    B. **Treatment Option B:** If sewage treatment is provided in cooperation and under written agreement with a municipality, then the Board shall consist of five (5) Trustees. Two (2) of the three (3) Trustees will remain in office; the third Brown County Council appointed Trustee will resign, but may be reappointed by another appointing body. Three (3) additional Trustees each with three (3) year terms shall be appointed to the district Board within sixty (60) days after the RSD enters an agreement with the cooperative municipality as follows: one (1) Trustee appointed by the Executive of the municipality, one (1) Trustee appointed by the fiscal body of Brown County (County Council), and one (1) Trustee appointed by the Executive of Brown County (County Commissioners) all in

compliance with IC § 13-26-4-5. Thereafter, the appointment schedule will be as follows: the Brown County Commissioners shall appoint one (1) Trustee, the Brown County Council shall appoint three (3) Trustees, and the Executive of the municipality shall appoint one (1) Trustee each with four (4) year terms. Appointments shall take place on the first January meeting of the Board in the year of the appointment. Any vacancy caused by death, chronic illness, removal or resignation of a Trustee, prior to the expiration of the term, shall be filled within sixty (60) days by an appointment from the original appointing body. At least two (2) members of the Bean Blossom Regional Sewer District Board of Trustees must own property in Jackson Township.

12. The initial estimates for the cost of construction of the sewer collection system and treatment options are set forth in the Preliminary Engineering Report, prepared by Ladd Engineering. The district is pursuing funding for the cost of accomplishing the purpose of the district, as outlined in the Preliminary Engineering Report, through the use of public funds including but not limited to the State Revolving Loan Fund, the Rural Development Loan and Grant Program, Department of Commerce Community Development Block Grants, and Build Indiana Funds.

13. Ladd Engineering has prepared initial cost estimates for accomplishing the purpose of the district, including construction and operation and maintenance. Ladd Engineering has also identified possible sources of funding for such costs, and estimates of rates and charges required for the district, as described in the Preliminary Engineering Report.

14. A copy of this petition has been filed with the Brown County Commissioners, Brown County Council, Jackson Township Trustee, Jackson Township Advisory Board, Brown County School District, Brown County Public Library, Brown County Solid Waste Management District, Brown County Soil and Water Conservation District, and the Fruitdale Volunteer Fire Department, who are the executives of the only governmental entities having territory within the proposed district on the ___ day of __________, 200__. Submitted this _____ day of __________________, 200__.

15. This petition and exhibits are available for review at the Brown County Public Library, 205 Locust Lane, Nashville, IN 47448 (812) 988-2850 and the Jackson Township Trustee's office, P.O. Box 297, 5075 North State Road 135, Morgantown, IN 46160 (812) 988-2179.

The above Petition to form a sewer district in Jackson Township, Brown County, Indiana was APPROVED by the Brown County Council, this ___ day of ________________, 200__.

BROWN COUNTY COUNCIL, BROWN COUNTY, INDIANA

David L Critser

David D. Critser

Tony S Emby

Tony Embrey

Stephen W. Gore

Stephen W. Gore

Arthur L. Knight

Diana McDonald-Biddle

Diana McDonald-Biddle

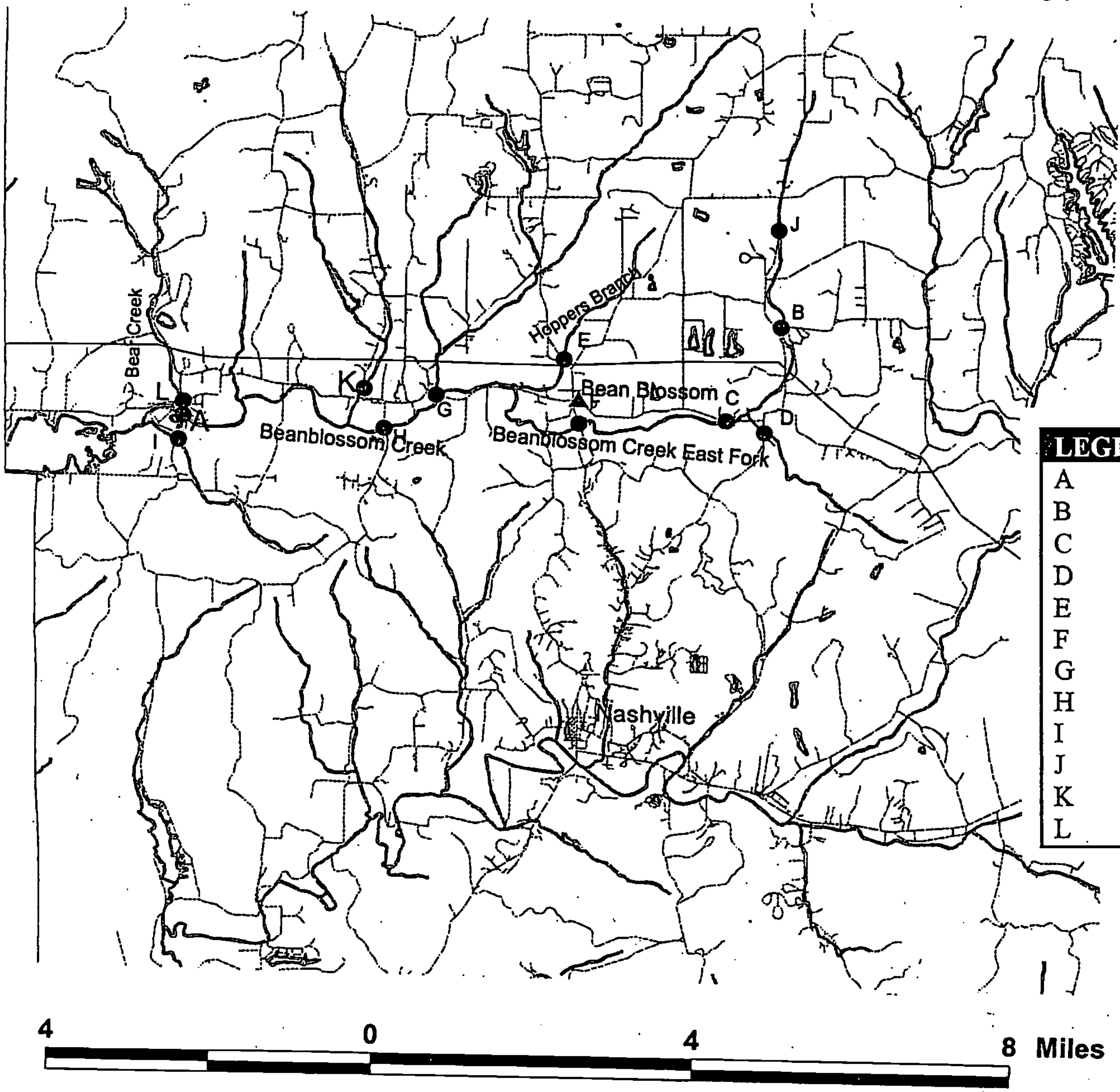
John Price

David L. Rudd

Exhibit A – Water sampling data and map
Exhibit B – Letter of support from the Brown County Health Dept
Exhibit C – Preliminary Engineering Report prepared by Ladd Engineering
Exhibit D – Parcel map depicting the Bean Blossom RSD proposed service area
Exhibit E – USGS Topographic map depicting the Bean Blossom RSD proposed service area

Bean Blossom Sampling Sites

EXHIBIT A



LEGEND	Stream Name and Sampling Location
A	Bean Blossom Creek-State Road 45
B	Bean Blossom Creek-Spurnica Rd.
C	Bean Blossom Creek-Gatesville Rd.
D	East Fork of Bean Blossom Creek-Bear Wallow Rd.
E	Hoppers Branch-State Road 135
F	Bean Blossom Creek-State Road 45
G	North Fork of Bean Blossom Creek-State Road 45
H	Bean Blossom Creek-Helmsburg Rd.
I	Plum Creek- State Road 45
J	Bean Blossom Creek-Upper Bean Blossom Rd.
K	Lick Creek- State Road 45
L	Bear Creek- North Shore Dr.

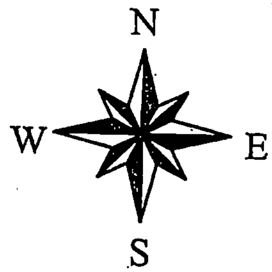
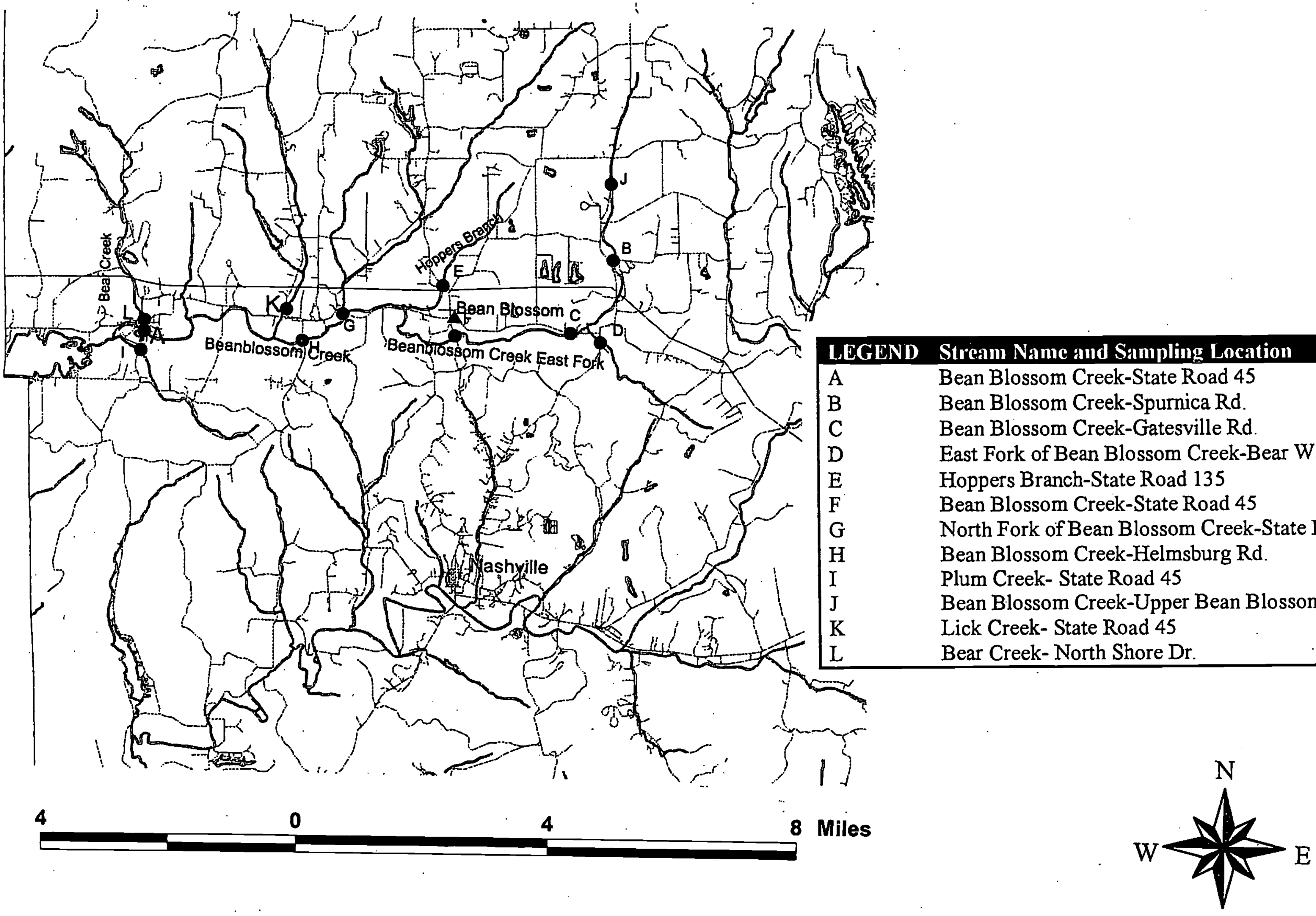


EXHIBIT A

Bean Blossom Sampling Sites



LEGEND	Stream Name and Sampling Location
A	Bean Blossom Creek-State Road 45
B	Bean Blossom Creek-Spurnica Rd.
C	Bean Blossom Creek-Gatesville Rd.
D	East Fork of Bean Blossom Creek-Bear Wallow Rd.
E	Hoppers Branch-State Road 135
F	Bean Blossom Creek-State Road 45
G	North Fork of Bean Blossom Creek-State Road 45
H	Bean Blossom Creek-Helmsburg Rd.
I	Plum Creek- State Road 45
J	Bean Blossom Creek-Upper Bean Blossom Rd.
K	Lick Creek- State Road 45
L	Bear Creek- North Shore Dr.

EXHIBIT A

Bean Blossom Water Sampling Data
Collected by the Indiana Dept. of Environmental Management

Sample ID	Stream Name and Sampling Location	Date	**E. coli /100ml
A	Bean Blossom Creek-State Road 45	9/10/01	2420
		9/17/01	100
		9/24/01	920
		10/1/01	37
		10/9/01	15
B	Bean Blossom Creek-Spurnica Rd.	9/10/01	60
		9/17/01	2400
		9/24/01	920
		10/1/01	30
		10/9/01	54
C	Bean Blossom Creek-Gatesville Rd.	9/10/01	56
		9/17/01	2420
		9/24/01	52
		10/1/01	2420
		10/9/01	99
D	East Fork of Bean Blossom Creek-Bear Wallow Rd.	9/10/01	38
		9/17/01	29
		9/24/01	51
		10/1/01	2400
		10/9/01	1100
E	Hoppers Branch-State Road 135	9/10/01	2420
		9/17/01	2420
		9/24/01	2420
		10/1/01	150
		10/9/01	110
F	Bean Blossom Creek-State Road 45	9/10/01	2420
		9/17/01	45
		9/24/01	24000
		10/1/01	120
		10/9/01	28
G	North Fork of Bean Blossom Creek-State Road 45	9/10/01	2420
		9/17/01	130
		9/24/01	820
		10/1/01	58
		10/9/01	93
H	Bean Blossom Creek-Helmsburg Rd.	9/10/01	2420
		9/17/01	770
		9/24/01	37000
		10/1/01	610
		10/9/01	370
I	Plum Creek- State Road 45	9/10/01	730
		9/17/01	37
		9/24/01	2420
		10/1/01	27
		10/9/01	76
J	Bean Blossom Creek-Upper Bean Blossom Rd.	9/10/01	160
		9/17/01	170
		9/24/01	1200
		10/1/01	85
		10/9/01	12
K	Lick Creek- State Road 45	9/10/01	2420
		9/17/01	60
		9/24/01	690
		10/1/01	180
		10/9/01	61

EXHIBIT E

Brown County Department of Health

P.O. Box 281
Nashville IN 47448
812/988-2255
812/988-5601 FAX

Robert M. Seibel, M.D.
Health Officer

6/23/03

Ms. Sarah Reymann
Indiana Rural Community Assistance Program

Subject: The Bean Blossom Wastewater Project

This letter is written in support of the Bean Blossom Wastewater Project.

Attached are copies of a report done by The State of Indiana and recapped on 2/20/03. The report identifies numerous sites along Bean Blossom Creek with E.coli counts higher that 2400. Swimming pools are closed with counts equal to or greater than 230.

Failed or "straight-pipe systems" are a serious problem in Brown County. Many of our citizens are financially unable to afford to repair or install systems that will protect our citizens and the environment.

We need this project to assist our county in eliminating this problem.

Your support of this project is appreciated.

John Kennard, EHS

CC: Dr. Robert Seibel, Brown County Health Officer

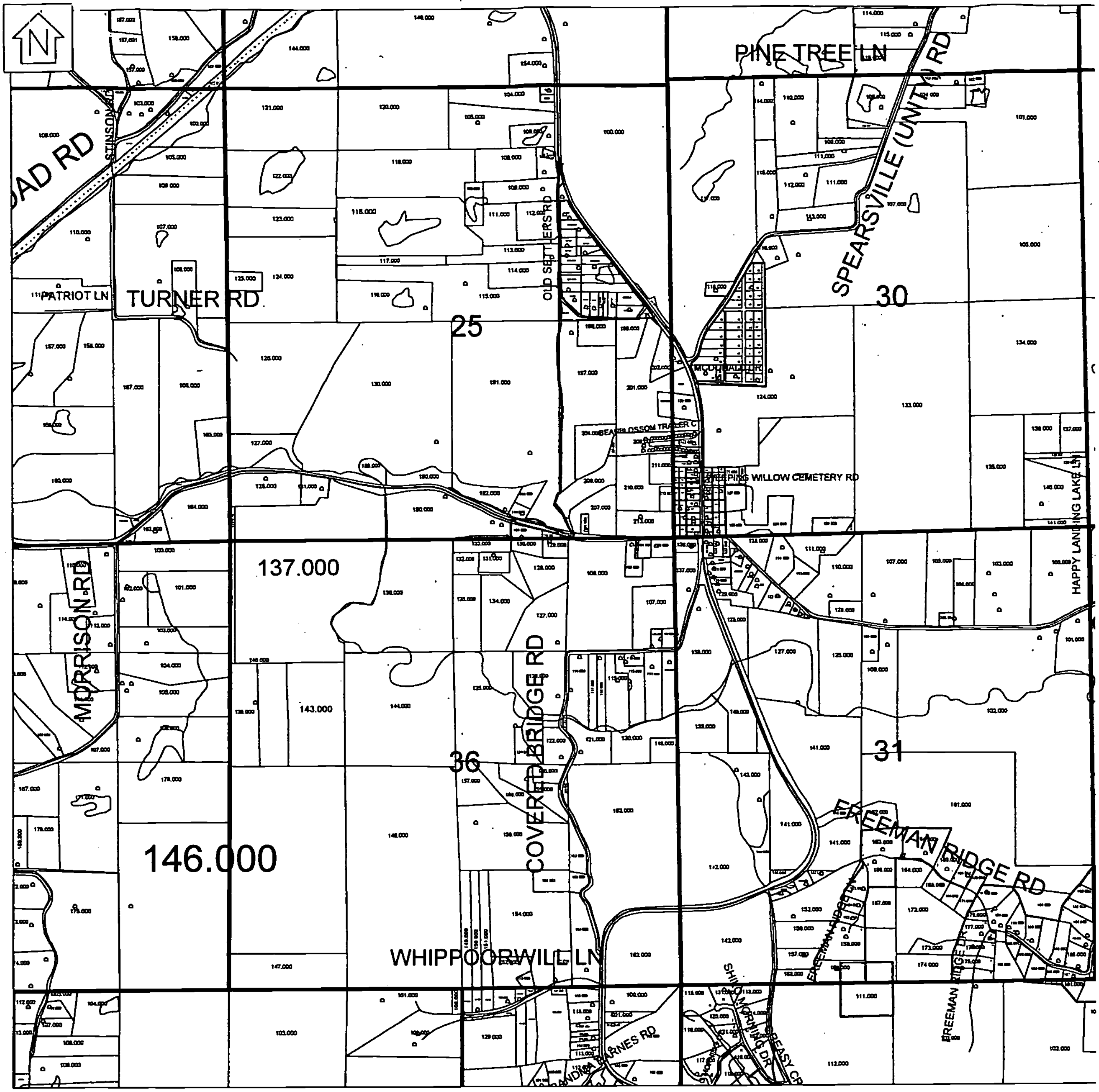
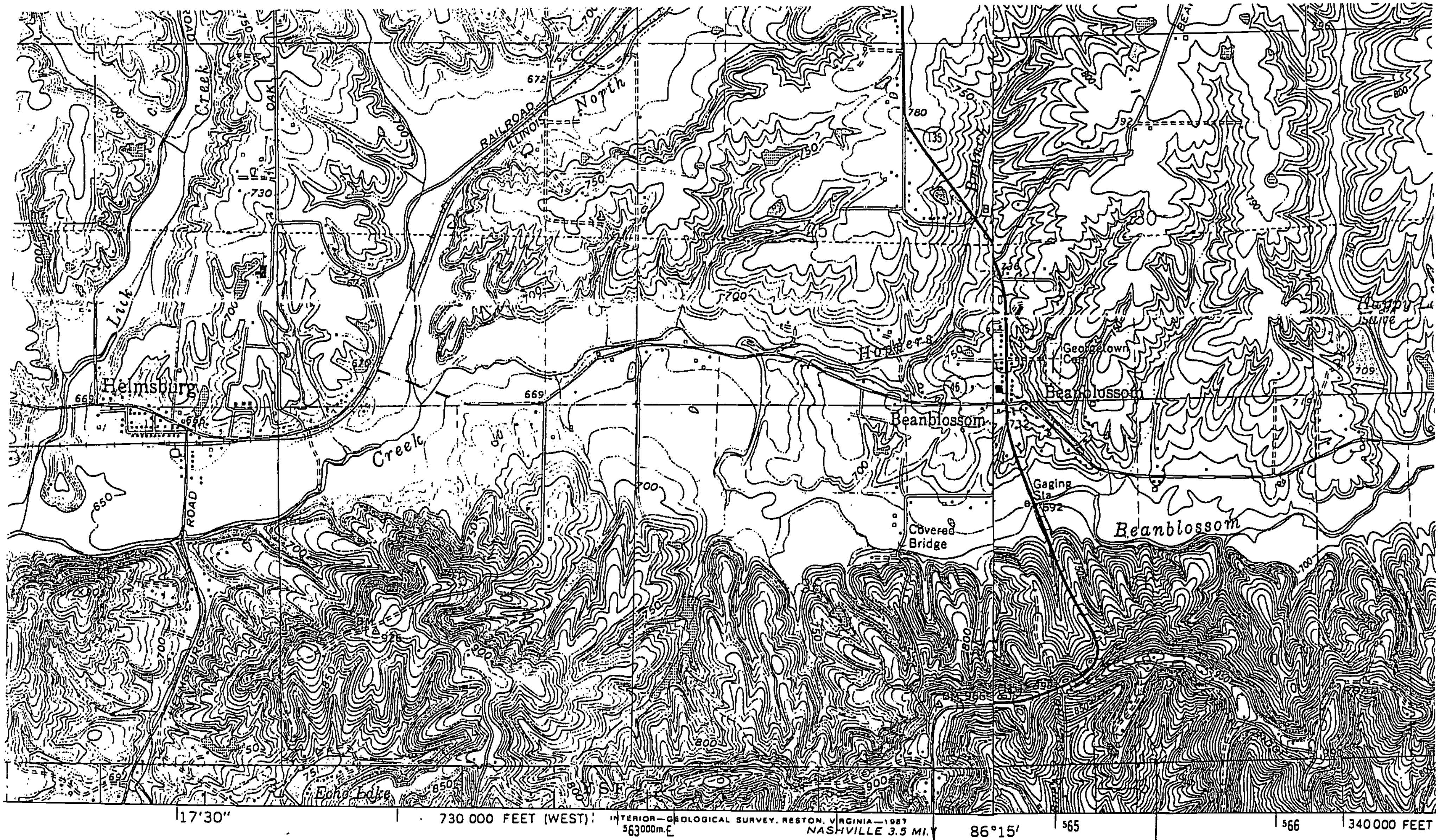

N
PINE TREE LN
SPEARSVILLE (UNITY) RD
STINSON
TURNER RD
PATRIOT LN
OLD SETTLERS RD
25
30
137.000
MORRISON RD
COVERED BRIDGE RD
36
31
146.000
WHIPPOORWILL LN
FREEMAN RIDGE RD
WEEPING WILLOW CEMETERY RD
HAPPY LANDING LAKE LN
143.000

EXHIBIT D



Produced by the U. S. Geological Survey
Revised in cooperation with State of Indiana
Department of Natural Resources

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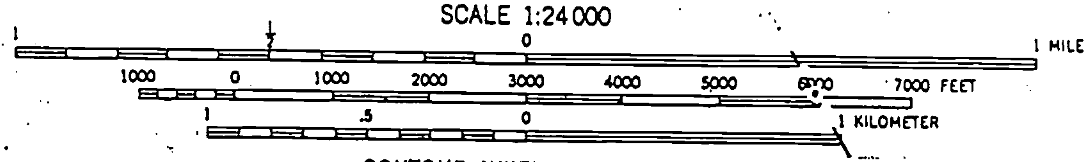
SCALE 1:24 000



CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

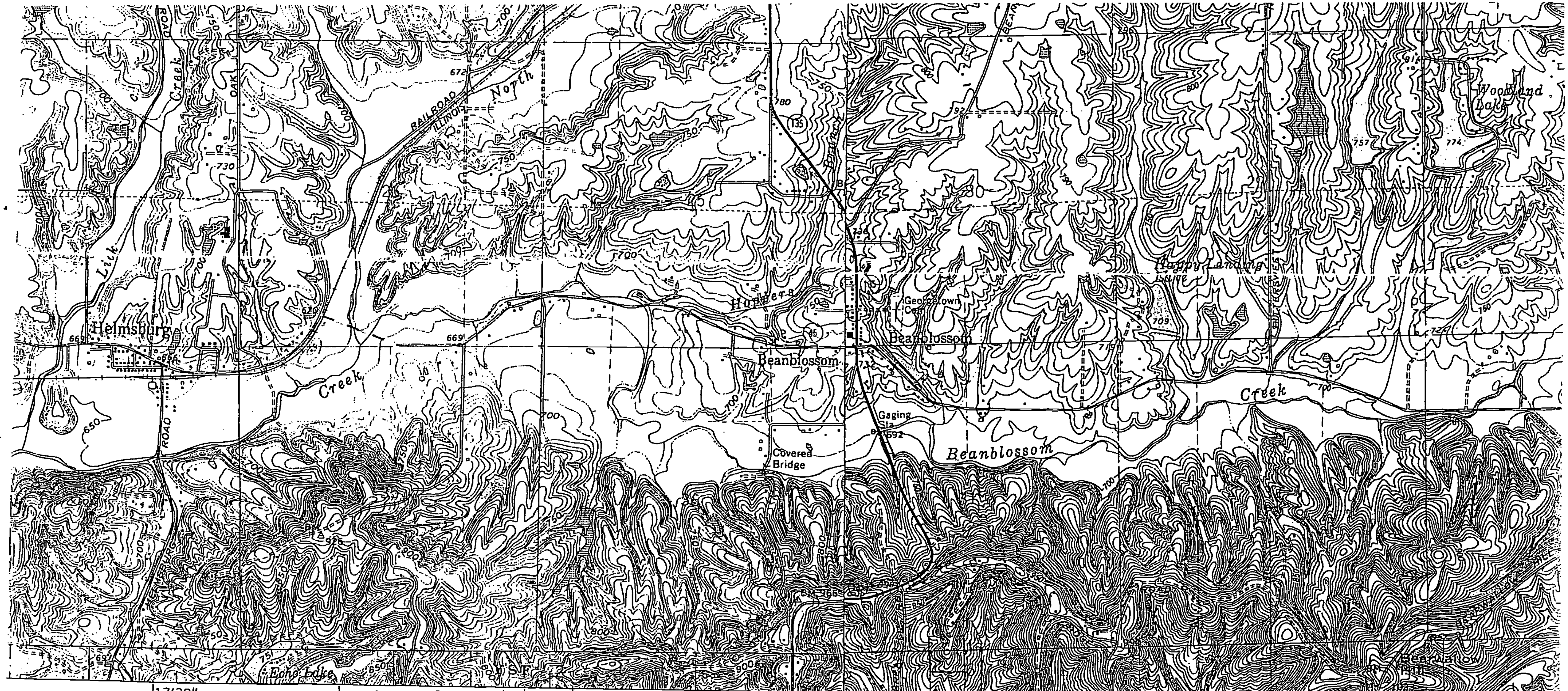
EXHIBIT A

Bean Blossom Water Sampling Data

Collected by the Indiana Dept. of Environmental Management

Sample ID	Stream Name and Sampling Location	Date	**E. coli /100ml
A	Bean Blossom Creek-State Road 45	9/10/01	2420
		9/17/01	100
		9/24/01	920
		10/1/01	37
		10/9/01	15
B	Bean Blossom Creek-Spurnica Rd.	9/10/01	60
		9/17/01	2400
		9/24/01	920
		10/1/01	30
		10/9/01	54
C	Bean Blossom Creek-Gatesville Rd.	9/10/01	56
		9/17/01	2420
		9/24/01	52
		10/1/01	2420
		10/9/01	99
D	East Fork of Bean Blossom Creek-Bear Wallow Rd.	9/10/01	38
		9/17/01	29
		9/24/01	51
		10/1/01	2400
		10/9/01	1100
E	Hoppers Branch-State Road 135	9/10/01	2420
		9/17/01	2420
		9/24/01	2420
		10/1/01	150
		10/9/01	110
F	Bean Blossom Creek-State Road 45	9/10/01	2420
		9/17/01	45
		9/24/01	24000
		10/1/01	120
		10/9/01	28
G	North Fork of Bean Blossom Creek-State Road 45	9/10/01	2420
		9/17/01	130
		9/24/01	820
		10/1/01	58
		10/9/01	93
H	Bean Blossom Creek-Helmsburg Rd.	9/10/01	2420
		9/17/01	770
		9/24/01	37000
		10/1/01	610
		10/9/01	370
I	Plum Creek- State Road 45	9/10/01	730
		9/17/01	37
		9/24/01	2420
		10/1/01	27
		10/9/01	76
J	Bean Blossom Creek-Upper Bean Blossom Rd.	9/10/01	160
		9/17/01	170
		9/24/01	1200
		10/1/01	85
		10/9/01	12
K	Lick Creek- State Road 45	9/10/01	2420
		9/17/01	60
		9/24/01	690
		10/1/01	180
		10/9/01	61
L	Bear Creek- North Shore Dr.	9/10/01	550
		9/17/01	42
		9/24/01	1300
		10/1/01	13
		10/9/01	35

**"Swimming pools are closed with counts equal to or greater than 230 E.coli/100ml."
See the Attached Letter of Support from the Brown County Health Department dated 6/23/03.



Produced by the U. S. Geological Survey
Revised in cooperation with State of Indiana
Department of Natural Resources

N↑

SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

EXHIBIT E

PUBLIC MEETING

HELD ON 10-19-05

IN RE: BEAN BLOSSOM REGIONAL SEWER DISTRICT

PUBLIC MEETING AS FOLLOWS:

BY LYNNE NEWLON:

Explain briefly what's going on and then we'll start this meeting. We're going to have a public meeting. We're going to give a little bit of background, kind of how we got to this public hearing. This public hearing is by statute to actually form a regional sewer district. It's in Indiana Code 13-26, and states, you have to have a public hearing as part of the process. The hearing, as I said, is to form an entity. It's a municipal corporation. And it's for this area of Bean Blossom. It doesn't mean the whole area is incorporated, but it means it's incorporated to serve the purpose for a sewer. So by doing that, the public funding becomes available. And when I say public funding, for the rural development money, which also has grant money as well as state revolving fund money, which are low interest loans, and sometimes grant money attached to it, commerce money. So it allows this entity, if it is formed, to pursue public funding. Low interest loans and grant money would help the overall costs. I want to thank everyone for coming out. We're just going to kind of informally have this meeting. We'll answer your questions to the best we can. We may not have all of the answers. I'm sure someone's going to say well how much is it going to cost. We don't know. What will happen, if .. we'll have this public hearing, we have public comment. Anyone can send comments to IDEM at that time. Then, I will review everything. This hearing officer. The Petition, make sure everything meets the statutory requirements. I'll review all of the comments. And then based on that, I would draft what they call a findings of fact. And then if it's recommended, a recommended order. Then, it actually goes to the office of legal counsel within IDEM. With is Indiana Department of Environmental Management. Then it goes through like a four or five signatures, ultimately the Commissioner of IDEM signs it. If that happens, then there's a thirty-three day period that is an appeal time. If anyone chooses to appeal it, they give time to appeal it. If it is within those thirty-three days from that signature. It will be public noticed in the newspaper once it is signed. Anyone that sends an Email to me, or comments, will also receive notice of decisions. If you want notice of decision, then I would suggest and we can come around and pass these out, to fill one of these out. Please print, because I'm going to have to make labels. With your full address, zip code and everything. And I will send one out. But it will be noticed in the newspaper. So that's kind of what happens and how it comes about. I've been coming to Bean Blossom probably for four or five years, to committee meetings, to meetings that Helmsburg had, meetings I think even with county commissioners, county council. So, talking about the problems here in Bean Blossom. And they organized the group the Friends of Bean Blossom, did I get that right? And Jim Drum is going to get up and talk. And when you ask questions, we are recording this. I am going to ask people to come forward and state your name, and then we will answer the .. ask the question, or you might want to save your comments for the public hearing part, but if you have one. And then because this is being recorded. We will have transcripts. And all of this does go to the Commissioner so he can review it. So, please speak clearly, and slowly, where we can get this on record. So right now I'm going to turn it over to Jim Drum. He's been part of this Friends of Bean Blossom. Kind of give you a quick background. And then we're going to go on over to Mark Davis, with .. he's with RCAP, which is Rural Community Assistance Program. And then we'll open it up to questions and answers. Then we'll move on into a normal public hearing. Okay, Jim.

BY JIM DRUM:

Thank you. Well, the Friends of Bean Blossom since formed long before I was involved with them.

They've been trying to get sewer project in for five or six years. Currently, I am the Chairman of the Friends of Bean Blossom. Dennis Smith is the co-chair. Steve Staley is our treasurer. Agnes Unger is our secretary. We owe a lot of thanks to Nina Jo McDonald because she got this group together to make this all happen. Like I said, we have gone through preliminary engineering study. We've met with IDEM. We've met with RCAP. We've had a lot of meetings trying to get this process moving. So, this is .. this is an important step, and we welcome your comments as we proceed forward. So with that, I'll just turn it over to Mark Davis. He's our .. our really guiding light with the Indiana rural development.

BY MARK DAVIS:

Thank you. I think guiding light is a promotion, so I appreciate that. But the rural community assistance program, of which I'm a part, Mark Davis, and also Vicky Perry .. I'm waiting for her .. Vicky is also a part of RCAP. And we are a not-for-profit organization that provides no charge technical assistance. We receive both State and Federal grants. And via those grants we're able to help communities like Bean Blossom, and basically we can help kind of guide you through the process. And basically we became involved because there was a finding by the health department and by local residents that there were concerns with the quality of the surface water in this area because of in particular because of failing septic systems. And what we try to do is help communities through the process of dealing with that problem. And where we've gotten to at this point is we are having the public meeting and public hearing tonight to discuss the formation of a regional sewer district. And the way that happened was an area was determined, and actually Jim brought the map, and that's actually the boundaries of the proposed sewer district. And basically what we have done is we're looking at a number of different options at this time. And I know the first question everyone wants to know is how much it's going to cost. And I can upfront tell you we're not to that stage yet. I can show you the preliminary engineering report, that has estimates. But the reality is until a final system is identified, the costs are still very much up in the air. I will tell you though that the members that are Friends of Bean Blossom, and I think ultimately whoever will be appointed to the sewer board, if it is formed, are members of this community. So it's not .. they want as cost effective a system just as much as everybody else. So please keep that in mind. I know that every member of the Friends of Bean Blossom wants something affordable. And I think that's a very key issue for everyone. So, with that, that is where we have gotten to today is we've reached the point of forming a sewer district. There's been looking at a number of other options. And basically what's been found to get us to this point is that really the best option for Bean Blossom right now is the formation of their own district, instead of joining with another sewer district, and/or the expansion of an existing district. So that is where we're at. And I will turn it back over to Lynne Newlon for her to moderate the questions.

BY LYNNE NEWLON:

Thank you. Okay. Are there any questions? And if so, please stand up and I might be able to take this mike. It's very important that our Court Reporter hears you. State your name please. Yeah, that's fine.

BY FRANK JESSUP:

All right.

BY LYNNE NEWLON:

He can hear you.

BY FRANK JESSUP:

All right. My name is Frank Jessup. I live in Bean Blossom. I've lived here approximately ten years. And I've attended most, if not all of the previous meetings back when Nina Jo McDonald first got this thing spearheaded. And probably one of the most important things, aside from the obvious of cost factor, is where will the sewage actually go and how will it impact our property values in terms of the stench? Well, it was brought to my attention at the earlier meetings that there was a State law, as I understood it, that said that if there was an existing facility within a given boundary, two miles or whatever, they were required to hook into it. Specifically, Helmsburg. Well there was a running debate at all of the meetings as to whether this would be reality or not. And I would like to say that if this thing comes about, that that would be absolutely mandatory that it hook into Helmsburg as opposed to any freestanding treatment options within Bean Blossom. There was also concerns as to where they were actually going to run the sewer lines. And it was stated that law said they could not run them on the same side of the road as the incoming fresh water supply lines. And I would want to make sure that that is true, and they do do that. Make sure the sewer lines are on the opposite side of the road than the incoming water. And the sewage is piped off to Helmsburg. So, that's my concern. And that's about all I have to say. If anyone agrees with me, they need to chime in on this.

BY LYNNE NEWLON:

Okay.

BY FRANK JESSUP:

Thank you.

BY LYNNE NEWLON:

Thank you. I'm not sure of that law within two miles. So, but I will ask and .. internally in IDEM.

BY FRANK JESSUP:

It was mentioned at all of the meetings that I've attended. They hammered on that repeatedly. They .. well, I have more to say, I need to comment on this further. I hope you count words, obviously. Well in continuation, they went on to say at these earlier meetings that the Helmsburg facility was not running at full capacity, and that the influx of water from the Bean Blossom project would actually would it run better.

BY FEMALE VOICE:

Exactly.

BY FRANK JESSUP:

That's what they said.

BY FEMALE VOICE:

(inaudible).

BY FRANK JESSUP:

And they said, well yeah, it's got to go to Helmsburg. They need the water. So .. now ..

BY FEMALE VOICE:

(Inaudible).

BY FRANK JESSUP:

.. when this ..

BY LYNNE NEWLON:

Please, one person speak at a time. It's really hard to get this all recorded.

BY FRANK JESSUP:

When this latest round came to my attention, with the notice in the paper and all of the wording is wanting to form a regional district in Bean Blossom. And I went to the library in Nashville, and as far as I can tell they're wanting to treat the sewage just east of here in a vacant cornfield, if I read the report properly. And I may be mistaken on that. It was the way I interpreted it. But once again, having attended those earlier meetings, it appears to me that the best option is to pump it to Helmsburg. They need the water. So, there you are.

BY LYNNE NEWLON:

Okay, thank you. And ultimately, if the district is formed, there is a board that is appointed. And currently, it varies if it's going to be three trustees on that board, or five. And that varies to if they combine with Helmsburg. But it's ultimately up to that district board to make the decision. And at the same time, they have nine months from being formed, if they are formed, to get in a district plan. That district plan will then further go into details, we are going with option B, da-da-da-da-da. So, those decisions are not made at this point. And ultimately, it is the sewer board that is appointed by elected officials that would be making those decisions. And that district plan as I said must be presented to IDEM within nine months after being formed, if they're formed. Yes, Mark?

BY MARK DAVIS:

There was just a comment that the Helmsburg plant is not running at capacity. That is correct. It is not at its capacity. And it is also true that up to a point, the closer to capacity, the better waste water treatment plants run. That is a correct statement. The report you're referring to, and if anyone else is interested, it is at the library, I believe is what's called a preliminary engineering report. And within that, the engineer looks at the preliminary options. And there is the option of forming a treatment plant, basically in a cornfield outside of town. But there is also the option of taking the sewage via a transmission line, and taking that to Helmsburg as a treatment option also. So, those options are both within the report, and both are weighed in that report. So .. and as Lynne said, ultimately, once this board is formed, that's who would make the decision upon where the waste would ultimately be treated.

BY LYNNE NEWLON:

Okay, other questions? Please ..

BY FRANK JESSUP:

I've got more to say.

BY LYNNE NEWLON:

All right, we'll let's see if anyone else has a question. I'll come back to you. Hold on.

BY FRANK JESSUP:

(inaudible).

BY LYNNE NEWLON:

Please come up forward. State your name, please.

BY DEBBIE LARSH:

My name is Debbie Larsh, and I live on Old Settlers Road. My first question should have started this meeting out. Our letter stated that the county commissioners and the county council had called this hearing. So I made the time Monday morning to go to the commissioners meeting. And they deny any knowledge of this meeting tonight at all. So I'm curious as to how you promoted that letter to all of the landowners that got those letters by saying that the county commissioners and the county council of Brown County had called this hearing tonight, when none of them were even aware of it until Monday morning.

BY LYNNE NEWLON:

Okay. One, it didn't say they called it. I said they .. it stated that they petitioned IDEM. And I did stand corrected. The petition that came to IDEM was signed by the county council.

BY MALE VOICE:

Oh ..

BY LYNNE NEWLON:

Not by the county commissioners ..

BY MALE VOICE:

It was by the county council ..

BY LYNNE NEWLON:

And by statute ..

BY MALE VOICE:

June the 21st of 2004.

BY LYNNE NEWLON:

And by statute, Indiana code 13-26, it has to be done by the physical body. So, it is sufficient to only be signed to form by the county council. So I did stand corrected, the county commissioners did not sign the petition. Brown County commissioner council signed the petition that came to IDEM that started this. IDEM is running the public hearing. IDEM is doing the public hearing for statute, due to statute.

BY DEBBIE LARSH:

And who here is from IDEM?

BY LYNNE NEWLON:

I am IDEM, and Ms. Nancy Holloran is our legal counsel. And I .. I will be the hearing officer tonight. So does that clarify?

BY DEBBIE LARSH:

A little.

BY LYNNE NEWLON:

I mean the statute was met.

BY DEBBIE LARSH:

It was met?

BY LYNNE NEWLON:

It was met. And it was my mistake to say .. usually the county commissioners also sign off. They do not have to. But in some cases ..

BY DEBBIE LARSH:

And do you know why they didn't?

BY LYNNE NEWLON:

I don't think ..I don't know if they were asked.

BY DEBBIE LARSH:

Yes, they were.

BY LYNNE NEWLON:

So but it would be irrelevant due to the fact that it met such requirements ..

BY DEBBIE LARSH:

It would be important to everyone who lives in our community to know why our commissioners wouldn't support this program.

BY LYNNE NEWLON:

Well ..

BY DEBBIE LARSH:

If, I mean, it doesn't hurt the county council any, because they're not the legal advisory board of the county either. But I think the commissioners, who have an awful lot to say about what goes in and goes out of this county ..

BY LYNNE NEWLON:

Technically, the petition could have even been formed, been signed and been sufficient if it was the township trustee ..

BY DEBBIE LARSH:

And he denied it too. So I guess I'm asking you to tell me exactly why the two bodies you went to first ..

BY LYNNE NEWLON:

I did not ..

BY DEBBIE LARSH:

And this final body, which one of your board members was sitting on the county council at the time, actually got the county council to pass .. to sign off on this.

BY LYNNE NEWLON:

Well, I didn't go to them. A petition was submitted and it met the statutory requirement ..

BY DEBBIE LARSH:

You didn't get to hear all of their reasons for not wanting to do ..

BY LYNNE NEWLON:

They .. they received notice by certified mail. None of them to date have called me or sent comments.

BY DEBBIE LARSH:

Okay.

BY LYNNE NEWLON:

And the comment period is still open for another three weeks. So, they're more than welcome to send in their comments. Any other questions? I'll let you come back up to the ..

BY FEMALE VOICE:

Can I ask you, who petitioned for this?

BY LYNNE NEWLON:

County council. Brown County Council.

BY MALE VOICE:

Did what?

BY LYNNE NEWLON:

Sir, if you're going to talk, you need to come up and state your name.

BY MALE VOICE:

Oh, I thought you was asking somebody from the council to talk. (inaudible).

BY LYNNE NEWLON:

Okay, would you like to ..

BY MALE VOICE:

No, if somebody's got a question, I'll be glad to try to .. glad to answer it.

BY LYNNE NEWLON:

That's great. And ..

BY MALE VOICE:

I thought you was asking.

BY LYNNE NEWLON:

No, but go ahead.

BY FEMALE VOICE:

Why was this petitioned? Who asked for it?

BY MALE VOICE:

There was a group of citizens here in this .. in Bean Blossom.

BY FEMALE VOICE:

How many (inaudible).

BY MALE VOICE:

You're going back .. much over about a year and a half here, and to ask me that question, I don't know. We sat up here, we had like three, two or three hearings. And there was people that come for and against, for and against.

BY FEMALE VOICE:

I (inaudible).

BY MALE VOICE:

And we had a lot of problem with where the district boundaries was. They were drawing those in, and drawing them out, and drawing them in, and drawing them out.

BY LYNNE NEWLON:

Wait, excuse me. He can't hear you. I didn't bring any microphones.

BY COURT REPORTER:

I'm not getting anything on record.

BY LYNNE NEWLON:

We just want this for a record, sir.

BY MALE VOICE:

Oh sure.

BY LYNNE NEWLON:

We'll try to microphone .. (inaudible).

BY COURT REPORTER:

I definitely didn't hear what she said last.

BY LYNNE NEWLON:

Okay, sorry. And if you could state your name, please.

BY MALE VOICE:

First thing I'll do is apologize for being late, but I had another meeting. Blake (inaudible) and I had an EMA meeting at 6:30, it's kind of hard to get to 6:30 and 7 o'clock meetings with five or six mile in between of having a meeting. So I didn't get in on the first of your meeting. We were petitioned and I had told Debbie earlier that I couldn't remember it, but we was. And I've got it here in my hand now, because I went and found all of the paperwork on the Bean Blossom sewer late tonight. I should have got it a day or two ago, and started digging through it. So there was petitioned. It is signed by all of the council members, and it says received June the 21st, 2004. That would have been received into the auditor's office. Not into IDEMs probably. Reasoning, is that what someone was asking, why?

BY FEMALE VOICE:

Yes, I want to know why you're coming ..

BY MALE VOICE:

There was a group of citizens here, some of them are familiar .. some of them are still here. Mr. Smith, I can't .. don't remember names. That gentleman's face is familiar. This gentleman here. And there was about four or five others.

BY MALE VOICE:

(inaudible) you guys don't want a sewer project in Bean Blossom? I don't know why we don't want one to be honest with you.

BY FEMALE VOICE:

(inaudible).

BY LYNNE NEWLON:

Okay, we're going to have to .. excuse me, we're going to have to talk one at a time up at the microphone. Also, the county health department, we have .. there's many failing systems. There's a need. It's just not a matter of want or not want. There's a need. There's failing septic systems in this area. The soil can't take it. The health department they ..

BY FEMALE VOICE:

(Inaudible).

BY LYNNE NEWLON:

Ma'am, if you want to talk, you're going to have to come up and stand in line and talk after him.

BY MALE VOICE:

I think, you know, all we're petitioning .. all this petition here or what you're doing tonight, now correct me if I'm wrong, is setting up a board. A district board.

BY LYNNE NEWLON:

An entity. This is part of the process if an entity is even set up, to form a district. It only, it's not saying it's coming for sure. It's .. and that board would be formed, correct, if a district is set up, an incorporated area to serve sewers.

BY MALE VOICE:

And in this here area, it tells .. and I don't have it. I see some notations where I've had like one person is going to start off one year, one of them is going to be a two year term, the other three year term is one of the options that we talked about and stuff that night. And there was about fifteen people here that I know talking. There was some against. But there was, I believe, three meetings, you know. And what this is again, is this is not saying it's done. It's forming a board, is my understanding.

BY LYNNE NEWLON:

This is part of the process to form an entity, a municipal corporation.

BY MALE VOICE:

Right.

BY LYNNE NEWLON:

It's like a not-for-profit utility. And that board that would be set up, if this happens, then was formed. But funding and a lot of other variables actually have to come together. But this is just on the formation process of forming the entity, you are correct.

BY MALE VOICE:

Is there any questions for me, if not, I'm .. I didn't come here to speak that's for sure. I come here because, you know, we did sign this, and I had told Debbie that I couldn't remember. I couldn't. I did. Okay, thank you.

BY LYNNE NEWLON:

Thank you very much. Any other questions? Yes sir. Please come up, yes, so he can record this. And state your name.

BY NICK SENIOUR:

My name is Nick Seniour. And I am .. I guess I'm still on the Board of the church down here on highway 45. My first question is why would not we want sewers? Number one, I .. I'm speaking from a standpoint of being in business also, and for many years I installed septic systems to the tune of about 150 of them a year, to 200. And as a business person, I quit putting in septic systems because there was no way you could guarantee they were going to work. And that was in counties all over the state. When you come to Brown County, the failure rate is so high that I would never consider even bidding one. And I do put in sewers at this point. But my main question is why would we not want a sewer? Now, I don't know about the cost. I have no idea .. that seems to be a question tonight. What is the cost going to be. I don't even know if you've gone so far as to determine what type of a system you're going to put in, whether it's a pressure system, I'm assuming it would be a pressure system. Somebody had said that they had heard that the Helmsburg system was like $100 a month, I don't know if that's true or if that's not true. Is it true or not? I don't know. I just came from a situation down in Brookville, Indiana where I pastored a church and we connected our church to the pressure line, and it was $43 a month. And $43 a month to get rid of your sewage in a proper manner is very reasonable. Now, if somebody, somebody had mentioned the stink, or where they were going to dump this water. Number one, there's nothing that stinks any worse than stepping out of the church down here Sunday night, and the wind coming from the north. There's a definite stink. So I don't think a stink is going to be a problem. Furthermore, my .. my final remarks are I live in Brown County, I've been here for thirty some years, and anything we can do to clean up the sewage problem in this county I think would be very beneficial. Thank you.

BY LYNNE NEWLON:

Okay. I could answer one of his questions. They don't know .. because it's ultimately up to that board, and then they would decide. If it's more economical to join with Helmsburg, is it more economical to do something else. So that board would have to get educated. Something would have to be updated. There is a preliminary hearing of the board. But that's two or three years old. Some of that information as you well know is (inaudible). So that information would have to be updated. So once they're formed, this information would be collected, it would be that board making those decisions. Sir? Would you like to ..? State your name again, please.

BY FRANK JESSUP:

Yeah. Once again, my name is Frank Jessup. I live in Bean Blossom. I've lived here ten years. And I've been to all of the previous meetings. And, once again, the .. one of the main focuses of attention in the earlier meeting was one, yeah, they wanted a sewer system. And there's no denying we need a sewer system. But catamount to that, is the doing it properly. And it was mentioned in the previous meetings, that they were going to have to pump this sewage to Helmsburg, in spite of Helmsburg's objections, and it was even mentioned in the meetings that this was .. there was a law on the Indiana books to this effect that if there was .. you couldn't create a new district. If it was within a certain distance from an existing. And now, someone needs to research those previous meetings and .. either I'm making this up, or it's a fact. And I seem to recall having heard it at each of the meetings. So there must be some fact to it.

BY LYNNE NEWLON:

Well, I know in Indiana code 13-26, which oversees regional district, it's not in that statute.

BY FRANK JESSUP:

Well, I'm not a lawyer, I don't know where it'd be.

BY LYNNE NEWLON:

I'm not saying .. it may be in another one. I'm going to ask. I know commerce likes regionalization.

BY FRANK JESSUP:

Uh-Huh.

BY LYNNE NEWLON:

And a lot of times it is more economical to go .. especially and it's usually within the five mile radius, things are .. it's more economical to join together. Those things will have to be reviewed and ultimately if the district is formed, it will be up to that board.

BY FRANK JESSUP:

Yeah, it was more than just economy or common sense the way I heard the thing from the meeting, it was a matter of law. They had to do it. and this would be the proper way to do it, not only for economy, but they've already got the odor problem in Helmsburg, why have it right down the road as well. Might as well keep like items with like items. Makes sense to me. At any rate, I feel that if we're going to form this and do it, that they need to forge ahead with as they discussed pumping the sewage to Helmsburg and using their existing treatment plant. And .. yeah, it's already there and paid for, and the way I heard the story, it would improve its situation with the increase in water flow. And of course, it would keep Bean Blossom from having any adverse odors from a treatment plant. So when you said they were viewing several different options, the one of the cornfield or to Helmsburg, the way I heard the story from the previous meetings, that had already been put to bed. The issue was settled. It was going to Helmsburg. And that would be the only way that I would ever be in favor of a sewer district, or whatever you want to call it. Now ..

BY LYNNE NEWLON:

Well, and no one can make those decisions unless, you know, a district is formed and that sewer board. You have conservancy districts. Conservancy districts .. I'm talking. Conservancy districts are formed through DNR and the local county. They can charge you tax. Regional districts cannot charge you tax and it is based on user fees. So, there's a little bit of a difference, they have different purposes, regional districts only have water and sewer. So again, only if the entity is formed, and it's that board that only has the power to make those decisions. It's not the Friends of Bean Blossom. It's not, you know, Helmsburg. It's not .. there has been communication with Helmsburg. And I've attended a few meetings as well. And there's conversation still going on. But no decisions have been made, or can be made at this time.

BY FRANK JESSUP:

Well I'm basing my remarks on what went down in the previous meetings. And it would seem logical that what was discussed at the previous meetings would have weight and carry forward to whatever this proposed board would do, as it was already pretty well set in concrete. So .. in closing, I would just say that that's the correct way to do it. I very much want it to be done that way. I would be very opposed to any other means of disposing of the sewage. So, there you are.

BY LYNNE NEWLON:

Thank you very much. Yes ma'am, please come forward and state your name.

BY DEBBIE LARSH:

Again, my name is Debbie Larsh. And we .. most of those of us who live on Old Settler's Road have fought this from the beginning. We went around and had a Petition signed with all of the areas on it.

We had enough names, we thought, to stop this from going outside of just the business area of Bean Blossom, and to ask Mr. .. answer Mr. Seniour's question. I'll give you the best reason I know. It's going to hurt a lot of people. A lot of innocent God fearing, you should appreciate that, people, who cannot afford because this is not just hooking onto a sewer line. They will force you to dig up what you already have in, and remove it, which is an additional cost. I went to the library, got my .. the books out and read on all of the proposed plans, just Old Settler's Road alone proposed cost was over $300,000. That's a lot of money for eleven homes, and I'm going to tell you that most of the people who have those homes are either on disability or social security. They cannot afford to do this. And I don't care how you look at it. If you think $45 is cheap for you, God Bless you, you're a very lucky man. It is not cheap for those people on Old Settler's Road. And it affects a lot of people down Gatesville Road, it affects people on your road, and maybe you're unaware of how many poor people are on your road. But if the five or six business people that have started this whole program out are all for us, then those five or six business people should be the ones to foot the bill. And that's how most of us have felt about this from the beginning. I for one have been to these meetings. I for one have spoken to all of you .. all of you time and time again. It's not making any sense to you that no one would want this. I hope I've given you some, some knowledge of who the people are you're hurting. You're helping the business people, yea-rah. If those five people that have businesses in Bean Blossom need this to expel their businesses and make them larger, fabulous for them. But it should not be on the backs of the poor people. I'm sorry, it just should not be. Gnawbone system has been a fiasco. The Helmsburg system has been a fiasco. How many times do we have to waste money in this county for a couple of business people, and they get off .. they get off. And then they move from the county and they're gone, and the rest of us are stuck here who have committed our lives to this community, continuing to pay their bills. That's why most of us who are here tonight are against this system. It's been the five people that started this out, are still five people that are for it, and like I said, yeah-rah, God bless them, I hope their businesses thrive for this, but it should not be on people like my mother's back, who's 81 years old. She should not have to face this on social security. She doesn't even have enough now to pay her bills, let alone to add on to those bills. And you know what's sick? Here's the sick part, people. You think you're safe if you've got a new system. Let me tell you you are not. They can .. if you're within that three hundred feet, they can force you to hook on. If you just spend $10,000 for your new system, my new system was over $12,000. We can all get it. It's not just the people's systems who are failing, that are going to get caught in the middle of this. It's going to be everybody. Okay, I'm done.

BY LYNNE NEWLON:

Okay, thank you. I would like to state in the statute that it does state if a district comes in, and if you have a new system, not a repair, then you can actually go to the district board and request a .. one not to be hooked up, or compensation up to $4800. So if the system is five years old or less, and a new system, not a repair. So there is some recourse that the homeowner has to take to the district board, if this is formed, and can actually get a $4800 offset. Or they can even, the board can even say you don't have to hook up. It's a case by case basis. And they have to go to the health department, get .. say that they did get the proper permitting, and this and that. So that is in the statute. Yes sir, please state your name.

BY MIKE LEGGINS:

I'm Mike Leggins. I'm from Old Settler's Road, also. And I'm all for the septic system myself. You folks have plenty of land, your system fails, you can go to another spot and put another system in and spend maybe your system is new now. Ten years from now, you may have another system. And my system is three years old and I can't sell my home today because my system is failing. I have another home on Old Settler's Road that I cannot sell, it is empty right now, it's vacant, no one can move in, because the system is failing, and they want another $15,000 system put in, and I'm saying if I'm going to spend $15,000 putting a new system in, I want a guarantee that this system is going to work. No one is going to guarantee me the system is going to work. You're going to spend $15,000, maybe next year, maybe next week, the system is going to blow out, and I've got another .. I've still spent another $15,000 and I've got a home still that I can't live in, I can't sell, no one's living. I have a mortgage on this home that

I pay every month on that we cannot live in it. And from what I understand, what's the health department has been out there and looked at our home there and said they could pretty much shut down half of Bean Blossom right now if they want to. They're trying to fork something around this so they don't have to shut down Bean Blossom. You can .. I can guarantee you, your system, if it's not failing now, and you live on Old Settler's Road, it's a matter of time before your system is going to fail, or you're very lucky. I've rebuilt almost half of Old Settler's Road. You .. if you went down Old Settler's Road ten years ago you would have seen run down mobile homes, homes that were falling down to the ground, and .. and we've erased all of that. We've tried putting in up to date systems, we did spend $10,000 putting new systems in every home. And four of five systems are failing. So I'm looking at I spent $50,000 putting systems in these homes and now they're coming to me and saying, fix these systems, they're failing, or we're going to condemn your houses. So I own five homes here that I cannot rent, I can't . .

BY FEMALE VOICE:

Who designed your system?

BY MIKE LEGGINS:

My dad lived in one, I lived in one, my brother lives in one. These are family. These are . .

BY FEMALE VOICE:

Who designed your system?

BY MIKE LEGGINS:

Ed Waggler put the system in.

BY FEMALE VOICE:

No, who designed the system? Who designed it?

BY MIKE LEGGINS:

The health department approved it. I have no idea . .

BY FEMALE VOICE:

I've been to the State of Indiana and the man who designs the systems for the State of Indiana came down and designed my system . .

BY LYNNE NEWLON:

Ma'am, you need to state your name please.

BY FEMALE VOICE:

Okay.

BY MIKE LEGGINS:

And no reckons to do with here, but I know your system that you put in your .. your .. the new one they put in within a year is failing also. They've been back to do more repairs to the system because the system is failing.

BY FEMALE VOICE:

It was not failing ..

BY MIKE LEGGINS:

I know for a fact it is.

BY FEMALE VOICE:

No, it's not failing.

BY MIKE LEGGINS:

Well, mine is. And what answer do you have for me if I'm paying $1000 ..

BY FEMALE VOICE:

I have five acres of land ..

BY MIKE LEGGINS:

Can I speak? And then you can come up here and answer the question. You can direct it to them.

BY FEMALE VOICE:

(inaudible).

BY MIKE LEGGINS:

The answer I would like you all to direct to me is how do I continue paying mortgages for a home that I cannot live in? That's not fair.

BY LYNNE NEWLON:

We're not .. If you want to make a comment back, you need to get in line and state your name.

BY MIKE LEGGINS:

I'm all for it, and if you .. if you need somebody to be on the board or to head this thing up, my name is Mike Leggins. I'll leave my information and I'm all for it. I hope .. don't hook onto it if you don't want to, but I hope you pay the price later.

BY FEMALE VOICE:

(inaudible).

BY MIKE LEGGINS:

And another thing is, they're telling me they tested the E Coli in all of the streams that's running through your backyards, and the meter cannot read them the amount of E Coli bacteria that's in the creeks that our kids are playing in, that our animals are drinking out of. The bacteria is so high, the pollutants are so high in these creeks that it's not safe for our kids to play in. So that's something you all need to think about also. You know. I don't .. I don't have enough land to just keep putting system, system, systems in, it's a plotted subdivision. There's only so much space. They have no .. the only answer they have for us is to have a regional sewer district. That's the only answer they have for .. or, continue paying this thirty year mortgage on a vacant house until it's done, and then I have nothing left. So again, I'm all for it. Anything I can do. I'll leave my name and number at the end of the meeting and I'll go for .. anything you need done. I'd be more than willing to help out.

BY LYNNE NEWLON:

Okay, thank you for your comments. We're going to continue a few more minutes, and we're going to start the hearing. If you would like to comment, please get in line and come up here and state your name, and state your comment or question. Now, remember, the public hearing, it's only to receive testimony. I cannot answer questions. The board will not .. folks will not be answering questions. It will be one person coming up and speaking and giving testimony. This is being recorded. Even the public meeting is being recorded, but I feel it's important for when I send the transcripts up to the Commissioner, he gets the full flavor of the hearing as well as the public meeting. So with that in mind, please, if you'd like to speak .. oh, hold on one minute.

(OFF RECORD TO CHANGE TAPES)

(BACK ON RECORD AS FOLLOWS)

STEVE STALEY:

My name is Steve Staley. I am a part of the Friends of Bean Blossom. We are the people that initiated to having this hearing. And, you know, I hear you ladies. I hear you loud and clear. You have some very legitimate concerns. And we want to deal with that. You also have some legitimate concerns, we want to deal with that. And the other gentleman made some really excellent points. But we're going beyond what the purpose of this meeting is today. I would be happy to speak with you any time you like. Any of you. With anybody here that ever has a question. I'd be happy to speak with you. And answer any questions. What we're trying to accomplish today is to become regional sewer district. It doesn't have anything to do with whether we take sewage to Helmsburg or we do it in a cornfield. It doesn't have anything to do with Old Settler's or this, okay? There are a lot of facts, information that needs to be compiled to make those decisions. What we're trying to do is keep this process alive so that we can make those decisions. We will have other meetings. This meeting is just because we've gotten to a standstill. We .. we ran out of options with Helmsburg, and with the process. You know, this .. people that work at the State are very intelligent people. They've been through this many, many times before. They know what to do. They have guidelines. We're following these guidelines. And we're utilizing RCAP, we're utilizing IDEM to help us to guide us, to answer questions, because we don't want to force anybody that's spent a substantial amount of money to have to hook on. We don't want to make bad mistakes like what happened with Gnawbone and what happened with Helmsburg. Bean Blossom is the only community that has enlisted the help of RCAP. They're set aside specifically to help communities like us. Helmsburg didn't use them, and neither did Gnawbone, and they made mistakes. We saw what mistakes they made. We don't want to make those mistakes. They were stupid mistakes. They shouldn't have been made. And if they had worked with RCAP, those kind of mistakes wouldn't have happened. You know, we have a gentleman that has homes that can't live in them, and he can't sell them, but he's paying a mortgage on them. And that hurts. That's not a business person. You know, there's very real .. well some people are. Some people are. Maybe he is. I don't know him. He might be a business man. But I know there are also just regular folks that the health department has, you know, they're shutting them down. They can't even live in their houses. That's a problem. This is not .. you know, you ladies here, as soon as you hear something about business, automatically, they're evil, they're the bad guy. Not all businesses are bad guys. And not all businesses are going to force regular people into doing something that they don't want. That's not the situation. Yeah, I'm a business person. My business is poor people, folks, I own a trailer court. And the people in that trailer court are low income. I love those people. There's a lot of really good people there. I've been to quite a few funerals unfortunately from people that have lived in that trailer court, just, you know, it tears my heart out. These are poor people. We want to try to satisfy the entire community. What we want to accomplish today is just to organize a regional sewer district so that we can keep moving forward and try to find the solutions. That's all we want to accomplish. If you have any questions, get with me, I'd be happy to answer them. I'd like to turn it back over to ..

BY LYNNE NEWLON:

Thank you. Okay, any other questions? Comments we can put into the public hearing. Okay, I'm going to go on and start the public hearing.

(OFF RECORD)

PUBLIC MEETING

HELD ON 10-19-05

IN RE: BEAN BLOSSOM REGIONAL SEWER DISTRICT

I, Heather Rhoden, A Court Reporter or transcriptionist for the County of Morgan, State of Indiana, do hereby certify that the foregoing transcript, as prepared, is full, true, correct and complete.

Heather L. Rhoden

Heather L. Rhoden
Transcriptionist in Morgan County, Indiana

DATED: 10-25-05

BEAN BLOSSOM

BROWN COUNTY, INDIANA

PRELIMINARY ENGINEERING REPORT

FOR:
BEAN BLOSSOM, OLD SETTLER'S ROAD AND WOODLAND LAKE AREAS

SEPTEMBER 2003

PREPARED FOR:

THE FRIENDS OF BEAN BLOSSOM

NINA JO MCDONALD	CHAIR
STEVE STALEY	VICE CHAIR
AGNES UNGER	SECRETARY-TREASURER
DENNIS SMITH	MEMBER
JIM DRUM	MEMBER

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GLOSSARY OF TERMS

Abbreviation of some technical terms is used throughout this report for brevity. Terms are listed as follows:

BOD5	-	5-Day Biological Oxygen Demand
CFF	-	Community Focus Fund
E. Coli	-	Escherichia coli (coliform bacteria)
EA	-	Each
EDA	-	Economic Development Administration
EDIT	-	Economic Development Income Tax
EDU	-	Equivalent Dwelling Unit
gal	-	gallons
gpd	-	gallons per day
gpm	-	gallons per minute
IDEM	-	Indiana Department of Environmental Management
HRSD	-	Helmsburg Regional Sewer District
IAC	-	Indiana Administrative Code
IDNR	-	Indiana Department of Natural Resources
IDOC	-	Indiana Department of Commerce
IN-RCAP	-	Indiana Rural Community Assistance Programs
LF	-	Linear Feet
LS	-	Lump Sum
lbs	-	pounds
mg/l	-	milligrams per liter
mgd	-	million gallons per day
ml	-	milliliters
MHI	-	Median Household Income
O, M, & R	-	Operation, Maintenance and Replacement
NH3	-	Ammonia Nitrogen
NPDES	-	National Pollutant Discharge Elimination System
PW	-	Present Worth
RCAP	-	Rural Community Assistance Programs
RD	-	Rural Development
RFM	-	Re-Circulating Filter Media
RSD	-	Regional Sewer District
s.u.	-	standard unit
SDI	-	Subsurface Drip Irrigation
SRF	-	State Revolving Fund
TSS	-	Total Suspended Solids

CHAPTER 1 - BACKGROUND INFORMATION

1.0 Introduction

Bean Blossom is an unincorporated area located in Brown County Indiana. The Bean Blossom Wastewater Project Committee selected Ladd Engineering, Inc. in October 2002 to develop a preliminary engineering report for providing wastewater facilities to the planning area and to prepare this report. The purpose of this study is to evaluate the existing facilities and recommend improvements to better serve the community's wastewater needs for the next 20 years. The study is being funded with a Rural Electric Management Corporation (REMC) grant.

1.1 General Information

Bean Blossom is an unincorporated, low-income community in Brown County, Indiana. A 2002 income study approximated the Bean Blossom population at 160 people (Hornsby, 2002). In addition to about 60 single-family homes, Bean Blossom includes a 32-lot mobile home park, 3 churches, a campground and festival park, over 14 commercial businesses and an 8-unit motel. The community lacks any schools or industrial operations. Bean Blossom is also home to numerous music festivals, including a large bluegrass festival, during which the population can temporarily increase to nearly 20,000 people. These festivals are usually weekend-long events and occur throughout the festival season from early April to late October.

Bean Blossom residents currently use onsite septic systems to treat and dispose of wastewater. Nearly all of the septic systems in the community have failed. Leach fields are clogged, causing holding tanks to fill to capacity, overflow, and discharge untreated wastewater directly onto the ground. Small lot sizes, unsuitable soils, hilly terrain, and seasonal high water tables have caused these failures and are preventing the residents of Bean Blossom from repairing or replacing the systems.

1.2 Project History

A preliminary engineering report dated January 2001 was prepared by R.W. Armstrong & Associates, Inc. for the unincorporated areas of Bean Blossom and Woodland Lake. This R.W. Armstrong & Associates, Inc. report was prepared on behalf of the Helmsburg Regional Sewer District (HRSD), a existing unincorporated community located approximately 3 miles west of Bean Blossom. The R.W. Armstrong study was funded with an Indiana Department of Commerce Community Focus Fund Planning Grant in the amount of $50,000, which was applied for by the Brown County Commissioners. The R.W. Armstrong report evaluated various collection system alternatives for the Bean Blossom and Woodland Lake areas with conveyance to the existing HRSD treatment plant. The recommendations of the R.W. Armstrong report included a combination of gravity and low pressure sewers in Bean Blossom draining to a lift station on the west side of Bean Blossom and conveyance to Helmsburg via a 6-inch force main. A low-pressure sewer system with simplex grinder pumps was recommended for Woodland Lake to be implemented as a future phase. The R.W. Armstrong report recommendations were based on the existing HRSD treatment plant having existing capacity available to serve Bean Blossom but would need to be expanded to serve Woodland Lake. The R.W. Armstrong report anticipated project financing for the Bean Blossom project would be from a $450,000 IDOC CFF Grant, $126,000 Brown County Economic Development Income Tax (EDIT), $128,000 Hook –on fees and $1,069,000 IDEM SRF Loan, which resulted in a $70 per month user cost. The R.W. Armstrong report was never implemented because of concerns about high monthly user costs and concerns from Bean Blossom about the financial and managerial capabilities of the HRSD.

The Rural Community Assistance Program (RCAP) became involved with Bean Blossom in late 2001. The RCAP is a non-profit organization that provides assistance with the lengthy and complicated process involved in developing community water, wastewater, and solid waste improvements in rural, low-income communities across the United States. All communities with populations under 10,000 are eligible for RCAP assistance. However, most communities that receive assistance have populations less than 2,000 people and are either minority, underdeveloped, or low-income rural communities. RCAP's mission is to improve the quality of rural life by providing safe drinking water and adequate wastewater treatment. For the last quarter-century, RCAP has worked to improve the infrastructure of rural communities. They operate a national office in Leesburg, Virginia, six regional offices, and community offices in each of the 50 states and Puerto Rico. The Indiana Rural Communities Assistance Program (IN-RCAP) is one of these offices. They work for improvements in communities across Indiana. Over the past two years (1999-2001), IN-RCAP has assisted over 910,000 people, 57% of which were in the low to moderate-income bracket. Funding for IN-RCAP's efforts come from numerous agencies including the U.S. Department of Agriculture, the U.S. Department of Health and Human Services, the Environmental Protection Agency, and the Indiana Department of Environmental Management. IN-RCAP is currently working with over 40 communities throughout the state, including the rural community of Bean Blossom, Indiana. To identify alternative feasible solutions to its own wastewater problems, the community, with the assistance of IN-RCAP, has organized itself into the Bean Blossom Wastewater Project Committee (BBWWPC) and, with the help of IN-RCAP, retained the services of Monarch Engineering to identify and evaluate these alternative solutions.

Monarch Engineering was retained by IN-RCAP to provide preliminary engineering work on wastewater collection and treatment alternatives for the Bean Blossom community. Monarch Engineering was fictitious company comprised of five Rose Hulman University senior students who would complete a preliminary engineering report as a senior project. Monarch Engineering completed a preliminary engineering report, which was submitted to the Bean Blossom Wastewater Project Committee in May 2003. The Monarch Engineering report recommended a vacuum sewer system, preceded by the use of existing septic tanks, for both the Bean Blossom and Woodland Lake Areas, and an extended aeration activated sludge treatment plant. Ladd Engineering, Inc. utilized information from both the R.W. Armstrong and Monarch Engineering reports for this report.

Earlier this year, the Bean Blossom Wastewater Project Committee formed "The Friends of Bean Blossom", a 501c(3) not for profit corporation, dedicated to bettering Bean Blossom. With the assistance of IN-RCAP, The Friends of Bean Blossom have applied for various grants to pay for preliminary engineering, preliminary financial report, environmental review/archeological reconnaissance, legal costs associated with forming a legal entity and miscellaneous administrative costs.

CHAPTER 2 -PROJECT PLANNING AREA

2.0 Introduction

The Town of Bean Blossom and Woodland Lake areas are unincorporated communities that are part of Jackson and Hamblen Townships, located in the northern part of Brown County, east of Helmsburg. Currently, Brown County Water Company and the Town of Nashville provide the community's water supplies, although their wastewater needs are met with private septic tank absorption field systems.

2.1 Purpose

The purpose of this study is to complete a general evaluation for providing public wastewater facilities to the Bean Blossom, Old Settler's Road, and Woodland Lake Areas. Alternatives for providing public wastewater systems will be reviewed and recommendations as to the most effective improvements will be presented for each of the listed study areas. The planning area was divided into three study areas for purposes of evaluating whether project phasing would result in any cost saving benefits. Cost estimates for each study area's recommended improvements will be given. Finally, the proposed improvements will be prioritized and a recommended schedule of implementation will be presented.

2.2 Locations and Land Use

The planning area includes portions of Sections 25 and 36, Township 10 North, Range 2 East, of Jackson Township, and portions of Sections 30 and 31, Township 10 North, Range 3 East, of Hamblen Township, of the Second Principal Meridian, as shown on the Bean Blossom and Morgantown Quadrangles, State of Indiana, United States Geological Survey map.

The Bean Blossom and Old Settler's Road Area's are primarily a residential community with a few small businesses located in the north central portion of Brown County in Jackson Township. The Woodland Lake Area is located approximately 2 miles east of the Bean Blossom Area and is a residential lake community consisting of homes and cottages. Fox Lake is another lake community consisting of approximately 15 homes that is located just west of Woodland Lake. Fox Lake is considered as a possible future service area. Both Woodland Lake and Fox Lake are located in Hamblen Township. The surrounding areas are wooded with several hills and valleys with limited agricultural use. The Bill Monroe Music Park and Campground, which is the home to several bluegrass music festivals during the summer that may temporarily increase the population to 20,000 people, is located in the Bean Blossom Area. The Town of Nashville and the Brown County State Park is located approximately 6 miles south of Bean Blossom. The unincorporated community of Helmsburg is located approximately 3 miles west of Bean

Blossom. Refer to Exhibit 2.1 for a state location map of the planning area and Exhibit 2.2 for a more detailed planning area map. State Road (SR) 135 runs north and south through the center of the Bean Blossom Area, and SR 45 goes west from SR 135 near the center of the Bean Blossom Area.

2.3 Population

An income survey conducted by Ball State University in 1998, demonstrated that the population of the Bean Blossom, Old Settler's Road and Woodland Lake planning areas was 471 persons. An income survey conducted by Ball State University in 2002 for the Bean Blossom and Old Settler's Road Areas indicated a population of approximately 160 persons. Approximately 90% of the Bean Blossom Area land area has been developed into an estimated 44 residential, single-family homes and 20 business/commercial establishments listed as follows:

- Staley's 31-Lot Mobile Home Park
- Bill Monroe Music Park and Campground
- Covered Bridge Inn
- St. David's Episcopal Church
- Mother's Cupboard
- Bean Blossom Mennonite Church
- Fire Department
- Grocery Store
- McDonalds Shopworth
- Health Clinic
- Trustees Office/ CAP
- Gun Shop
- Bean Blossom Reality
- Veterinary Clinic
- Dog Grooming Business
- Beauty Salon
- Brown County Water
- Candle Cupboard
- Baskets by Barbara
- Ridgetop Rustic

Also included in the planning area is the Old Settler's Road Area, which is located west of St. Rd. 135 and North of Hoppers Branch and includes 16 residential homes and the Bean Blossom Inn Restaurant. Also located in the Old Settler's Road Area is a Lutheran Church, which has a recently constructed on-site mound septic system and therefore will not be served at this time, but remains a future possibility. The Woodland Lake portion of the planning area is strictly a residential lake community containing approximately 65 existing residential homes.

Based on a survey completed by Monarch Engineering, the estimated future customers for the planning area based on undeveloped land are shown in Table 2.1. Refer to Appendix E for future development information provided by Monarch Engineering.

Table 2.1 Estimated Future Development In Planning Area		
Study Area	Residential	Business/Commercial
Bean Blossom	5	5
Old Settler's Road	4	1
Woodland Lake (*)	25	0

Notes for Table 2.1:
* - Includes 7 undeveloped lots at Woodland Lake and 18 potential customers at Fox Lake, which have not expressed and interest in being served by wastewater facilities but are anticipated to be interested when facilities are made available at Woodland Lake.

2.4 Environmental Resources Present

2.4.1 Topography

The Bean Blossom Area east of SR 135 has approximately 60 feet of fall in a southeastern direction towards Beanblossom Creek, whereas the area west of SR 135 has approximately 70 feet of fall in a southwesterly direction towards Beanblossom Creek. The majority of the residences and businesses are located along State Road 135. The Old Settler's Road area has approximately 80 feet of fall in a southeasterly direction to Hoppers Branch, which flows southwest to Beanblossom Creek. The Woodland Lake topography is rolling having approximately 40 feet of fall towards the lake. The Woodland Lake dam, located on the south side of the lake, overflows into a tributary that flows south to Beanblossom Creek. Refer to Exhibit 2.2 for a topographic map of the Bean Blossom, Old Settler's Road, and Woodland Lake Areas. The topographic map is contoured in ten feet intervals with the index contours being labeled and darker.

2.4.2 Soil Types

The U.S. Department of Agriculture Soil Conservation Service Soil Survey Report indicates that much of the soils within the area are moderately or highly difficult to provide working septic tank and absorption fields. The Cincinnati Silt Loam, Hickory Silt Loam, Pekin Silt Loam, Bean Blossom Silt Loam soils found in the area are all rated as "Severe" for installation of septic and absorption fields. The "severe" rating is defined as site or soil conditions so unfavorable as to require special design, soil reclamation or intensive maintenance needed to install a functioning septic tank and absorption field. The "Moderate" rating is defined as soil or site features are unfavorable to septic/absorption use, but can be overcome with special design and planning. A "Slight" rating is defined as soils generally favorable for use in septic/absorption fields with only minor limitations. A review of the soils map indicates that the majority of the planning area is considered "Severe" rated for septic tanks with absorption fields. Refer to Exhibit 2.3 for a soils map of the planning area and Exhibit 2.4 for a soils legend.

2.4.3 Wetlands

The wetlands that are impacted by the proposed project are the streams. Crossing of these streams will be accomplished in a manner to restore the stream to original conditions. Care must be taken to avoid erosion problems during the construction project. Because the area impacted by this project will encompass greater than five acres of disturbed land, a Rule 5 NPDES Permit will be required before construction can commence. The Contractor must obtain this permit, and an Erosion Control Plan must be submitted with the application. This Erosion Control Plan must address the reduction or elimination of erosion and siltation that could be caused by construction activities. Refer to Exhibit 2.5 for a wetlands map.

2.4.4 Historic Sites and National Landmarks

There are no known national natural landmarks in the area of proposed construction; however the Historical Maps as shown on Exhibit's 2.6 and 2.7, identify 6 locations within the planning area that could be affected. No sewer lines will be laid near these historical sites. The surrounding area adjacent to the planning area has proven to be archaeologically significant. The Glenn A. Black Archaeological Laboratory of Indiana University conducted a records search of archeological studies within the planning area. The findings of this research are included in the Environmental Report located in Appendix A, which was taken from the R.W. Armstrong Preliminary Engineering Report dated January 2001. Before a final design is completed, a further archaeological investigation must be completed with approval of the State Historic Preservation Office to assure that any impacts on archaeologically significant sites are avoided.

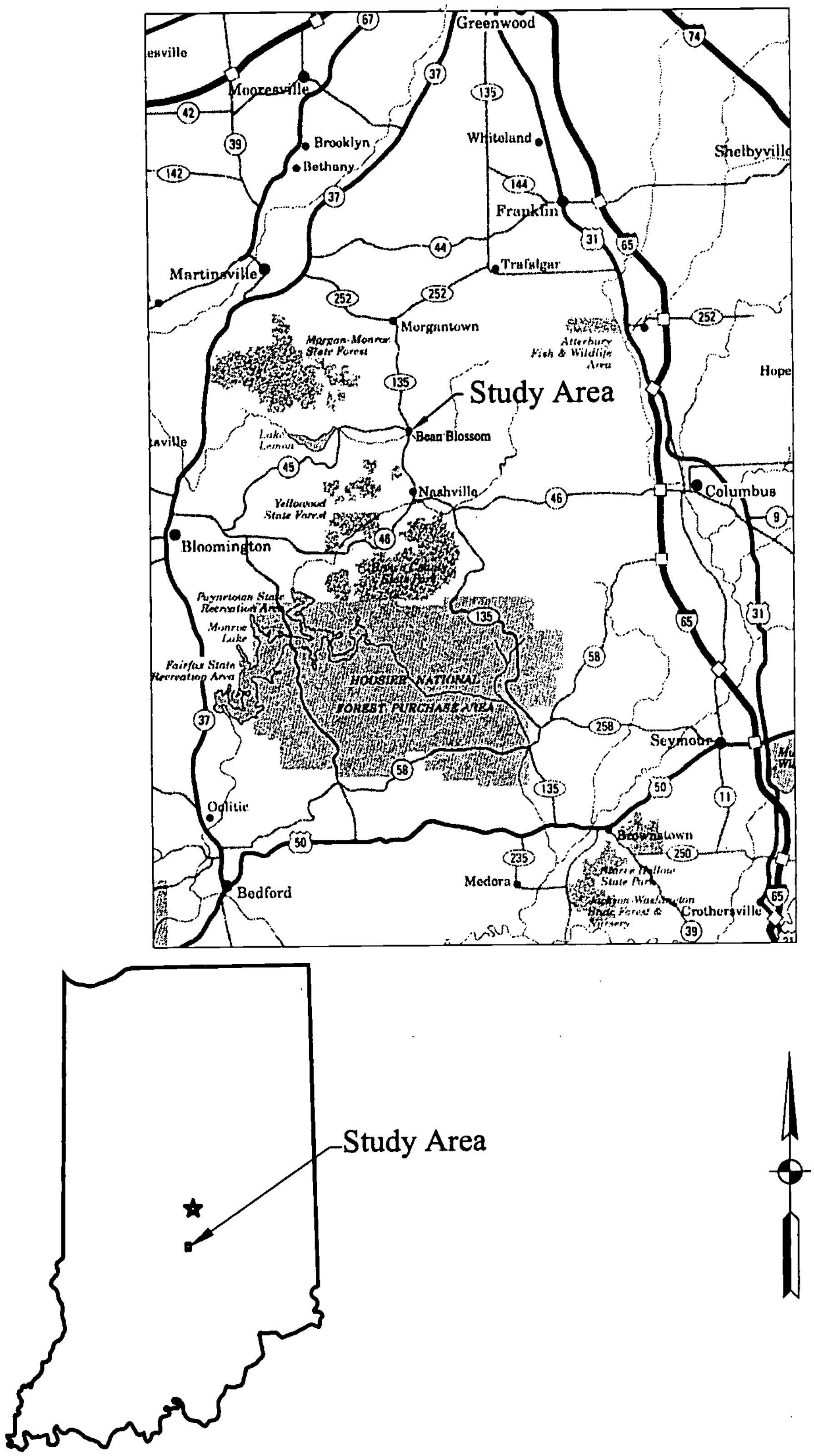
2.4.5 Endangered Species

The Bean Blossom, Old Settler's Road, and Woodland Lake Areas do not contain any critical habitats to endangered species. The proposed construction project will not negatively impact state or federal-listed endangered species or their habitat. The project will be implemented to minimize impact to non-endangered species and their habitat. Mitigation measures cited in comment letters from the Indiana Department of Natural Resources and the U.S. Fish and Wildlife Service will be implemented. Refer to Indiana Department of Natural Resources correspondence in Appendix A.

The proposed project should be considered in compliance with the Endangered Species Act of 1973 and the Fish and Wildlife Coordination Act of 1934.

2.4.6 Flood Plain

A Construction in a Floodway Permit from the Indiana Department of Natural Resources, Division of Water will be required where sewer lines, or structures are located within the Beanblossom Creek or Hoppers Branch flood plain. This permit will require that the top of all proposed structures be designed at a minimum of two feet above the 100-year flood elevation. A copy of the Flood Insurance Rate Map (FIRM) is presented on Exhibit 2.8.

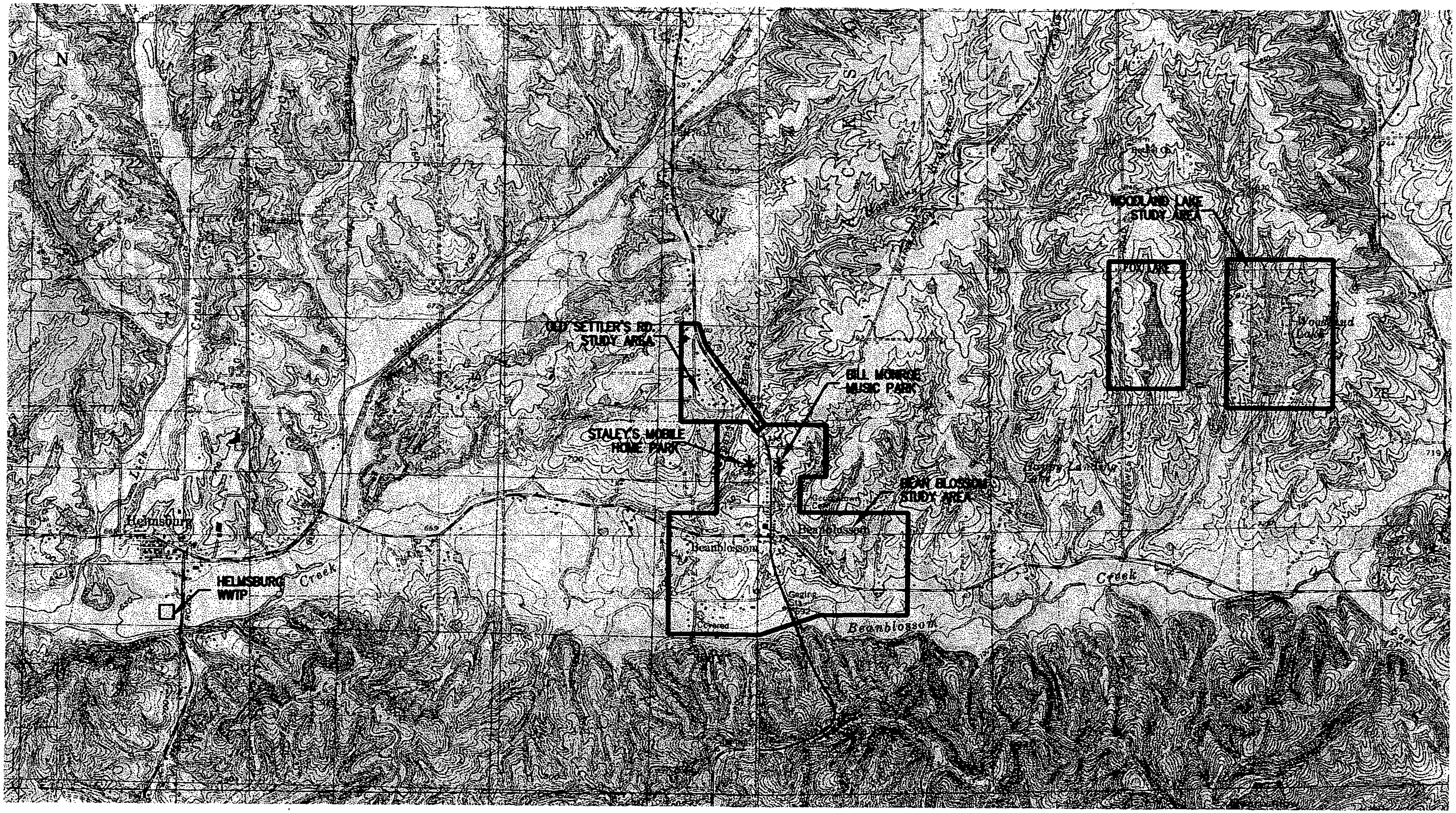


LADD ENGINEERING, INC.
LEBANON, INDIANA

Bean Blossom Wastewater

PRELIMINARY ENGINEERING REPORT

Exhibit 2.1
Location Map



2000 0 1000 2000

1 inch = 2000ft.

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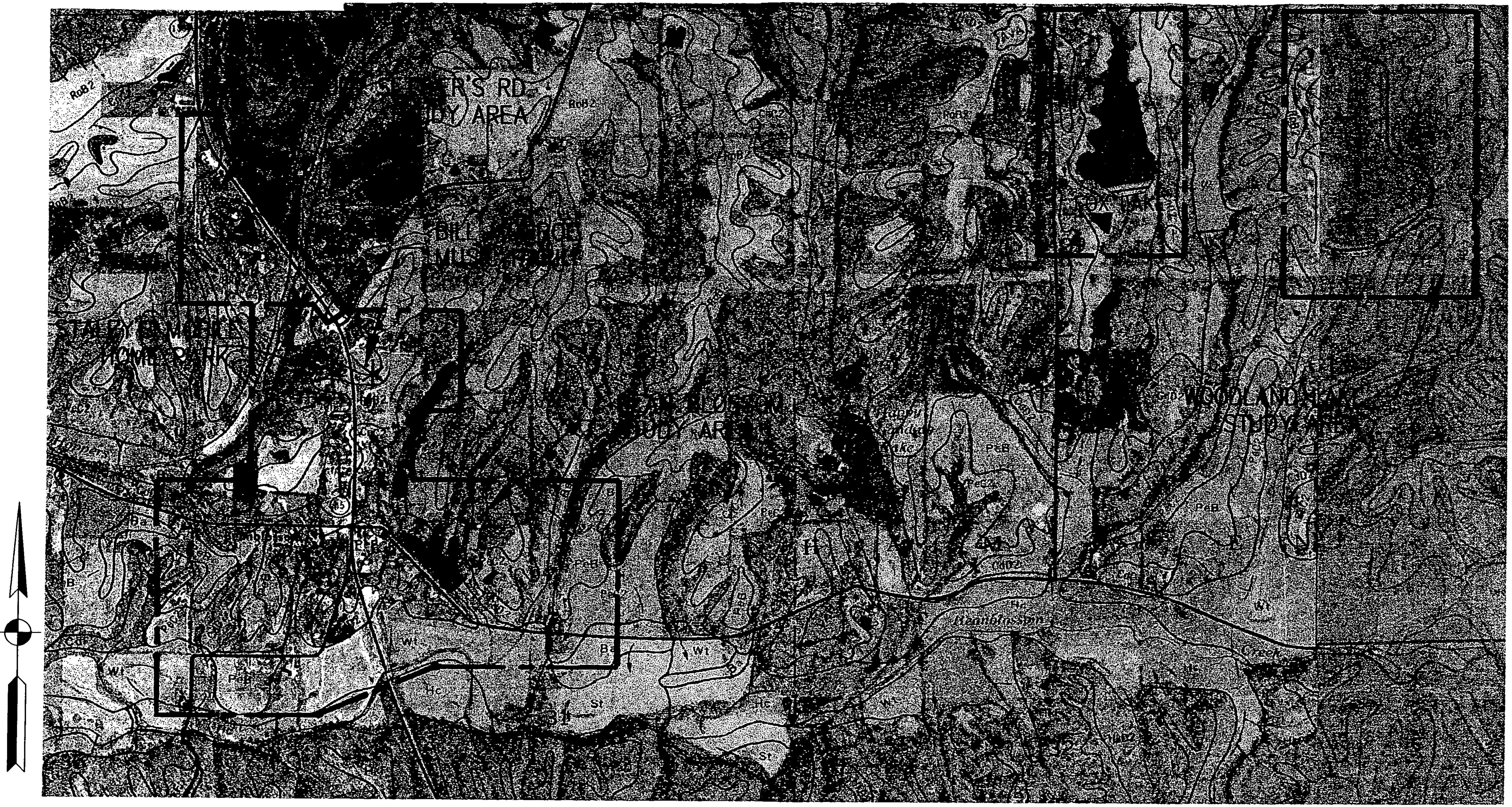
LEBANON, INDIANA

Bean Blossom Wastewater

PRELIMINARY ENGINEERING REPORT

Exhibit 2.2
PLANNING AREA & TOPOGRAPHIC MAP



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1 inch = 1000 ft.

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Bean Blossom Wastewater

PRELIMINARY ENGINEERING REPORT

Exhibit 2.3

SOILS MAP

Soils Legend

The first capital letter is the initial one of the map unit name. The lowercase letter that follows seperates map units having names that begin with the same letter, except that it does not seperate sloping or eroded phases. The second capital letter indicates the class of slope. Symbols without a slope letter are for nearly level soils or miscellaneous areas. A final number of 2 indicates that the soil is eroded and 3 that it is severely eroded.

AvA	Avonburg silt loom, 0 to 2 percent slope
Bo	Bartle silt loom, 0 to 3 percent slope
Be	Beonblossom chonnery silt loom, occosionolly flooded
BgF	Berks-Trevloc-Wellston complex, 20 to 70 percent slopes
BnD2	Bonnell loom, 12 to 20 percent slopes, eroded
BpD3	Bonnell cloy loom, 12 to 20 percent slopes, gullied
Co	Chogrin silt loom, occosionolly flooded
CdD2	Chetwynd loom 12 to 20 percent slopes, eroded
CdF	Chetwynd loom 20 to 50 percent slopes
CnC2	Cincinnotti silt loom, 6 to 12 percent slopes, eroded
CwB	Crosby silt loom, 1 to 5 percent slopes
Hc	Hoymond silt loom, frequently flooded
HkD2	Hickory silt loom, 12 to 20 percent slopes, eroded
HkF	Hickory silt loom, 20 to 70 percent slopes
MoB	Mortinsville loom, 1 to 6 percent slopes
MnC2	Miomi loom, 6 to 15 percent slopes, eroded
PeB	Perkin silt loom, 2 to 6 percent slopes
PeC2	Perkin silt loom, 6 to 12 percent slopes, eroded
Re	Rensseleor-Whitoker complex
RoB2	Rossmoyne silt loom, 2 to 6 percent slopes, eroded
Sf	Steff silt loom, frequently flooded
St	Stendol silt loom, frequently flooded
Sv	Stendol silt loom, frequently flooded, very long durotion
SwC2	Stoneheod silt loom, 6 to 10 percent slopes, eroded
SwD3	Stoneheod silt loom, 10 to 20 percent slopes, gullied
SxD2	Stoneheod-Trevloc silt looms, 10 to 20 percent slopes, eroded
Sy	Stonelick loom, grovelly substrotum, frequently flooded
TlB	Tilsit silt loom, 2 to 6 percent slopes
Ud	Udorthents, loomy
WoD	Wellston-Berks-Trevloc complex, 6 to 20 percent slopes
WeC2	Wellston-Gilpin silt looms, 6 to 20 percent slopes, eroded
Wt	Wilbur silt loom, frequently flooded

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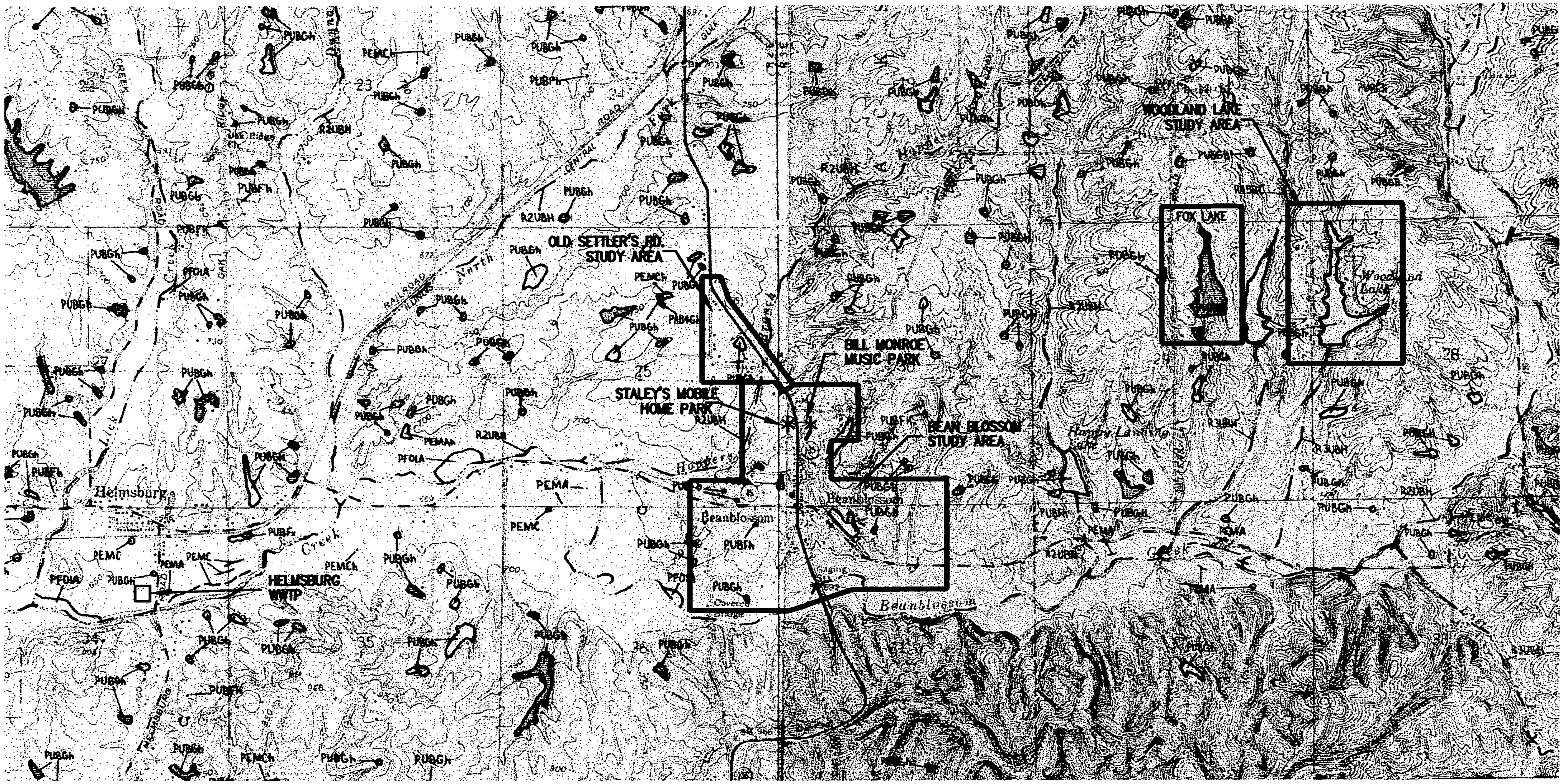
Bean Blossom
Wastewater
PRELIMINARY ENGINEERING REPORT

Exhibit 2.4
Soils Legend



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1 inch = 2000ft.

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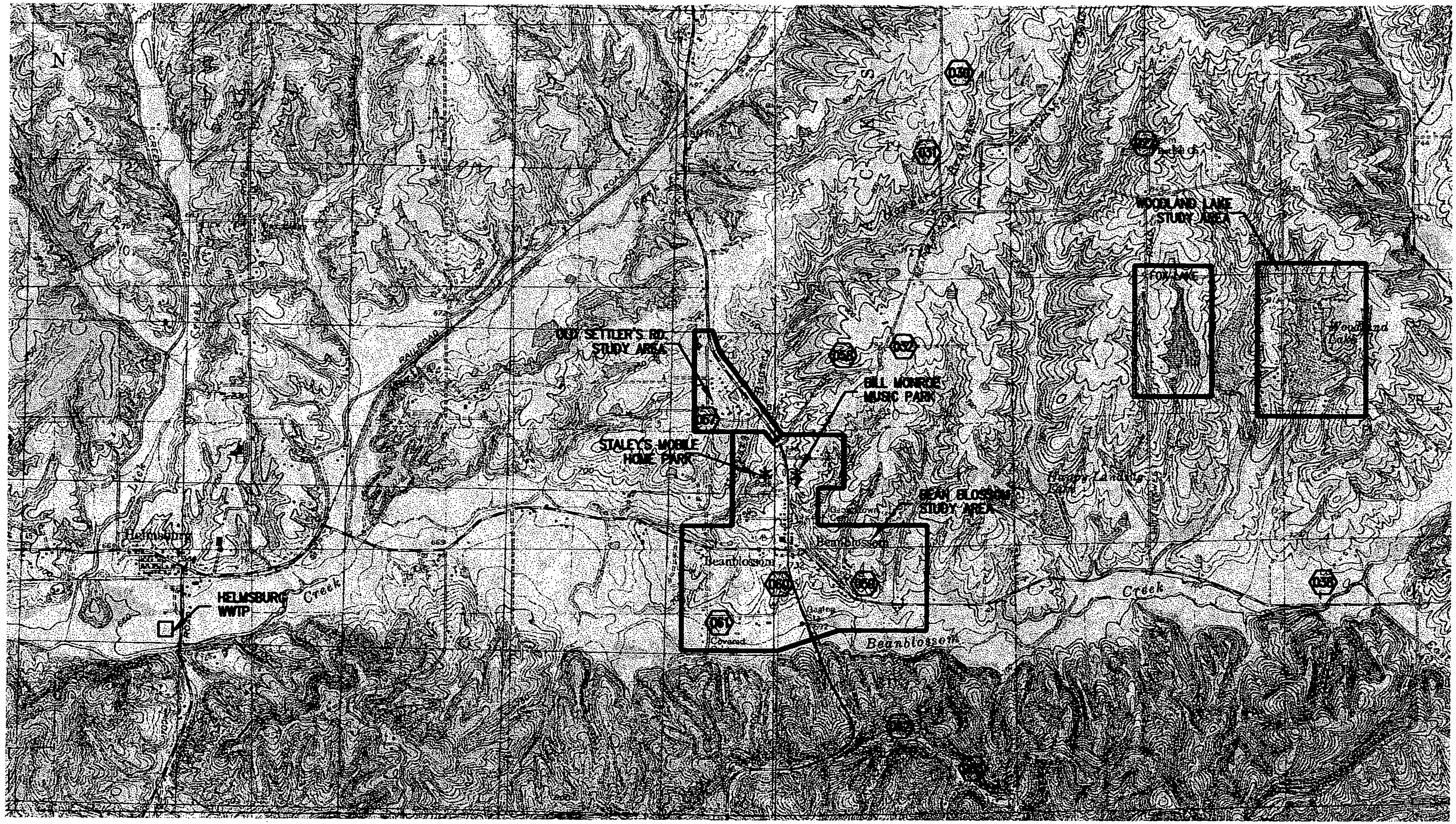
LEBANON, INDIANA

Bean Blossom Wastewater

PRELIMINARY ENGINEERING REPORT

Exhibit 2.5
WETLANDS MAP



No.	Rating	Description
022	C	Bethel Cemetery
030	C	Clarence & Oma Jane Zody Farm
031	N	Bind Farm
032	C	Hartman House
038	N	Columbus Parsley Farm
057	C	Waltman's Grove – Clupper's Grove

No.	Rating	Description
058	C	House, Bean Blossom–Spearsville Road
059	C	Brummet House
060	N	Lowell Waltman House
061	O	Bean Blossom Covered Bridge
062	C	Center House
063	C	Freeman Orchard

2000 0 1000 2000

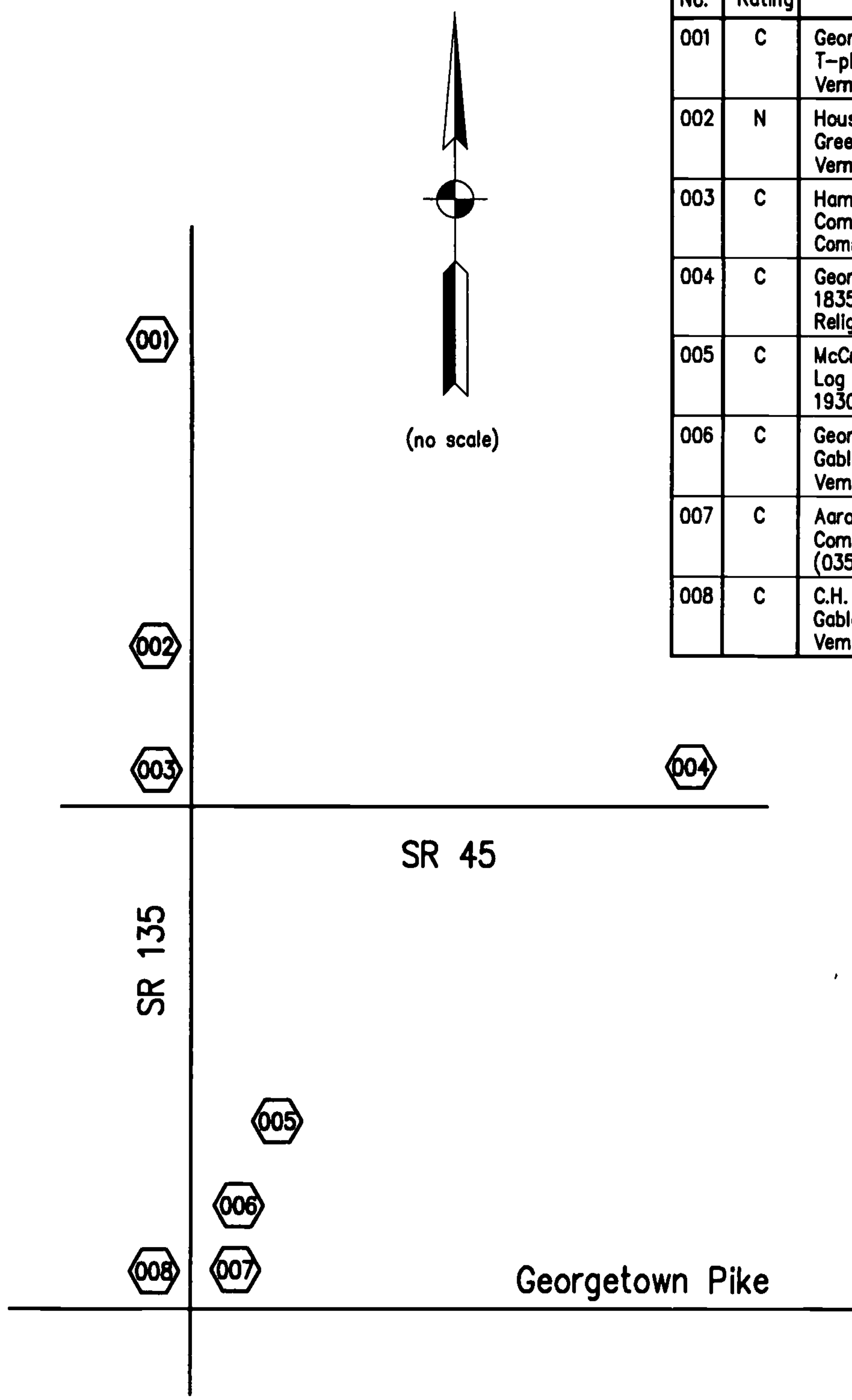
1 inch = 2000ft.

LADD ENGINEERING, INC.
LEBANON, INDIANA

Bean Blossom Wastewater

PRELIMINARY ENGINEERING REPORT

Exhibit 2.6
HISTORICAL IMPACT MAP



No.	Rating	Description
001	C	George Snyder House, SR 135; T-plan/Italianate, c.1880; Architecture Vernacular/Construction (035)
002	N	House, SR 135; Central Passage/ Greek Revival, c.1860; Architecture Vernacular/Construction (035)
003	C	Hammond Rund Grocery, SR 135; Commercial Vernacular, c.1880; Commerce, Vernacular/Construction (035)
004	C	Georgetown Cemetary, SR 135; 1835–present; Exploration/Settlement Religion (035)
005	C	McCrory–Gwin House, SR 135; Log single–pin/Rustic Revival, c.1850/ 1930; Vernacular/Construction (035)
006	C	Georgetown Funeral Parlor, SR 135; Gable–front, c.1880; Commerce Vernacular/Construction (035)
007	C	Aaron Zody Grocery Store, SR 135; Commerce, Vernacular/ Construction (035)
008	C	C.H. McDonald Grocery, SR 135; Gable–front, c.1900/c.1930; Commerce Vernacular/Construction (035)

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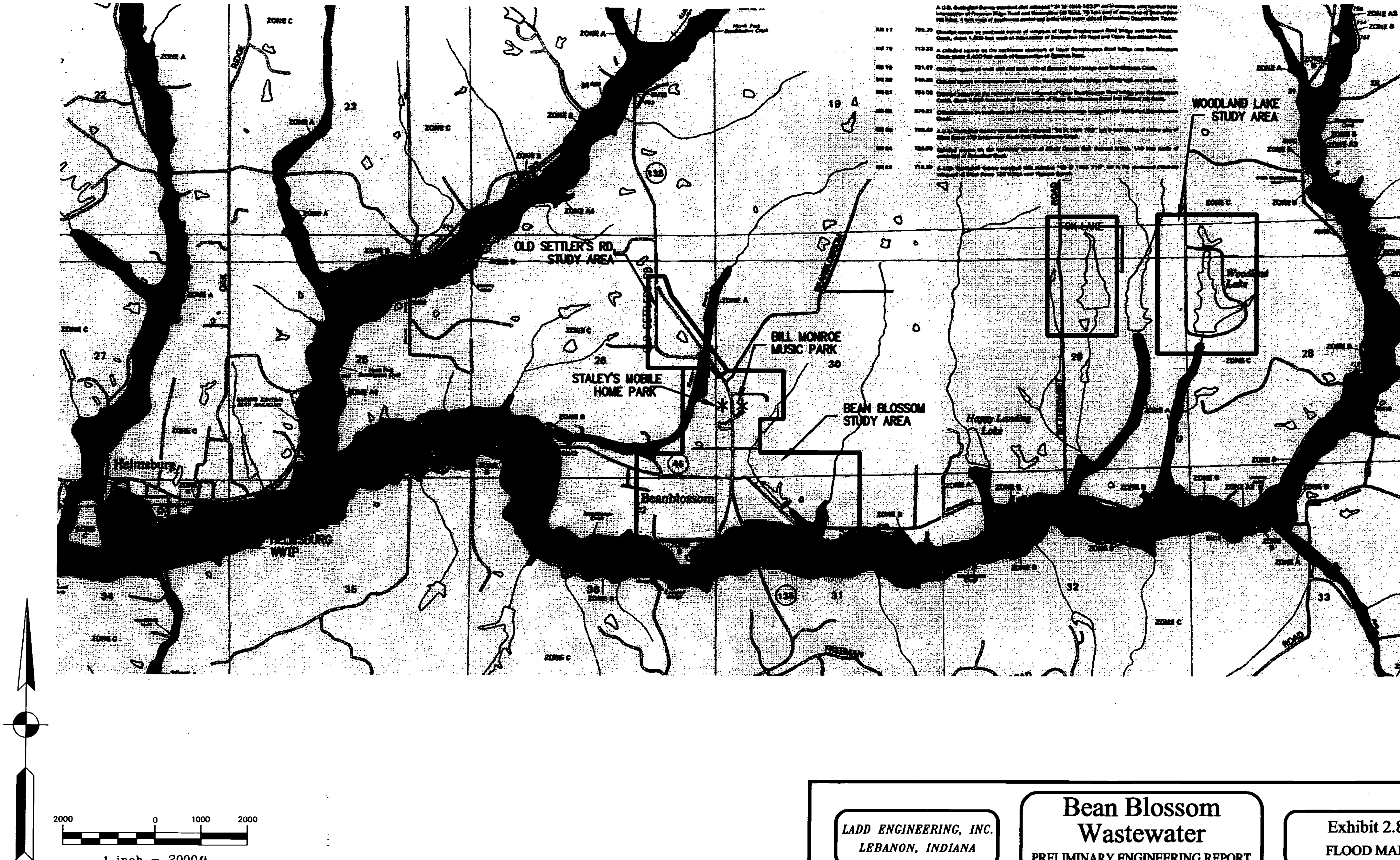
Bean Blossom
Wastewater
PRELIMINARY ENGINEERING REPORT

Exhibit 2.7
Bean Blossom
Historical Sites



LADD ENGINEERING, INC.
LEBANON, INDIANA

Bean Blossom
Wastewater
PRELIMINARY ENGINEERING REPORT

Exhibit 2.8
FLOOD MAP

CHAPTER 3 - EXISTING FACILITIES

3.0 General

This section of the report presents conditions of the existing wastewater facilities within the Bean Blossom, Old Settler's Road, and Woodland Lake areas.

3.1 Location

The Bean Blossom, Old Settler's Road, and Woodland Lake residents and businesses currently have individual onsite wastewater treatment and disposal systems located on individual properties, generally consisting of a septic tank and soil absorption disposal system.

The Bill Monroe Music Park and Campground utilizes an 850-gpd septic tank and on-site mound system for wastewater disposal from the office/museum. Besides the on-site system for the office/museum the park has three (3) holding tanks having a combined capacity of 7,500 gallons, which receive wastewater from semi-trailer type restroom facilities and three cabins. In addition there are several port-o-lets scattered throughout the park. Currently there are no sewer hook-ups for individual campground lots.

Helmsburg, an unincorporated area, which is located about 2.5 miles west of Bean Blossom, is the closest community to the planning area that has an existing sanitary sewer system and treatment facility. The Helmsburg collection system was designed to handle only those existing and future residents within the planning area boundaries of the Helmsburg Regional Sewer District. Any additional flows from outside the existing service area would have to be connected directly to the existing treatment facility.

3.2 History and Condition of Helmsburg Wastewater Facilities

The existing sanitary sewer system and treatment facilities in the community of Helmsburg consists of a low-pressure/grinder pumping system, which flows to a 25,000 gpd extended aeration packaged-type treatment system. The collection system and treatment facilities were constructed in 1995, and were funded, in part, by a Community Focus Fund Grant from the Indiana Department of Commerce, and local Brown County EDIT Funds.

Recently, IDEM issued a Warning of Noncompliance to the Helmsburg Regional Sewage District, citing NPDES permit violations at the treatment facility. The District responded by developing a plan for correcting these problems, which have since been corrected. The treatment plant has been operating within its permit limits for the last several months. Copies of the correspondence with the Helmsburg Regional Sewage District and IDEM regarding the Warning of

Noncompliance, along with a copy of an Agreed Order for the Helmsburg Wastewater Treatment Plant, are included in Appendix B.

The existing Helmsburg Wastewater Treatment Plant is a conventional extended aeration package plant consisting of a flow equalization tank, aeration tank with a diffused aeration system, clarification facilities, chlorination/dechlorination facilities, surge control facilities and a tertiary filter to provide nitrification and a good quality effluent.

The dechlorination facilities consist of a dechlorination tablet-type feeder, which feeds solid sodium dioxide tablets. The sodium dioxide is fed into the treatment stream at the effluent end of the chlorine contact tank.

Post aeration is provided in a 120-gallon chamber using air from the filter air scour blower. Post aeration occurs after the dechlorination process.

A 2,500 gallon aerated sludge holding tank is also provided as part of the package plant. Sludge is stored in this tank and then hauled for treatment at other wastewater treatment facilities. This design summary for the existing Helmsburg wastewater collection system and treatment plant, taken from the R.W. Armstrong Preliminary Engineering Report dated January 2001, is located in Appendix C.

Based on information obtained from a Helmsburg Regional Sewer District representative, the average daily flow received by the Helmsburg wastewater treatment plant is approximately 6,000 to 8,000 gpd, but has been as high as 18,000 gpd during a wet weather event.

The Helmsburg Elementary School was connected to the Helmsburg system recently, which added approximately 1,000 gpd of flow to the treatment plant.

CHAPTER 4 – NEED FOR PROJECT AND FUTURE SITUATION

4.0 General

This chapter describes the need for the project based on health, safety, system operation and maintenance and anticipated growth. The anticipated wastewater flows and waste loads are also presented in this chapter.

4.1 Wastewater Facilities Needs

The Brown County Health Department has reported numerous problems with the existing on-site septic systems within the planning area over the last 20 years. The soils within the study area are not conducive to the proper operation of on-site soil absorption septic systems. Problems range from too small of lot size to soil impermeability or permeability and hilly terrain, which limit the space available for an on-site septic system. Pollution of surface water and ground water resources has been a major health issue and concern throughout the study area. Nearly all of the septic systems in the study area have experienced some problems, many have experienced complete failure. Recently there has been some condemnation of households in the Woodland Lake area due to inoperable on-site septic systems. Soil absorption fields are clogged, causing holding tanks to fill to their capacity, overflows, and the discharge of untreated wastewater directly onto the ground.

The Bean Blossom business area has been in a state of decline since most all of the businesses do not have the necessary land available to either upgrade or even repair their septic systems. The Woodland Lake Area has many homes with grossly undersized septic systems on lots with no more space available for needed absorption field expansion, replacement, or repairs.

The Brown County Health Department has cited several homeowners within the planning area for septic tank and absorption field system failures. That office has denied issuing septic permits to several potential businesses and residences because of inadequate space, poor soil structure or seasonal high ground water tables that cannot be successfully lowered for a septic system. In some cases, expensive mound systems have been the only type of on-site disposal system that could be approved. Because many septic tank and absorption field systems are more than 50 years old, future additional failures are anticipated.

The Brown County Health Department has also conducted stream analysis testing at several locations throughout the Bean Blossom area. These tests revealed E coli counts of 2,400 parts per million at a location downstream of the 31-lot mobile home park, and 690 parts per million at a roadside ditch located on the north side of Covered Bridge Road.

The Bill Monroe Music Park and Campground is referred to as the "Mecca of Bluegrass Music" and is host several major Bluegrass Music events during the summer. The music park and campground owner expends considerable amounts of money for holding tank pump-out and disposal of their wastewater, and for port-a-let rental. The music park and campground owner and maintenance personnel have expressed a need for a permanent solution to their wastewater management dilemma. They have recently hired a consultant to investigate various alternatives for an on-site wastewater treatment system. A representative from the music park and campground have expressed a desire to provide sewer hook ups to approximately 35 campsites located at the front of the facilities should a permanent wastewater system be available. Refer to Appendix D for information taken from the Monarch Engineering Preliminary Engineering Report to further document the project need.

4.2 Anticipated Wastewater Flows and Waste Loads

4.2.0 Introduction

The wastewater flows and waste loads must be estimated for sizing the wastewater system components. For the purpose of project phasing effects on the costs for a wastewater system, the flows and waste loads for the Bean Blossom, Old Settler's Road and Woodland Lake Areas have been analyzed and estimated separately. Previous studies completed by RW Armstrong & Associates, Inc. and Monarch Engineering, Inc. estimated sewage flows and waste loads by utilizing the existing Brown County Water Company and Town of Nashville Water Utility water usage records and then adding a 20% increase assuming that the water usage will increase when adequate wastewater facilities are provided. However, neither of these referenced studies considered an allowable infiltration rate, which is commonly added for gravity sewer piping and is based on the length and diameter of the gravity sewer collection piping system. Since the Monarch Engineering study is the most recent, the water usage records shown in their report will be utilized and are provided in Appendix E. In reviewing the water usage records for residential users (equivalent dwelling unit – EDU), the usage varies from 0 to 256 gpd. Since the water usage varies considerably for the EDU's being served, people move in and out of homes periodically who may have different water usage habits, water usage will probably increase when wastewater facilities are provided by an unknown percentage, and some EDU's have private wells, the wastewater flows for each area for sizing wastewater system components will be determined by comparing the flows utilizing Table 11-1 in 327 IAC 3-6-11 (utilized by the IDEM) and the water usage, including allowable infiltration. The actual water usage will be utilized to determine the number of EDU's for business customers and for allocating rates and charges for users of the system, as basing bills for wastewater on the actual water used is the most equitable method.

The following influent wastewater concentrations will be utilized in determining the estimated waste loads:

BOD5 – 250 mg/l
TSS – 250 mg/l
NH3 – 30 mg/l

4.2.1 Bean Blossom Area

There are currently approximately 44 residential and 20 commercial/business users located within the Bean Blossom Area. The estimated water usage and wastewater flows for the Bean Blossom Area are shown in Table 4.1.

Table 4.1
Estimated Wastewater Flows – Bean Blossom Area

Service Connection Description	Flow Calc. Factor per Table 11-1 (gpd)	Total Est. Flow from Table 11-1 (gpd)	Equiv. No. of EDU's (Total WW Flow/310 gpd)	Avg. Water Usage (gpd)	Average Water Usage Increased By 20% (gpd)	Equivalent No. of EDU's (Avg. Water Use/113 gpd
44 Residential	310	13,640	44	4,972 (*1)	5,966	44
Staley's Mobile Home Park 31 MH's 1 Residential	200/MH 310/EDU	6,510	21	3,967	4,760	35
Bill Monroe Facility 35 c'ground sites w/sewer, 315w/o sewer, museum/office 4 employees & 3 cabins	100/site 50/site 20/empl. 100/cabin	19,630	63	3,400	4,080	30
Mother's Cupboard 50 meals	35	1,750	6	67	80	1
R'Blossom Reality 3 employees	20	60	1	113 (*2)	136	1
Candle Cupboard Est. 1 emp.	20	20	1	113 (*2)	136	1
Trustee's Offc/CAP 3 emp.	20	60	1	113 (*2)	136	1
Health Clinic - 1 Doctor 1 Nurse	75 75	150	1	113 (*2)	136	1
Rigetop Rustic Est. 1 emp.	20	20	1	113 (*2)	136	1
Beauty Salon Est. 10 customers	10	100	1	113 (*2)	136	1
Covered Bridge Inn 8 rooms	100	800	3	113 (*2)	136	1
Dog Grooming 1 emp. 10 animals	20 10	120	1	113 (*2)	136	1
Vet Clinic 1 Vet. 1 Asst. 2 Support 30 cages 1 Surgery Rm.	75 75 20 5 50	225	1	113 (*2)	136	1
Fire Dept. Est. 10 Firemen	35	350	1	48	58	1
Brown County Water Co. Est. 3 emp.	20	60	1	113 (*2)	136	1
Gun Shop 1 employee	20	20	1	113 (*2)	136	1
B'Blossom Mennonite Church - 90 seats	4	360	1	113 (*2)	136	1
Baskets By Barbara Est. 1 employee	20	20	1	113 (*2)	136	1
McDonalds Shopworth	20	20	1	113 (*2)	136	1
Grocery Store Est. 2 employees	20	40	1	113 (*2)	136	1
St. David's Episcopal Church - 60 seats	5	300	1	113 (*2)	136	1
Total Current		44,255	153	14,262	17,120	127
5 Residential	310	1,550	5	563	676	5
5 Com/Bus. Est. 2 emp.	20	200	5	200	240	5
Total Current + Future		**46,005**	**163**	**15,025**	**18,036**	**137**

Notes for Table 4.1:
*1 – 113 gpd/EDU
*2 – 113 gpd/small business used if the actual water usage unknown
*3 – New office facility
*4 – 5 residential lots plus 5 commercial lots per Monarch Engineering, report (Refer to Appendix F)

The total future estimated water usage, including a 20% increase, is 18,036 gpd. An allowable infiltration volume estimated for a gravity sewer collection system is 5,000 gpd, which results in a total future flow of 23,036 (18,036 + 5,000) gpd. The allowable infiltration volume estimated for a pressure or vacuum sewer collection system is 1,100 gpd, which results in a total future flow of 19,136 (18,036 + 1,100) gpd. For the reasons previously stated in section 4.2.0, it is recommended that a wastewater flow of 25,000 gpd be utilized for sizing system components in the Bean Blossom Area.

The projected waste loads are calculated as follows:

BOD5 – 0.025 mgd x 250 mg/l x 8.34 lbs/gal. = 52.1 lbs/day
TSS – 0.025 mgd x 250 mg/l x 8.34 lbs/gal. = 52.1 lbs/day
NH_3 - 0.025 mgd x 30 mg/l x 8.34 lbs/gal. = 6.3 lbs/day

4.2.2 Old Settler's Road Area

There are currently approximately 15 residential users and the Bean Blossom Inn Restaurant located within the Old Settler's Area. The estimated water usage and wastewater flows for the Old Settler's Area are shown in Table 4.2.

Table 4.2
Estimated Wastewater Flows – Old Settler's Road Area

Service Connection Description	Flow Calc. Factor per Table 11-1 (gpd)	Total Est. Flow from Table 11-1 (gpd)	Equiv. No. of EDU's (Total WW Flow/310 gpd)	Avg. Water Usage (gpd)	Average Water Usage Increased By 20% (gpd)	Equivalent No. of EDU's (Avg. Water Use/113 gpd
15 Residential	310	4,650	15	2,265 (*1)	2,718	15
Bean Blossom Inn Rest. 50 seats	35	1,750	6	39	47	1
Total Current		3,400	21	2,304	2,765	16
4 Residential	310	1,240	4	604	725	4
Lutheran Church 80 seats	4	320	1	124	149	1
Total Current + Future		**4,960**	**26**	**3,032**	**3,639**	**21**

Notes for Table 4.2:
*1 – 151 gpd/EDU
*2 – The Lutheran Church and four (4) additional users are anticipated in the future (Refer to Appendix F)

The total future estimated water usage, including a 20% increase, is 3,639 gpd. An allowable infiltration volume estimated for a gravity sewer collection system is 1,100 gpd, which results in a total future flow of 4,739 (3,639 + 1,100) gpd. The allowable infiltration volume estimated for a pressure sewer collection system is 120 gpd, which results in a total future flow of 3,759 (3,639 + 120) gpd. For the reasons previously stated, in section 4.2.0, it is recommended that a wastewater flow of 5,000 gpd be utilized for sizing system components in the Old Settler's Road Area.

The projected waste loads are calculated as follows:

BOD5 – 0.005 mgd x 250 mg/l x 8.34 lbs/gal. = 10.4 lbs/day
TSS – 0.005 mgd x 250 mg/l x 8.34 lbs/gal. = 10.4 lbs/day
NH3 - 0.005 mgd x 30 mg/l x 8.34 lbs/gal. = 1.3 lbs/day

4.2.3 Woodland Lake Area

There are currently approximately 65 residential users located within the Woodland Lake Area. There is another lake located just west of Woodland Lake by the name of Fox Lake, which has approximately 15 residential homes that will be considered in the future estimated wastewater flows. The estimated water usage and wastewater flows for the Woodland Lake are shown in Table 4.3.

Table 4.3
Estimated Wastewater Flows – Woodland Lake Area & Fox Lake

Service Connection Description	Flow Calc. Factor per Table 11-1 (gpd)	Total Est. Flow from Table 11-1 (gpd)	Equiv. No. of EDU's (Total WW Flow/310 gpd)	Avg. Water Usage (gpd)	Average Water Usage Increased By 20% (gpd)	Equivalent No. of EDU's (Avg. Water Use/113 gpd
65 Residential	310	20,150	65	7,345 (*1)	8,814	65
Total Current		20,150	65	7,345	8,814	65
30 Residential	310	9,300	30	3,390	4,068	30
Total Current + Future		**29,450**	**95**	**10,735**	**12,882**	**95**

Notes for Table 4.3:
*1 – 113 gpd/EDU
*2 – Thirty (30) additional users are anticipated in the future (Refer to Appendix F)

The total future estimated water usage, including a 20% increase, is 12,882 gpd. The allowable infiltration volume estimated for a pressure sewer collection system is 1,500 gpd, which results in a total future flow of 14,382 (12,882 + 1,500) gpd. For the reasons previously stated, in section 4.2.0, it is recommended that a wastewater flow of 25,000 gpd be utilized for sizing system components in the Woodland Lake Area.

The projected waste loads are calculated as follows:

BOD5 – 0.025 mgd x 250 mg/l x 8.34 lbs/gal. = 52.1 lbs/day
TSS – 0.025 mgd x 250 mg/l x 8.34 lbs/gal. = 52.1 lbs/day
NH3 - 0.025 mgd x 30 mg/l x 8.34 lbs/gal. = 6.3 lbs/day

4.2.4 Summary

A summary of future estimated wastewater flows and waste loads for each study area are shown in Table 4.4.

Table 4.4
Summary of Future Flows and Waste Loads By Study Area

Area	Bean Blossom	Old Settler's Road	Woodland Lake	Totals
Flows (mgd)	0.025	0.005	0.025	0.055
BOD (lbs/day)	52.1	10.4	52.1	114.6
TSS (lbs/day)	52.1	10.4	52.1	114.6
NH3 (lbs/day)	6.3	1.3	6.3	13.9

CHAPTER 5 - ALTERNATIVES CONSIDERED

5.0 Introduction

This chapter of the report provides a description of the reasonable alternatives that were considered in providing solutions to meet the needs discussed in Chapter 4.

A cost-effective-analysis was prepared for each of the alternatives listed in this chapter of the report. The cost-effective-analysis takes into consideration the initial capital (project) costs and annual operation, maintenance and replacement cost. All of the estimated costs were brought back into today's costs for comparison purposes. A current Federal discount interest rate of 2% was utilized for the cost-effective-analysis.

The estimated construction costs for the recommendations are presented in this Chapter. These estimated construction costs are based on manufacturer's quotations, estimating manuals, recent bid construction prices and estimating experience and are based on today's costs. No inflation allowance has been made should the recommended, or certain portions of the recommended, work be undertaken in the future.

Besides the estimated construction costs there are other costs associated with undertaking a project. These other costs are identified as non-construction costs, which are explained in the following sections of this chapter.

5.1 Non-Construction Costs

5.1.0 General

Non-construction costs are those costs that are associated with preparing a project for construction, monitoring the project during construction, and follow-up after construction is completed. Non-construction costs generally include engineering, legal and administrative, land acquisition and easements, grant administration, sometimes direct equipment purchases, accounting services, start-up costs and contingencies. As a whole, non-construction costs can range between 20% and 40% of the total project cost depending the method utilized to finance the project and size of the project. For purposes of evaluating wastewater alternatives, an estimated non-construction cost of 25% of the construction cost will be utilized. A detailed itemization of the estimated non-construction costs will be provided for the proposed project.

5.1.1 Engineering

Engineering generally includes the associated costs for preparing detailed design plans and specifications, assisting with project financing, field exploration surveys, preparing permit applications, easement preparation, construction shop drawing review, construction observation and post construction follow-up activities.

5.1.2 Legal and Administrative

Legal services are often required to assist with the preparation of bond and/or rate ordinances that may be required. Some of the funding agencies for projects of this type require additional legal documents. Administrative costs include such things as permit fees, bid advertising fees, newspaper legal advertising, etc. A bond council may need to be retained depending on the method utilized to fund the project.

5.1.3 Grant Administration

A certified Grant Administrator is required for projects that are partially funded by the Indiana Department of Commerce Community Focus Fund. The Grant Administrator is generally responsible for handling the forms and paperwork associated with this funding program, reviewing payrolls during construction, drawing-down funds and performs several other miscellaneous duties.

5.1.4 Land Acquisition

Land acquisition is commonly referred to as the process of obtaining needed site property and easements for pipelines, lift stations and the wastewater treatment plant.

5.1.5 Start-up Costs

Start-up costs are those costs generally associated with operator training, gasoline or diesel fuel for filling a new underground generator tank, etc. There are no start-up costs anticipated for the recommended improvements.

5.1.6 Contingencies

Budgeted contingency money is used to pay for unexpected, unforeseen, or unanticipated costs associated with the project. Contingency money may be needed for construction or non-construction items. Contingencies are typically based on a percentage of the project cost and that percentage is determined by the project complexity. During the study and design phases of a project contingencies are usually estimated at 10% of the project costs and after construction bids are received, and the costs are better known, then the contingency amount is reduced to 3% to 5%.

5.2 Wastewater Collection System

5.2.0 General

The following alternatives were considered for wastewater collection in the Bean Blossom, Old Settler's Road and Woodland Lake Areas:

- No Action
- Conventional Gravity Sewer System
- Low Pressure Sewer System
- Vacuum Sewer System

<u>No Action:</u>
The current wastewater system for the study area consists of septic tanks for treatment and on-site soil absorption for disposal. There are port-o-lets located on some of the properties within the study area. Many of the existing on-site septic systems are more than 50 years old and are experiencing frequent failures. Adequate repairs to these existing systems to comply with County and State (410 IAC 6-8.2) requirements cannot be made due to small lot sizes and poor soil conditions. The no action alternative would continue to create adverse environmental impacts to the watershed and to Beanblossom Creek, which is a tributary to Lake Lemon located approximately 6 miles downstream from Bean Blossom. Inadequate wastewater collection and disposal facilities presently limit economic growth of the study area. Copies of letters from local residents and businesses, taken from the R.W. Armstrong Preliminary Engineering Report dated January 2001, provided in Appendix F, describe some of the present septic treatment/disposal problems. The No Action Alternative would provide the study areas with neither short nor long term benefits.

<u>Conventional Gravity Sewer System:</u>
Conventional gravity sewer systems have been in use for years as the usual method of conveying sanitary sewage. The operation and maintenance costs are low but the construction costs can be high. With a conventional gravity system, sewers are laid to a slope to maintain scouring velocity in the pipe. Too low of a velocity will result in sedimentation in the pipe with subsequent degradation in sewer performance. The major disadvantage of a conventional gravity sewer is the need, at times, for excessively deep trenches to maintain slope on a sewer or to avoid a natural barrier such as a creek or hill, at which time a lift station may become necessary. Lift stations are used to pump the flow up to a higher level, either to a treatment plant or to another portion of the collection system, through a conveyance line (force main) for further processing. Refer to Exhibit 5.1 for a layout of the gravity sewer system alternative for the Bean Blossom and "Old Settler's Road Areas. A conventional gravity sewer system was not considered

practical for the Woodland Lake Area due to its rolling topography, which would require several lift stations and multiple pumping of the wastewater. There are a few existing buildings that either sit below the street level, or that have significant topography changes between the building and proposed sewer main that will most likely require grinder pump stations, which have been considered in the conventional gravity sewer system alternative cost tables. Adjustments to the final collection system layouts will be required during the design phase when more accurate survey information is obtained. For purposes of this study there have been a few grinder pump stations proposed for a few buildings to eliminate the need for deep gravity sewers and additional lift stations in the conventional gravity sewer system alternatives.

Low Pressure Sewer System:

Low-pressure sewer systems consist of low-pressure pipes that generally are buried below the frost line following the land contours and grinder pump stations. The grinder pump station consists of a wet well (usually 2-feet diameter and 6-feet deep) which includes the pump and level controls. Each grinder pump station has its own control panel, which is either mounted, at the pump unit or on the building owners' structure. There are some major disadvantages with the pressure systems including higher maintenance cost with each building owner having a grinder pump station and the possibility of grease build-up and pump clogging. The major advantage of the pressure system is that the pipes are buried shallower and are smaller sized than conventional gravity sewers and therefore can sometimes result in a lower construction cost. The pressure sewers can be directional bored, or auger bored in many instances, which minimizes surface disruptions and reduces the environmental impacts. Refer to Exhibit's 5.2 for a layout of the pressure sewer system alternative for the Bean Blossom and Old Settler's Road Areas and Exhibit 5.3 for the Woodland Lake Area.

Vacuum Sewer System:

Vacuum sewer systems consist of low-pressure pipes that generally are buried beneath the frost line at a slope with periodic step-ups to avoid deep installation. The wastewater flows from the building by gravity to a vacuum pit. A vacuum pit can serve each building or a few buildings located close together can be clustered to one vacuum pit. The vacuum pit has an interface valve that automatically opens when a certain volume of sewage is collected in the vacuum pit. A central collection system station generates vacuum, which sucks the sewage from the vacuum pit when the interface valve opens. The advantage of a vacuum system is that pipe sizes are kept to a minimum; usually 4 to 8-inch and major spills of sewage are impossible. The disadvantage of the vacuum system is that the collector station is very expensive unless the cost can be shared amongst several users.

Based on input received from a representative of AIRVAC, a vacuum sewer system company, a vacuum system was determined to be feasible for the Bean Blossom Area but was not for the Old Settler's Road Area and Woodland Lake

Area. Refer to Appendix G for correspondence from AIRVAC. Refer to Exhibit 5.4 for a layout of the vacuum sewer system alternative for the Bean Blossom Area.

A listing of the advantages and disadvantages of each collection system considered are listed in Table 5.1.

Table 5.1
Collection System Types – Advantages/Disadvantages

Collection System	Advantages	Disadvantages
Gravity	• Widely used • Simple • Reliable	• Terrain dependant • Large excavations • More construction related environmental impacts
Small Diameter Pressure	• Not terrain dependant • Solids ground up • Less excavation and environmental impacts	• Some policing of what is conveyed to the pumping structure • Higher maintenance
Vacuum	• Not totally terrain dependant lessening environmental impacts • Solids vacuumed • Less excavation • 1 pit for every 2 homes possible in certain instances	• Unable to serve all study areas • Solids treatment needed • Higher maintenance

The small diameter pressure and vacuum collection systems offer the greatest flexibility because they can overcome hilly terrain, such as that found in most of the study areas. In addition, a smaller quantity of excavation is required for these types of systems lessening negative environmental impacts. With the recent advancement and increased popularity of the directional drilling (boring) method of utility pipeline installation, pressure sewers could be installed in the study area with minimized disturbance to the public. A detailed cost estimate for each of the alternatives considered for each study area are in the following section of the report.

5.2.1 Bean Blossom Area

The construction cost estimates for the conventional gravity, low-pressure sewer and vacuum sewer system alternatives are shown in Table's 5.2, 5.3 and 5.4 respectively.

Table 5.2 Estimated Construction Cost for Conventional Gravity – Bean Blossom Area					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Amount**
1	8" Gravity Sewer	10,170	LF	$28	$284,760
2	6" Force Main	1,400	LF	$12	$16,800
3	3" Force Main	950	LF	$9	$8,550
4	2" Force Main	2,500	LF	$7	$17,500
5	1-1/2" Pressure Sewer	1,250	LF	$6	$7,500
6	6" Laterals (*1)	6,800	LF	$18	$122,400
7	8" x 6" Wyes	55	EA	$65	$3,575
8	Simplex Grinder Pump Stations	7	EA	$6,000	$42,000
9	Pressure Sewer Valve Assemblies	7	EA	$400	$2,800
10	4' Diameter Manholes	37	EA	$2,000	$74,000
11	Force Main Air Release Valves	5	EA	$2,100	$10,500
12	Compacted Granular Backfill	1,500	LF	$23	$34,500
13	Pavement Replacement	1,100	LF	$24	$26,400
14	Main Lift Station	1	LS	$80,000	$80,000
15	Bill Monroe C'Ground/Festival Park Grinder Pump Lift Station	1	LS	$50,000	$50,000
16	Staley's Mobile Home Park Grinder Pump Lift Station	1	LS	$50,000	$50,000
17	SR 45 W. Grinder Pump Lift Station	1	LS	$45,000	$45,000
18	Covered Bridge Road Grinder Pump Lift Station	1	LS	$45,000	$45,000
19	3" Force Main, Augured Bores	50	LF	$25	$1,250
20	2" Force Main, Augured Bores	300	LF	$20	$6,000
21	8" Gravity Sewer Stream Crossing	100	LF	$65	$6,500
22	Easements	3,500	LF	$2	$7,000
23	Miscellaneous	1	LS	$94,200	$94,200
24	Mobilization, Bond & Insurance	1	LS	$51,800	$51,800
Total					**$1,088,035**

Table 5.3 Estimated Construction Cost for Pressure Sewers – Bean Blossom Area					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Amount**
1	6" Pressure Sewer	4,400	LF	$12	$52,800
2	4" Pressure Sewer	900	LF	$10	$9,000
3	3" Pressure Sewer	3,950	LF	$9	$35,550
4	2-1/2" Pressure Sewer	2000	LF	$8	$16,000
5	2" Pressure Sewer	3,750	LF	$7	$26,250
6	1-1/2" Pressure Sewer	6,800	LF	$6	$40,800
7	2" Force Main	1,000	LF	$7	$7,000
8	Simplex Grinder Pump Stations (*2)	62	EA	$5,000	$310,000
9	Pressure Sewer Valve Assemblies	62	EA	$400	$24,800
10	Pressure Sewer/Force Main Air Release Valves	8	EA	$2,100	$16,800
11	Line Flushing Valve Pits	22	EA	$1,700	$37,400
12	Compacted Granular Backfill	425	LF	$20	$8,500
13	Pavement Replacement	375	LF	$22	$8,250
14	Bill Monroe C'Ground/Festival Park Grinder Pump Lift Station	1	LS	$50,000	$50,000
15	Staley's Mobile Home Park Grinder Pump Lift Station	1	LS	$50,000	$50,000
16	6" Pressure Sewer, Augured Bores	100	LF	$45	$4,500
17	4" Pressure Sewer, Augured Bores	100	LF	$30	$3,000
18	2" Pressure Sewer, Augured Bores	200	LF	$20	$4,000
19	1-1/2" Pressure Sewer, Augured Bores	200	LF	$20	$4,000
20	Spare Parts	1	LS	$5,000	$5,000
21	Easements	2,500	LF	$2	$5,000
22	Miscellaneous	1	LS	$71,860	$71,860
23	Mobilization, Bond & Insurance	1	LS	$39,520	$39,520
Total					**$830,030**

Table 5.4 Estimated Construction Cost for Vacuum Sewers – Bean Blossom Area					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Amount**
1	8" PVC Sewer	5,500	LF	$25	$137,500
2	6" PVC Sewer	6,700	LF	$20	$134,000
3	4" PVC Sewer	3,300	LF	$18	$59,400
4	2" Force Main	650	LF	$7	$4,550
5	4" PVC Sewer Laterals (*1)	6,800	LF	$18	$122,400
6	8" Division Valves	4	EA	$1,200	$4,800
7	6" Division Valves	7	EA	$1,000	$7,000
8	4" Division Valves	5	EA	$900	$4,500
9	Airvac Valve Pits (*3)	45	EA	$3,800	$171,000
10	Force Main Air Release Valves	1	EA	$2,100	$2,100
11	Dual Buffer Tanks	3	EA	$6,000	$18,000
12	Compacted Granular Backfill	1,500	LF	$22	$33,000
13	Pavement Replacement	1,100	LF	$23	$25,300
14	Staley's Mobile Home Park Grinder Pump Lift Station	1	LS	$50,000	$50,000
15	Highway Jack & Bores	150	LF	$150	$22,500
16	8" PVC Sewer, Augured Bores	200	LF	$35	$7,000
17	6" PVC Sewer, Augured Bores	300	LF	$33	$9,900
18	4" PVC Sewer, Augured Bores	300	LF	$30	$9,000
19	2" Force Main, Augured Bores	100	LF	$20	$2,000
20	Special Tools	1	EA	$3,000	$3,000
21	Spare Parts	1	LS	$7,000	$7,000
22	Airvac Field Rep.	14	WK	$1,500	$21,000
23	Portable Vacuum Pump	1	EA	$16,500	$16,500
24	Vacuum Collection System Station	1	LS	$275,000	$275,000
25	Easements	3,500	LF	$2	$7,000
26	Miscellaneous	1	LS	$115,340	$115,340
27	Mobilization, Bond & Insurance	1	LS	$63,440	$63,440
Total					**$1,332,230**

Notes for Table's 5.2, 5.3 and 5.4:
*1 – 6" lateral quantity includes extending pipe to near the building to be served for purposes of comparing to the low-pressure sewer alternative, which includes extending the lateral to near the building where it is assumed that the existing septic tank is located. If it is determined that gravity is the selected alternative in this chapter then the lateral quantity will be reduced in the project cost estimate, provided later in this report, to extend only from the mainline sewer to the right-of-way, or edge of easement line. The building owner would be responsible for extending the lateral from the right-of-way line to the building.
*2 – The potential for clustering buildings into one simplex grinder pump station may be possible but cannot be determined until a detailed topographical surveying is obtained during the engineering design phase of the project. For conservative purposes this study assumes one simplex grinder pump station per building being served.
*3 – Some clustering of buildings is anticipated for the Airvac Valve Pits. The actual number of potential clustering cannot be determined without detailed topographical surveying, which will be obtained during the engineering design phase of the project.

The estimated annual operation, maintenance and replacement (O, M & R) costs for the conventional gravity, low-pressure sewer and vacuum sewer system alternatives for the Bean Blossom Area are shown in Table 5.5.

Table 5.5
Estimated O, M & R Costs for Bean Blossom Area Collection Alternatives

Item	Alternative		
	Conventional Gravity	Pressure	Vacuum
Labor	$6,000	$6,000	$6,000
Energy/Power (*)	$1,900	$1,000	$1,100
Materials and Supplies	$500	$500	$500
Repairs	$500	$500	$500
Replacement	$3,600	$8,000	$6,000
Outside Services (Cleaning, Billing, etc.)	$5,000	$2,500	$5,000
Insurance	$1,000	$1,500	$1,000
Conferences, Training & Miscellaneous	$300	$300	$300
Total	**$18,800**	**$20,300**	**$20,400**

Notes for Table 5.5:
* - Includes the estimated electrical usage for simplex grinder pumps in the low pressure sewer system alternative

A summary of the cost comparison of the three considered alternatives for the Bean Blossom Area is shown in Table 5.6.

Table 5.6 **Cost Comparison of Bean Blossom Area Collection Alternatives**			
Item	**Alternative**		
	Gravity	**Pressure**	**Vacuum**
Construction Cost	$1,088,035	$830,030	$1,332,230
Non-Construction Cost – 25%	$272,010	$207,500	$333,060
Contingencies (10%)	$136,000	$103,750	$166,530
Total Capital Cost	$1,496,045	$1,141,280	$1,831,820
Present Worth Summary (20 years @ 2% interest)			
a) Total Capital Cost	$1,496,045	$1,141,280	$1,831,820
b) PW of Annual O, M & R (PW factor 16.351)	$307,399	$331,925	$333,560
Total (a+b)	**$1,803,444**	**$1,473,205**	**$2,165,380**

As can be seen from Table 5.6, the low-pressure system is the most cost-effective alternative on a present worth basis for the Bean Blossom Area. However, there other factors besides monetary such as reliability, expandability and implementability that should be considered in selecting the best alternative. The gravity sewer system alternative has fewer mechanical components and is therefore considered more reliable than the pressure system and vacuum system; however there are five (5) lift stations required due to the topography. The pressure sewer system alternative is considered more implementable than the conventional gravity sewer alternative since it requires less easement, offers the least environmental impact, and is the most economical. The gravity sewer alternative provides for easier expandability since the minimum pipe sizes required for this type of system are oversized for the total number of initial users, however it is not anticipated that expandability is an issue. Therefore, all factors considered, it is recommended that the low-pressure sewer system alternative be selected for the Bean Blossom Area.

5.2.2 Old Settler's Road Area

The construction cost estimates for the conventional gravity and low-pressure sewer system alternatives for the Old Settler's Road Area are shown in Table's 5.7 and 5.8 respectively.

Item	Description	Quantity	Unit	Unit Cost	Amount
Table 5.7 — Estimated Construction Cost for Conventional Gravity – Old Settler's Road Area					
1	8" Gravity Sewer	2,470	LF	$28	$69,160
2	2-1/2" Force Main	900	LF	$8	$7,200
3	1-1/2" Pressure Sewer	200	LF	$6	$1,200
4	6" Laterals (*1)	1,250	LF	$18	$22,500
5	8" x 6" Wyes	15	EA	$65	$975
6	Simplex Grinder Pump Stations	1	EA	$6,000	$6,000
7	Pressure Sewer Valve Assemblies	1	EA	$400	$400
8	4' Diameter Manholes	8	EA	$2,000	$16,000
9	Force Main Air Release Valves	4	EA	$2,100	$8,400
10	Compacted Granular Backfill	1,000	LF	$23	$23,000
11	Pavement Replacement	800	LF	$24	$19,200
12	Old Settler's Road Grinder Pump Lift Station	1	LS	$45,000	$45,000
13	2-1/2" Force Main, Augured Bores	100	LF	$24	$2,400
14	2" Force Main, Directional Bores	200	LF	$35	$7,000
15	Easements	800	LF	$2	$1,600
16	Miscellaneous	1	LS	$23,000	$23,000
17	Mobilization, Bond & Insurance	1	LS	$12650	$12,650
Total					**$265,685**

Item	Description	Quantity	Unit	Unit Cost	Amount
Table 5.8 — Estimated Construction Cost for Pressure Sewers – Old Settler's Road Area					
1	3" Pressure Sewer	2,450	LF	$9	$22,050
2	2" Pressure Sewer	1,400	LF	$7	$9,800
3	1-1/2" Pressure Sewer	1,250	LF	$6	$7,500
4	Simplex Grinder Pump Stations (*2)	16	EA	$5,000	$80,000
5	Pressure Sewer Valve Assemblies	16	EA	$400	$6,400
6	Pressure Sewer/Force Main Air Release Valves	3	EA	$2,100	$6,300
7	Line Flushing Valve Pits	5	EA	$1,700	$8,500
8	Compacted Granular Backfill	100	LF	$20	$2,000
9	Pavement Replacement	80	LF	$22	$1,760
10	3" Pressure Sewer, Augured/Directional Bores	100	LF	$30	$3,000
11	1-1/2" Pressure Sewer, Augured Bores	50	LF	$20	$1,000
12	Easements	800	LF	$2	$1,600
13	Miscellaneous	1	LS	$14,990	$14,990
14	Mobilization, Bond & Insurance	1	LS	$8,240	$8,240
Total					**$173,140**

<u>Notes for Table's 5.7 and 5.8:</u>

*1 – 6" lateral quantity includes extending pipe to near the building to be served for purposes of comparing to the low-pressure sewer alternative, which includes extending the lateral to near the building where it is assumed that the existing septic tank is located. If it is determined that gravity is the selected alternative in this chapter then the lateral quantity will be reduced in the project cost

estimate, provided later in this report, to extend only from the mainline sewer to the right-of-way, or edge of easement line. The building owner would be responsible for extending the lateral from the right-of-way line to the building.
*2 – The potential for clustering buildings into one simplex grinder pump station may be possible but cannot be determined until a detailed topographical surveying is obtained during the engineering design phase of the project. For conservative purposes this study assumes one simplex grinder pump station per building being served.

The estimated annual operation, maintenance and replacement (O, M & R) costs for the conventional gravity and low-pressure sewer alternatives for the Old Settler's Road Area are shown in Table 5.9.

Table 5.9
Estimated O, M & R Costs for Old Settler's Road Area Collection Alternatives

Item	Conventional Gravity	Pressure
Labor	$600	$600
Energy/Power (*)	$600	$150
Materials and Supplies	$50	$50
Repairs	$50	$50
Replacement	$700	$1,800
Outside Services (Cleaning, Billing, etc.)	$250	$250
Insurance	$100	$150
Conferences, Training & Miscellaneous	$50	$50
Total	**$2,400**	**$3,100**

Notes for Table 5.9:
* - Includes the estimated electrical usage for simplex grinder pumps in the low pressure sewer system alternative

A summary of the cost comparison of the two considered alternatives for the Old Settler's Road Area is shown in Table 5.10.

Table 5.10 Cost Comparison of Old Settler's Road Area Collection Alternatives		
Item	**Alternative**	
	Gravity	**Pressure**
Construction Cost	$265,685	$173,140
Non-Construction Cost – 25%	$66,420	$43,285
Contingencies (10%)	$33,210	$21,640
Total Capital Cost	$365,315	$238,065
Present Worth Summary (20 years @ 2% interest)		
b) Total Capital Cost	$365,210	$238,065
b) PW of Annual O, M & R (PW factor 16.351)	$39,242	$64,586
Total (a+b)	**$404,452**	**$302,651**

As can be seen from Table 5.10, the low-pressure system is the most cost-effective alternative on a present worth basis for the Old Settler's Road Area. However, there other factors besides monetary such as reliability, expandability and implementability that should be considered in selecting the best alternative. The gravity sewer system alternative has fewer mechanical components and is therefore considered more reliable than the pressure system. The pressure sewer system alternative is considered more implementable than the conventional gravity sewer alternative since it requires less easement, offers the least environmental impact, and is the most economical. The gravity sewer alternative provides for easier expandability since the minimum pipe sizes required for this type of system are oversized for the total number of initial users, however it is not anticipated that expandability is a issue. Therefore, all factors considered, it is recommended that the low-pressure sewer system alternative be selected for the Old Settler's Road Area.

5.2.3 Woodland Lake Area

The construction cost estimate for the low-pressure sewer system for the Woodland Lake Area is shown in Table 5.11.

Table 5.11 Estimated Construction Cost for Pressure Sewers – Woodland Lake Area					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Amount**
1	4" Pressure Sewer	1,100	LF	$10	$11,000
2	3" Pressure Sewer	5,000	LF	$9	$45,000
3	2" Pressure Sewer	1,330	LF	$7	$9,310
4	1-1/2" Pressure Sewer	7,800	LF	$6	$46,800
5	6" Force Main	10,900	LF	$12	$130,800
6	Simplex Grinder Pump Stations (*1)	65	EA	$5,000	$325,000
7	Pressure Sewer Valve Assemblies	65	EA	$400	$26,000
8	Pressure Sewer/Force Main Air Release Valves	8	EA	$2,100	$16,800
9	Line Flushing Valve Pits	11	EA	$1,700	$18,700
10	Compacted Granular Backfill	425	LF	$20	$8,500
11	Pavement Replacement	375	LF	$22	$8,250
12	Woodland Lake Lift Station w/Odor Control	1	LS	$85,000	$85,000
13	6" Force Main, Augured Bores	200	LF	$45	$9,000
14	3" Pressure Sewer, Augured Bores	500	LF	$25	$12,500
15	2" Pressure Sewer, Augured Bores	150	LF	$20	$3,000
16	1-1/2" Pressure Sewer, Augured Bores	200	LF	$20	$4,000
17	Spare Parts	1	LS	$5,000	$5,000
18	Easements	500	LF	$2	$1,000
19	Miscellaneous	1	LS	$76,565	$76,565
20	Mobilization, Bond & Insurance	1	LS	$42,110	$42,110
Total					**$884,335**

Notes for Table 5.11:
*1 – The potential for clustering buildings into one simplex grinder pump station may be possible but cannot be determined until a detailed topographical survey is obtained during the engineering design phase of the project. For conservative purposes this study assumes one simplex grinder pump station per building being served.

The estimated annual operation, maintenance and replacement (O, M & R) costs for the low-pressure sewer alternative for the Woodland Lake Area is shown in Table 5.12.

Table 5.12 Estimated O, M & R Costs for Woodland Lake Area Collection Alternative	
Item	**Pressure**
Labor	$6,000
Energy/Power (*)	$1,500
Materials and Supplies	$500
Repairs	$500
Replacement	$8,500
Outside Services (Cleaning, Billing, etc.)	$2,500
Insurance	$1,500
Conferences, Training & Miscellaneous	$300
Total	**$21,300**

Notes for Table 5.12:
* - Includes the estimated electrical usage for simplex grinder pumps in the low pressure sewer system alternative

5.3 Treatment Plant

5.3.0 General

The following alternatives were considered for centralized wastewater treatment and disposal for the Bean Blossom, Old Settler's Road and Woodland Lake Areas:

Treatment

- Extended Aeration Activated Sludge
- Constructed Wetlands
- Facultative Lagoons
- Re-circulating Media Filter
- Conveyance to Helmsburg Regional Sewer District

Disposal

- Surface Water Receiving Stream
- Spray Irrigation
- Subsurface Drip Irrigation
- Elevated Mound

Based on input received from the Bean Blossom Wastewater Committee representatives there are four (4) potential sites for a centralized wastewater treatment plant, taken from the Monarch Engineering Preliminary Engineering Report. The location of these four (4) sites along with other information regarding these sites is shown in Appendix H. All of the potential treatment plant sites are at a lower elevation than the service area and, relatively flat and undeveloped. Along with the low housing density in these areas, these characteristics make these four (4) prospective sites the best within the planning area.

Extended Aeration Activated Sludge:

The extended aeration activated sludge process uses microorganisms to feed on organic contaminants in wastewater, producing a high quality effluent for discharge to a nearby receiving stream, or into a subsurface elevated mound, drip irrigation system, or other land application technique. The activated sludge plant is probably the most popular biological treatment process. It is used for both large and small installations. These plants are capable of producing a high quality effluent for the price. Activated sludge package plants are used by isolated facilities such as hospitals or hotels, cluster situations, subdivisions and small communities. The basic activated sludge process consists of several interrelated components including; an aeration tank where the biological reaction takes place; an aeration source that provides oxygen and mixing; a clarifier tank where the solids settle and are separated from wastewater treatment and; a means of collecting the solids either to return them to the aeration tank, or to remove them from the process. The removed solids are then further processed and disposed of. There are several types of extended aeration activated sludge processes including oxidation ditches, sequential batch reactors, vertical loop reactors, etc. The extended activated sludge process is a viable alternative for the planning area and will be further evaluated.

Constructed Wetlands:

The Constructed Wetlands utilizes a combination of chemical and biological processes to remove nutrients from wastewater. The wetlands system is preceded with preliminary treatment consisting of individual septic tanks at each property, or large septic tank treatment at the centralized plant location. After preliminary treatment is achieved the wastewater flows into a wetland cell or cells. A system of plants planted in a sand/gravel medium provides a natural treatment within the cell(s) by up taking the nutrients. Constructed wetland effluent would either be disinfected and discharged into a surface water-receiving stream or disposed of by drip irrigation or into an elevated mound. It is not anticipated that a constructed wetland can meet the NPDES permit limits for discharge into a surface water-receiving stream. While discharging constructed wetland effluent into a subsurface source may be a viable option, to date the IDEM has not developed a permitting program for community wide systems for this type of discharge. Therefore, the constructed wetland alternative will not be considered further.

Facultative Lagoons:

A facultative lagoon system consists of a series of ponds, which hold the wastewater until a sufficient level of treatment is achieved, and the effluent can be safely discharged to a surface water-receiving stream. Facultative lagoons can be either aerated or non-aerated (stabilization lagoons). Stabilization lagoons systems are usually 5 to 6 feet deep where aerated lagoons may be 10 to 20 foot deep. Advantages of lagoon systems include their relatively low maintenance requirements and relatively small quantities of sludge production. Disadvantages of a lagoon system are that the lagoon cannot be located within ¼-mile to the nearest residence, they experience reduced biological activity and treatment efficiency during cold weather, ice formation can hamper the operation and in overloading situations, or spring and fall periods when turnover occurs, odors can be produced and lagoons require more property area. Recently the IDEM has set more stringent water quality standards for lagoons requiring more stringent ammonia-nitrogen discharge limits and requiring monitoring for *E. coli*. Due to the reduced biological activity in a lagoon system during cold weather the ammonia-nitrogen effluent limits become difficult to achieve. Meeting the *E. coli* discharge limits will most likely require disinfection. IDEM is discouraging the use of lagoon systems due to their ability to meet stringent ammonia-nitrogen and *E. coli* limits. Therefore, the facultative lagoon system alternative will not be considered further.

<u>Re-circulating Filter Media:</u>
A re-circulating filter media (RMF) system consists of a tank filled with a bed of graded media (sand, gravel, textiles, etc.) and pump(s). Septic tank effluent enters the filter media tank and pumped onto the media bed where it flows through the media bed. As the partially treated wastewater passes through the media, a combination of physical, chemical, and biological processes consistently treat the wastewater. A portion of the flow that passes through the media is re-circulated over the media and a portion is discharged into either a collection system or for further treatment processing prior to its discharge to a surface water-receiving stream or disposed of by drip irrigation, spray irrigation, or into an elevated mound. Re-circulating filter media systems are fairly simple to operate and include only a few mechanical components (i.e. pumps and controls). Either individual treatment RMF's serving one or two buildings, or a centralized RMF could be considered but both would require preliminary septic tank treatment ahead of the units. It is not anticipated that a RMF can meet the NPDES permit limits for discharge into a surface water-receiving stream. While discharging RMF effluent into a subsurface source, or via spray irrigation may be a viable option, to date the IDEM has not developed a permitting program for community wide systems for this type of discharge. Therefore, the RMF alternative will not be considered further.

<u>Conveyance to Helmsburg Regional Sewer District:</u>
Conveyance of wastewater from the Bean Blossom planning area to the existing treatment plant at Helmsburg is a considered alternative. The Helmsburg Regional Sewer District (RSD) operates a 25,000-gpd extended aeration steel packaged-type treatment plant that was constructed in 1995. The treated flow is discharged into Beanblossom Creek. The condition of the existing plant appears fair but in need of maintenance, as the steel components above the water level are showing significant corrosion deterioration caused by the release of hydrogen sulfide gas. The average daily flow to the plant is 8,000 gpd, which is

approximately 32% of its rated capacity. It is suspected that the significant corrosion of the plant components is caused by anaerobic wastewater, possibly from low flows within Helmsburg's low-pressure/grinder pump collection system. A location map of the Helmsburg RSD treatment plant is shown on Figure 2.2. The estimated flow from the Bean Blossom, Old Settler's Road and Woodland Lake Areas is 0.055 mgd. In order for the existing Helmsburg plant to receive additional flow it would need to be expanded. Besides, based on the condition of the existing steel plant components, a new plant would need to be constructed so that its projected useful life would exceed the duration of any loan period, assuming that a loan would be needed for the project financing. The reuse of the existing steel plant structure could be considered for sludge digestion, sludge storage or flow equalization if a new plant were constructed. According to the Preliminary Engineering Report for Bean Blossom and Woodland Lake dated January 2001, prepared by R. W. Armstrong & Associates, Inc., the year 2015 design population equivalent for Helmsburg is 208, primarily residential. By using 2.56 people per household, which is from the 2000 census data for Jackson Township, this equates to approximately 81 future users on the Helmsburg system. The Helmsburg system currently has approximately 63 customers. The estimated number of equivalent users from the Bean Blossom, Old Settler's Road and Woodland Lake Areas are 137, 21 and 95 respectively. Since sewage flows from the Bean Blossom planning area would need to be conveyed approximately 2.75 miles to the Helmsburg RSD treatment plant at an estimated construction cost of $350,000 and a new plant is suggested at Helmsburg it is unlikely that this will be a feasible alternative unless the Helmsburg RSD is willing to incur debt and their existing users are willing to withstand a rate increase. Based on information provided by the Bean Blossom Wastewater Committee members it is not likely that the Helmsburg users would accept a rate increase, as they would believe that the Bean Blossom study area would be the cause, which would create a considerable amount of animosity between the two communities. Therefore, this conveyance to Helmsburg alternative will not be considered further. Additional information in reference to the existing Helmsburg treatment plant, taken from the Monarch Engineering Preliminary Engineering Report, is provided in Appendix I.

Surface Water Receiving Stream:

The surface water receiving stream discharge alternative generally consists of discharging wastewater treatment effluent into a ditch, creek or river, which is the most commonly used form of discharge for community systems. The IDEM sets limits for treated wastewater discharge and issues NPDES (National Pollutant Discharge Elimination System) permits. The NPDES permit has a listing of the parameters to be monitored and established limits for these parameters. Exceeding these NPDES parameter limits can result in noncompliance and possible enforcement action by the IDEM. Typically discharging into a larger receiving stream provides more dilution and results in less stringent NPDES permit limits. Therefore, the Beanblossom Creek is the chosen receiving stream for the study area. In order to determine what the effluent NPDES permit limits would be for discharge from one of these listed treatment plant sites into Beanblossom Creek a waste load allocation (WLA) was requested from the IDEM. The correspondence to and from the IDEM for the WLA is provided in Appendix J. The preliminary effluent limitations established by the IDEM for discharge into Beanblossom Creek are listed in Table 5.13.

Table 5.13
NPDES Permit Limits

Parameter	**Summer**		**Winter**	
	Monthly Average	**Weekly Average**	**Monthly Average**	**Weekly Average**
CBOD5	15 mg/l	23 mg/l	25 mg/l	40 mg/l
TSS	18 mg/l	27 mg/l	30 mg/l	45 mg/l
NH3-N	1.5 mg/l	2.3 mg/l	3.0 mg/l	4.5 mg/l

Parameter	Daily Minimum	Daily Maximum	Monthly Average
pH	6.0 s.u.	9.0 s.u.	-----
Dissolved Oxygen Summer	6.0 mg/l	-----	-----
Dissolved Oxygen Winter	5.0 mg/l	-----	-----
E. coli	-----	235 count/100 ml	125 count/100 ml

Spray Irrigation:

Spray irrigation and drip irrigation are permitted through IDEM under 327 IAC 6.1-7 as forms of land application of pollutant-bearing water. Sizing for the reuse field is based on the hydraulic capacity of the soil and the nitrogen uptake of the crop in the field. The proposed crop is usually a alfalfa and/or hardwood tree to maximize nitrogen uptake of the system. Spray irrigation discharges using mechanical irrigation equipment to apply treated wastewater over a wide area that can be used for agricultural purposes. Spray irrigation is limited to slopes less than 6% to prevent runoff of the applied wastewater, requires a 90-day minimum storage for periods when it cannot be applied during wet conditions or on frozen ground, and requires either significant setbacks or effluent disinfection with a high degree of treatment. Because of these limitations, spray irrigation was not considered further for disposal.

Subsurface Drip Irrigation:

Subsurface drip irrigation (SDI) discharges into the ground using ½-inch diameter high-density polyethylene pipe installed approximately 8-inches into the ground. The SDI tubing has pressure-compensating emitters spaced every two feet along the tubing, allowing a constant rate of effluent discharge when the SDI is pressurized over a wide range of pressures. The SDI system of wastewater effluent discharge, combined with RMF treatment, has been utilized recently for commercial on-site facilities and permitted by the Indiana State Department of

Health. To date the IDEM has not developed a permitting program for community wide systems for this type of discharge. Therefore, the SDI alternative will not be considered further.

Elevated Mound:

Elevated mound systems have traditionally been used for individual commercial on-site septic systems and occasionally for clustered homes within a rural subdivision. Elevated sand mounds have built up layers of sand mounded up above the existing ground surface approximately 3 to 4 feet. A network of perforated pipes bedded in stone is placed within the mound, which is where treated wastewater is pumped into for distribution. The mound acts as an intermittent sand filter that drains into the native soil. The top layer of a mound consists of topsoil and is mulched seeded. Elevated mounds are normally preceded by septic tank(s) but can be used in conjunction with other treatment methods. Over a period of time solids that are conveyed into the mound often blind over the sand media particles and the wastewater effluent oozes from the side of the mound, which is an indication of failure. Elevated mounds require monitoring wells and generally perimeter subsurface drains to keep the ground water lowered. The primary soil conditions and level of treatment preceding the elevated mound dictate the sizing requirements. To date the IDEM has not developed a permitting program for community wide systems for this type of discharge. Therefore, the elevated mound alternative will not be considered further.

A listing of the advantages and disadvantages of each treatment and disposal system considered are listed in Table's 5.14 and 5.15 respectively.

Table 5.14
Treatment System Types – Advantages/Disadvantages

Treatment System	Advantages	Disadvantages
Extended Aeration Activated Sludge	• Capable of producing high quality effluent • Minimal land use • Most popular • Ammonia nitrogen removal	• Certified operator attention required • Routine sludge removal and disposal • Higher operation and maintenance cost
Constructed Wetlands	• Low capital cost • Natural treatment • Lower operation and maintenance cost	• Cannot meet NPDES Permit surface water discharge due to inability to treat ammonia nitrogen • Requires preliminary septic tank treatment and periodic sludge removal
Facultative Lagoons	• Lower operation and maintenance cost • No routine sludge removal required	• Requires large land area • Minimum ¼ mile separation distance from residence required • Potential odors • Does not meet IDEM surface discharge water quality standards
Re-circulating Media Filter	• High BOD & TSS removal • Good technology used in conjunction with subsurface discharge	• Cannot meet NPDES Permit surface water discharge due to inability to treat ammonia nitrogen • Requires preliminary septic tank treatment and periodic sludge removal
Conveyance to Helmsburg RSD	• No operation and maintenance associated with treatment and disposal	• Treatment costs would be under the control of an outside entity unless regionalization occurred with local representation • Requires a long conveyance line and lift station with odor control • Requires significant plant upgrade

Table 5.15 Disposal System Types – Advantages/Disadvantages		
Treatment System	**Advantages**	**Disadvantages**
Surface Water Receiving Stream	• Limited to a pipe or channel • Ease of monitoring treatment quality • Most familiarity since it is the most widely used	• NPDES Permit compliance required • Most likely more consistent monitoring required
Spray Irrigation	• No NPDES Permit compliance	• Site restrictions • Wet and cold weather application restrictions
Subsurface Drip Irrigation	• Ease of installation	• Susceptible to clogging • Long-term performance is unknown • IDEM currently does not have permitting mechanism is place for community systems
Elevated Mound	• Low maintenance • No NPDES Permit compliance	• IDEM currently does not have permitting mechanism is place for community systems • Useful life is typically less than 20 years

Based on a review of the considered alternatives for treatment and disposal, a detailed analysis will be developed for various types of extended aeration activated sludge plants for discharge of treated effluent to Beanblossom Creek.

In order to simplify the analysis for treatment alternatives the cost-effective evaluation is divided into Phase 1 and Phase 2. Phase 1 includes the construction of a 0.030 mgd treatment plant, which would service both the Bean Blossom and Old Settler's Road Areas. Phase 2 would consist of an expansion of the Phase 1 plant to a 0.055 mgd capacity, which would accommodate the Bean Blossom, Old Settler's Road and Woodland Lake Areas. A construction cost estimate for constructing a 0.055 mgd plant initially will also be prepared in the following sections of this chapter for evaluation of combining Phase's 1 and 2.

The following components are anticipated for the extended aeration activated sludge treatment plant to meet the NPDES Permit requirements:

- Preliminary screening will be provided by the grinder pumps in the collection system

- Surge tank having a minimum capacity of 30% of the design flow
- Aeration tank/chamber
- Clarifier tank/chamber for final settling
- Aerobic digester tank/chamber
- Ultraviolet light disinfection
- Post aeration tank
- Influent and effluent flow meters
- Standby generator
- Control/storage building with small laboratory facilities
- Sludge disposal facilities
- Plant Drain Lift Station

The following types of extended aeration activated sludge treatment plants were determined to be appropriate for evaluation for this project:

- Sanitaire Package Plant
- Ashbrook – Hydro-Aerobics Package Plant
- Aero-Mod, Inc. Plant

A byproduct of the activated sludge process is waste sludge. Waste sludge is normally stabilized then disposed of in some fashion. There are several stabilization methods for sludge including aerobic and anaerobic digestion, alkaline stabilization, heat-dried systems and composting. For smaller plants, the primary method of stabilization is aerobic digestion, which involves aerating the sludge for a period of time to reduce pathogens. Therefore, aerobic digestion will be used for sludge stabilization. Once the sludge is stabilized, it is referred to as biosolids and must be disposed of. The following alternatives were considered and evaluated for biosolids disposal:

- Transport liquid to larger treatment plant
- Sand drying beds for dewatering and haul to a landfill

Another method of biosolids disposal, either in liquid or dewatered form, is land application. Due to the small size of the Bean Blossom treatment plant, and because the land application method of disposal requires considerable equipment, permitting, etc. it was not evaluated further.

In considering a wastewater flow of 0.030 mgd (Phase 1), the estimated volume of biosolids wasted from the digester is 35 pounds per day, or 278 gallons per day, which results in a yearly volume of approximately 12,775 pounds, or 101,470 gallons.

Based on information obtained from a representative from the Town of McCordsville, Indiana, their cost for transporting and disposing of liquid biosolids at the Belmont Wastewater Treatment Plant, located in Indianapolis, Indiana is

$40.16 per 1,000 gallons. In addition to the hauling and disposing cost there are annual application processing and testing fees of approximately $550.00. Considering an estimated volume of 101,470 gallons, the cost to the Bean Blossom plant would be approximately $4,700 per year to send the biosolids to Indianapolis. The City of Bloomington and City of Martinsville, Indiana were each contacted and all indicated that they do not accept biosolids from other community systems. The Town of Nashville indicated that they do not accept sludge/biosolids but a Helmsburg representative that their sludge is hauled to the Nashville wastewater treatment plant. The Town of McCordsville representative also indicated that the Town of New Palestine, Indiana dewaters their biosolids on sand drying beds, then transfers them to a 20 cubic yard lined dumpster, which is hauled to a landfill. New Palestine's cost for transporting and disposal is $26.50 per ton plus a $150.00 haul rate and $50.00 for a dumpster liner. The dumpster can only be filled to its 2/3 full level due to hauling weight limits. Considering an estimated volume of 12,775 pounds, or 6.4 tons (+/- 4 cubic yards), the cost to the Bean Blossom plant would be approximately $400.00 per year to send dewatered biosolids to the landfill. In addition to the dewatered biosolids costs for transporting and disposal, the cost of sand drying beds and equipment with a front end loader to transfer to the dumpster, such as a Bobcat, will be needed. The estimated cost for 350 square foot drying beds (including piping and valves, etc.) and a Bobcat, including 25% non-construction costs is approximately $72,500.00. By utilizing an annual interest rate of 5% for a 20-year financing period, and estimating $200.00 per year for ongoing drying bed and Bobcat maintenance (i.e. sand replacement, etc.), the estimated annualized cost for dewatered biosolids is summarized as follows:

- Capital cost of dewatered biosolids = $72,500.00
- Annualized cost of dewatered biosolids = $5,814.50
- Annual cost of operation and maintenance and disposal = $600.00
- Total annual cost for dewatered biosolids = $6,414.50

Based on this analysis, the best alternative is sludge/biosolids loading station with liquid hauling and disposal at the Belmont Wastewater Treatment Plant. Therefore, it is recommended that the initial treatment plant include a sludge/biosolids loading station for liquid disposal and that if the plant is expanded someday give future consideration to the dewatered biosolids method, or possible future technologies, as there are new technologies emerging frequently.

5.3.1 Sanitaire Package Plant

The Sanitaire package plant alternative consists of a circular tank, approximately 35 feet in diameter, with concrete walls having several wall-divided compartments. The compartments would consist of a circular clarifier in the center of the tank and surge basin, aeration chamber and aerobic digester compartments around the tanks perimeter, between the inside wall of the tank and outside wall of the center clarifier. Based on a proposal received for the Sanitaire plant, they would furnish equipment that would accommodate the future estimated flow of 0.055 mgd because their smallest clarifier is large enough for this condition. Additional separation walls, for future removal, would initially be placed within the tank for the first phase (0.030 mgd). The construction cost estimates for the Sanitaire package plant alternative for Phase's 1 and 2 and combining both phases are shown in Table 5.16.

Table 5.16
Estimated Construction Cost for Sanitaire Package Treatment Plant

Item	Phase 1 (0.030 mgd) Cost	Phase 2 (Expansion to 0.055 mgd) Cost	Combined Cost
Packaged Plant Equipment	$115,000	$10,000	$120,000
Packaged Plant Equipment Installation	$20,000	$5,000	$22,000
Excavation	$3,000	$0	$3,000
Concrete Tankage	$110,500	$0	$110,500
Flow Meters	$12,000	$0	$12,000
Control Building	$60,000	$0	$60,000
Tools and Supplies	$8,000	$5,000	$13,000
Piping, Valves & Pumps	$50,000	$5,000	$52,000
Site Work & Fence	$25,000	$1,000	$25,000
Standby Generator	$25,000	$0	$25,000
Painting	$6,000	$1,000	$6,000
UV & Post Aeration Equipment & Installation	$20,000	$0	$20,000
Sludge Loading Station	$2,500	$0	$2,500
Plant Drain Lift Station	$40,000	$0	$40,000
Control Building Mechanical	$10,000	$0	$10,000
Electrical	$40,000	$3,000	$40,000
Miscellaneous	$54,000	$3,000	$56,000
Bond, Mobilization & Insurance	$30,000	$1,600	$30,800
Total	**$631,000**	**$34,600**	**$637,800**

5.3.2 Ashbrook – Hydro-Aerobics Package Plant

The Hydro-Aerobics package plant alternative consists of a rectangular; approximately 80 feet long by 12 feet wide steel tank having several divided rectangular shaped compartments. The compartments would consist of a surge chamber, aeration chamber, clarifier chamber and aerobic digester chamber.

Based on a proposal received for the Ashbrook Hydro-Aerobics plant, they would furnish the steel tank in two pieces and the equipment for a 0.030 mgd capacity. An additional 0.025, or 0.030 mgd plant would need to be added for the future plant expansion, if completed in two phases. The construction cost estimates for the Ashbrook Hydro-Aerobics package plant alternative for Phase's 1 and 2 and combining both phases are shown in Table 5.17.

Table 5.17
Estimated Construction Cost for Ashbrook Package Treatment Plant

Item	Phase 1 (0.030 mgd) Cost	Phase 2 (Expansion to 0.055 mgd) Cost	Combined Cost
Packaged Plant Equipment	$112,700	$112,700	$225,400
Packaged Plant Equipment Installation	$6,000	$6,000	$12,000
Excavation	$2,600	$2,000	$5,600
Concrete Tankage	$15,000	$0	$15,000
Flow Meters	$12,000	$0	$12,000
Control Building	$60,000	$0	$60,000
Tools and Supplies	$8,000	$5,000	$13,000
Piping, Valves & Pumps	$50,000	$10,000	$52,000
Site Work & Fence	$25,000	$5,000	$25,000
Standby Generator	$25,000	$0	$25,000
Painting	$10,000	$10,000	$18,000
UV & Post Aeration Equipment & Installation	$20,000	$0	$20,000
Sludge Loading Station	$2,500	$0	$2,500
Plant Drain Lift Station	$40,000	$0	$40,000
Control Building Mechanical	$10,000	$0	$10,000
Electrical	$40,000	$12,000	$40,000
Miscellaneous	$43,000	$15,000	$57,000
Bond, Mobilization & Insurance	$24,000	$8,800	$31,600
Total	**$505,800**	**$186,500**	**$664,100**

5.3.3 Aero-Mod, Inc. Plant

The Aero-Mod, Inc. plant alternative consists of a rectangular; approximately 56 feet long by 19 feet wide concrete tank having several divided rectangular shaped compartments. The compartments would consist of a surge chamber, aeration chamber, clarifier chamber and aerobic digester chamber. Based on a proposal received for the Aero-Mod, Inc. plant, they would furnish the equipment, which consists of non-corrosive stainless steel and polyvinyl chloride, for a 0.030 mgd capacity. An additional 0.025 mgd expansion would need to be added for the future plant expansion, if completed in two phases. The expansion would utilize common wall concrete construction to minimize costs. The construction cost estimates for the Aero-Mod plant alternative for Phase's 1 and 2 and combining both phases are shown in Table 5.18.

Table 5.18
Estimated Construction Cost for Aero-Mod, Inc. Treatment Plant

Item	Phase 1 (0.030 mgd) Cost	Phase 2 (Expansion to 0.055 mgd) Cost	Combined Cost
Packaged Plant Equipment	$118,500	$46,000	$149,500
Packaged Plant Equipment Installation	$18,000	$13,000	$25,000
Excavation	$4,000	$3,000	$6,000
Concrete Tankage	$80,000	$50,000	$120,000
Flow Meters	$12,000	$0	$12,000
Control Building	$60,000	$0	$60,000
Tools and Supplies	$8,000	$5,000	$13,000
Piping, Valves & Pumps	$50,000	$10,000	$60,000
Site Work & Fence	$25,000	$5,000	$25,000
Standby Generator	$25,000	$0	$25,000
Painting	$4,000	$2,000	$6,000
UV & Post Aeration Equipment & Installation	$20,000	$0	$20,000
Sludge Loading Station	$2,500	$0	$2,500
Plant Drain Lift Station	$40,000	$0	$40,000
Control Building Mechanical	$10,000	$0	$10,000
Electrical	$40,000	$12,000	$40,000
Miscellaneous	$51,000	$14,500	$61,000
Bond, Mobilization & Insurance	$28,400	$8,000	$33,700
Total	**$596,400**	**$168,500**	**$708,700**

5.3.4 Activated Sludge Treatment Plant Evaluation

The estimated operation, maintenance and replacement costs for the 0.030 and .055 mgd capacity Sanitaire, Ashbrook – Hydro-Aerobics, and Aero-Mod, Inc. plants are shown in Table's 5.19 and 5.20.

Table 5.19 Estimated O, M & R Costs for 0.030 mgd Activated Sludge Treatment Alternatives			
Item	**Alternative**		
	Sanitaire	**Ashbrook**	**Aero-Mod, Inc.**
Labor	$20,800	$20,800	$20,800
Energy/Power	$12,000	$12,000	$12,000
Materials and Supplies	$2,000	$2,000	$2,000
Repairs	$1,000	$1,000	$1,000
Replacement	$1,500	$4,700	$1,500
Outside Services (Testing, etc.)	$1,500	$1,500	$1,500
Insurance	$1,500	$1,500	$1,500
Sludge Hauling & Disposal	$4,700	$4,700	$4,700
Conferences, Training & Miscellaneous	$300	$300	$300
Total	**$45,300**	**$48,500**	**$45,300**

Table 5.20 Estimated O, M & R Costs for 0.055 mgd Activated Sludge Treatment Alternatives			
Item	**Alternative**		
	Sanitaire	**Ashbrook**	**Aero-Mod, Inc.**
Labor	$20,800	$20,800	$20,800
Energy/Power	$15,500	$15,500	$15,500
Materials and Supplies	$2,000	$2,000	$2,000
Repairs	$1,200	$1,200	$1,200
Replacement	$2,000	$8,300	$2,000
Outside Services (Testing, etc.)	$1,500	$1,500	$1,500
Insurance	$1,500	$1,500	$1,500
Sludge Hauling & Disposal	$6,700	$6,700	$6,700
Conferences, Training & Miscellaneous	$300	$300	$300
Total	**$51,500**	**$57,800**	**$51,500**

A summary of the cost comparison of the three considered activated sludge treatment plant alternatives considered for 0.030 mgd and 0.055 mgd capacities are shown in Table's 5.21 and 5.22.

Table 5.21
Cost Comparison for 0.030 mgd Activated Sludge Treatment Alternatives

Item	**Alternative**		
	Sanitaire	**Ashbrook**	**Aero-Mod**
Construction Cost	$631,000	$505,800	$596,400
Non-Construction Cost – 25%	$157,750	$126,450	$149,100
Contingencies (10%)	$78,850	$63,200	$74,500
Total Capital Cost	$867,600	$695,450	$820,000
Present Worth Summary (20 years @ 2% interest)			
a) Total Capital Cost	$867,600	$695,450	$820,000
b) PW of Annual O, M & R (PW factor 16.351)	$740,700	$793,024	$740,700
Total (a+b)	**$1,608,300**	**$1,488,474**	**$1,560,700**

Table 5.22
Cost Comparison for 0.055 mgd Activated Sludge Treatment Alternatives

Item	**Alternative**		
	Sanitaire	**Ashbrook**	**Aero-Mod**
Construction Cost	$637,800	$664,100	$708,700
Non-Construction Cost – 25%	$159,400	$166,000	$177,150
Contingencies (10%)	$79,700	$83,000	$88,550
Total Capital Cost	$876,900	$913,100	$974,400
Present Worth Summary (20 years @ 2% interest)			
a) Total Capital Cost	$876,900	$913,100	$974,400
b) PW of Annual O, M & R (PW factor 16.351)	$842,077	$945,088	$842,077
Total (a+b)	**$1,718,977**	**$1,858,188**	**$1,816,477**

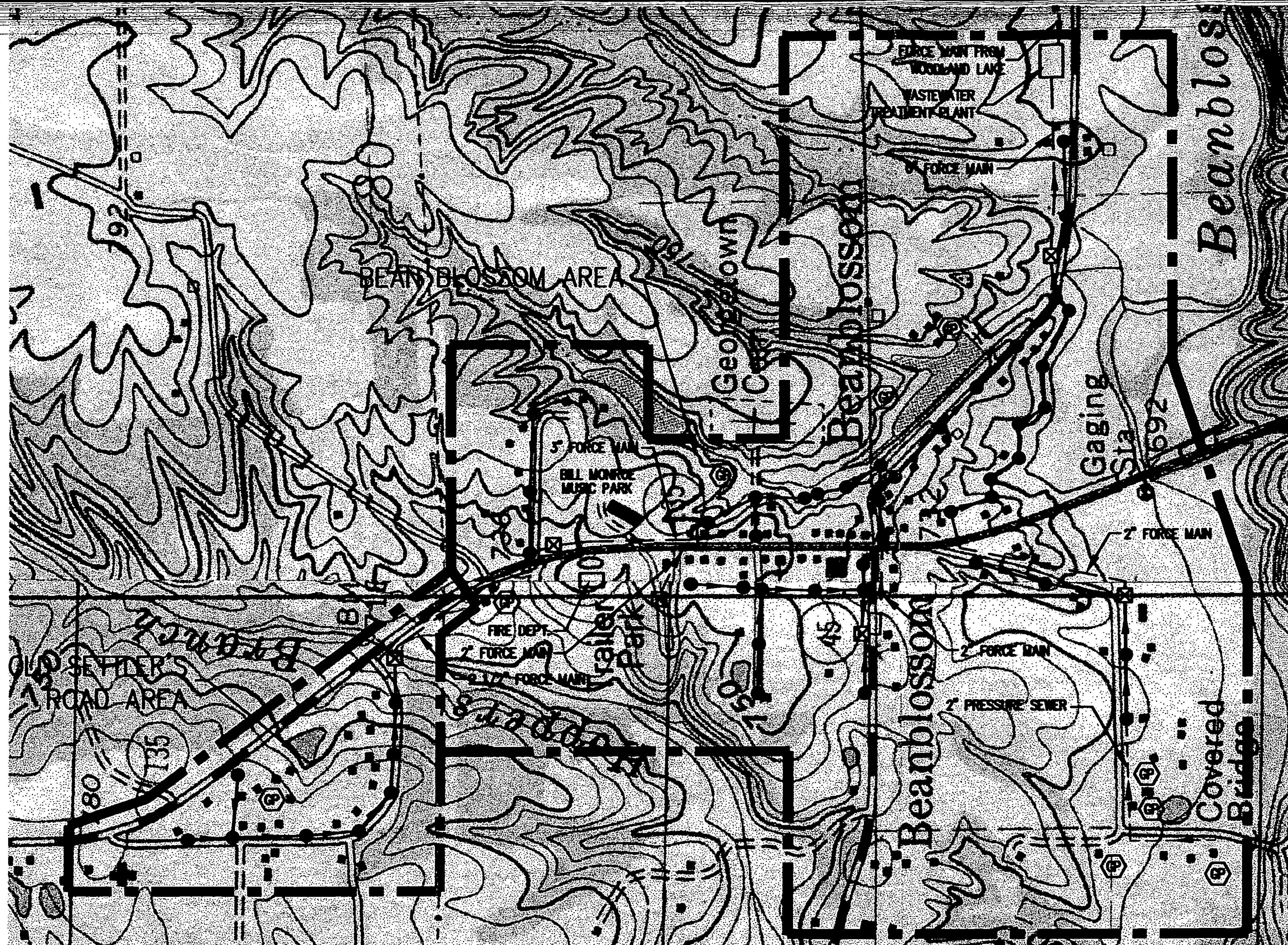
As can be seen from Table's 5.21 and 5.22, the Ashbrook treatment plant is the most cost-effective alternative on a present worth basis for a capacity of 0.030 mgd, whereas the Sanitaire treatment plant is the most cost-effective when considering a capacity of 0.055 mgd. However, there other factors besides monetary such as reliability, expandability and implementability that should be considered in selecting the best alternative. The Sanitaire and Aero-Mod treatment plant alternatives are considered equal when it comes to reliability, whereas the Ashbrook plant is steel and will require more maintenance. All three alternatives are considered equal in regards to implementability. All three alternatives provides for easy expandability, with the Aero-Mod alternative providing more flexability for future expandability should the Bean Blossom service area continue to grow beyond the estimated flow of 0.055 mgd. The Sanitaire plant provides the least cost for expanding from 0.030 to 0.055 mgd. Therefore, all factors considered, the Sanitaire and Aero-Mod alternatives are nearly equal. Further analysis of the Sanitaire and Aero-Mod treatment plant alternatives will be conducted in the next chapter. Refer to Exhibit 5.5 for a schematic of the extended aeration activated sludge treatment plant.

LEGEND

- PROPOSED MANHOLE
- 8" GRAVITY SEWER W/DIRECTION OF FLOW
- LIFT STATION
- FORCE MAIN W/DIRECTION OF FLOW
- GP GRINDER PUMP
- PRESSURE SEWER W/DIRECTION OF FLOW

600 0 300 600

1 inch = 600 ft.



LADD ENGINEERING, INC.
LEBANON, INDIANA

Bean Blossom Wastewater

PRELIMINARY ENGINEERING REPORT

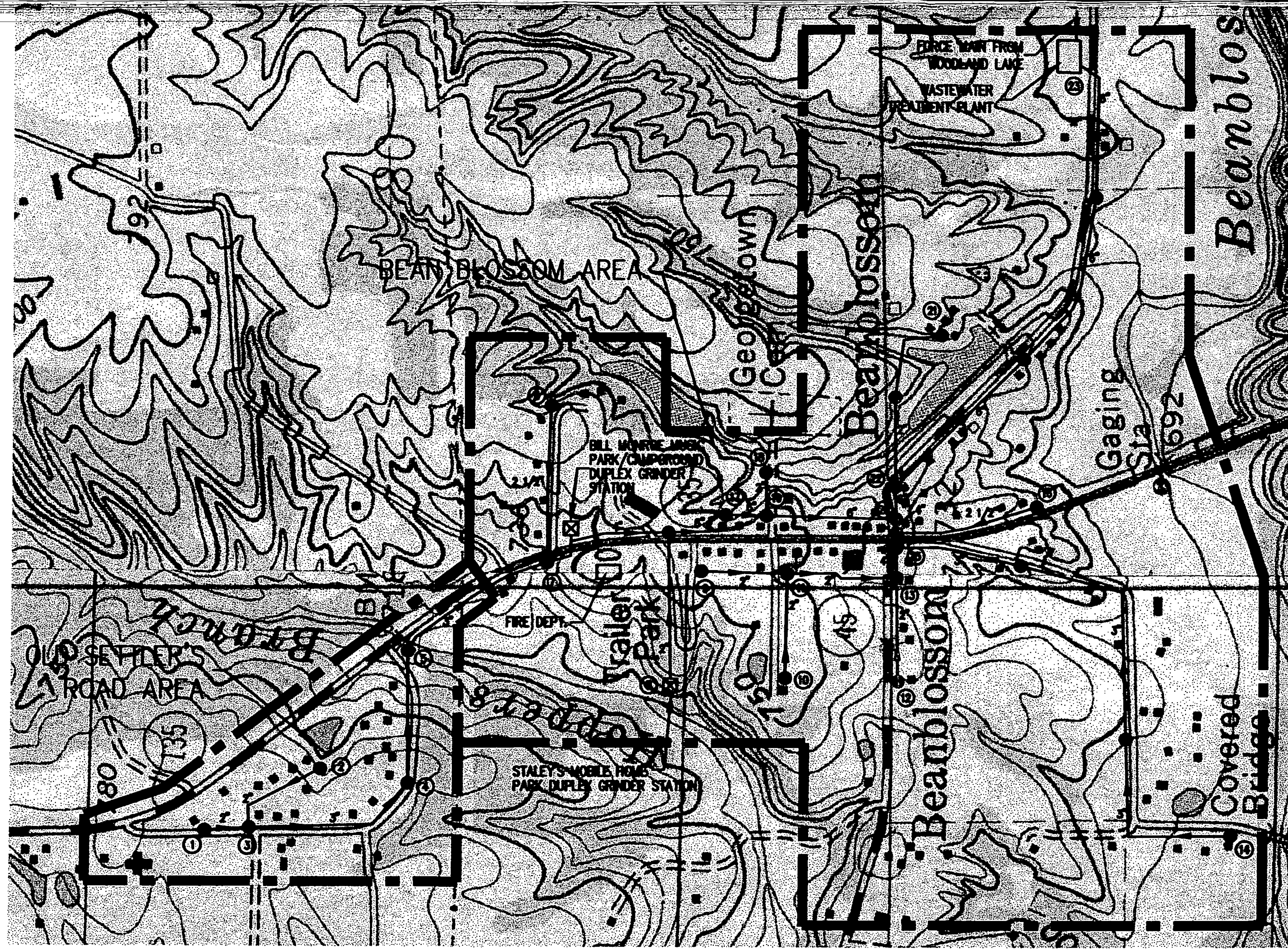
Exhibit 5.1
CONVENTIONAL GRAVITY SEWER

LEGEND

- NODE W/NUMBER
- PRESSURE SEWER W/DIRECTION OF FLOW
- DUPLEX GRINDER STATION
- VALVE PIT

600 0 300 600

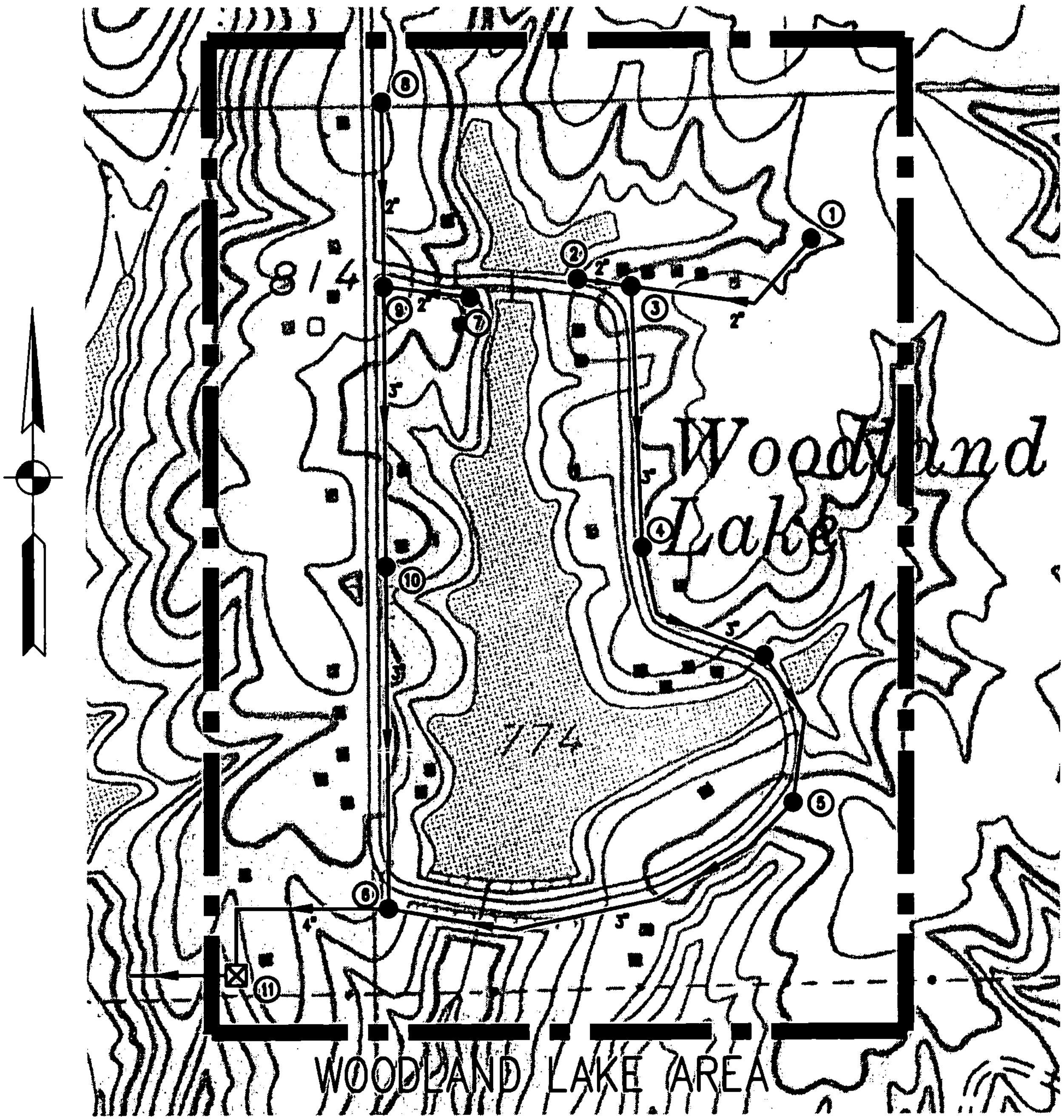
1 inch = 600 ft.



LADD ENGINEERING, INC.
LEBANON, INDIANA

Bean Blossom Wastewater
PRELIMINARY ENGINEERING REPORT

Exhibit 5.2
LOW PRESSURE SEWER SYSTEM



LEGEND

23 ●	NODE W/NUMBER
——►	PRESSURE SEWER W/DIRECTION OF FLOW
⊠	LIFT STATION
●	VALVE PIT

500 0 250 500

1 inch = 500 ft.

LADD ENGINEERING, INC.
LEBANON, INDIANA

Bean Blossom
Wastewater
PRELIMINARY ENGINEERING REPORT

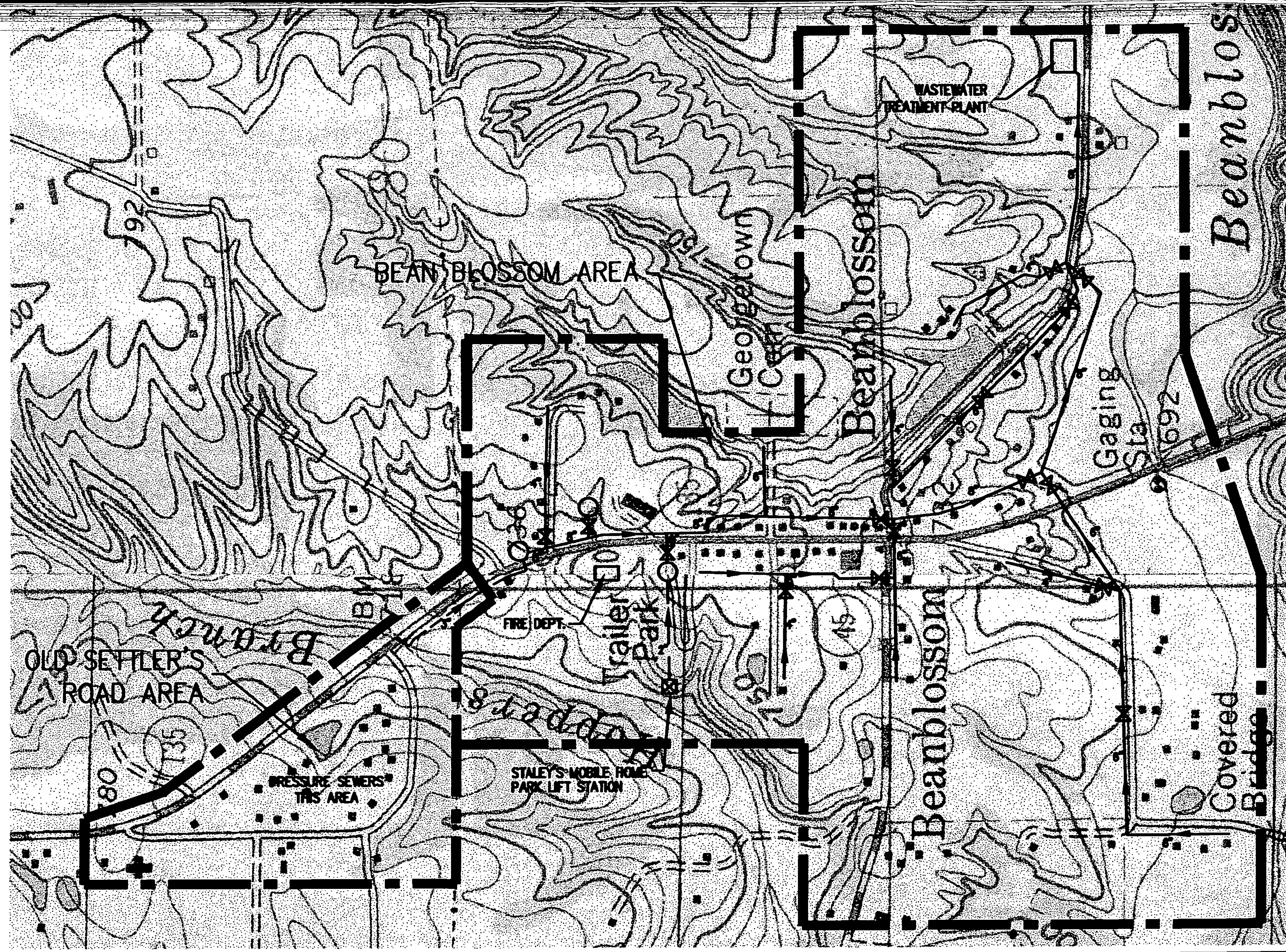
Exhibit 5.3
LOW PRESSURE
SEWER SYSTEM

LEGEND

- VACUUM SEWER W/DIRECTION OF FLOW
- PRESSURE SEWER W/DIRECTION OF FLOW
- DUAL BUFFER TANK
- DIVISION VALVE

600 0 300 600

1 inch = 600 ft.

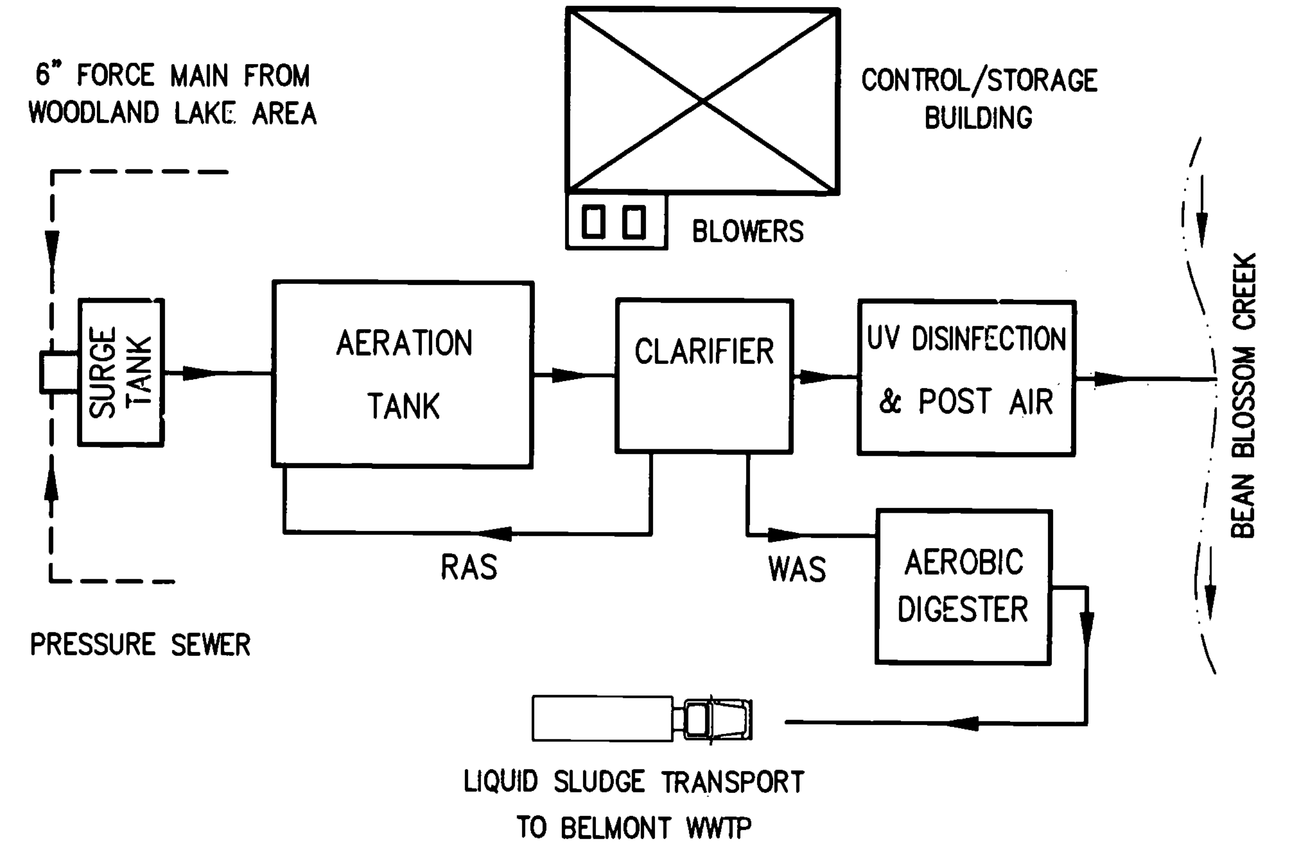


LADD ENGINEERING, INC.
LEBANON, INDIANA

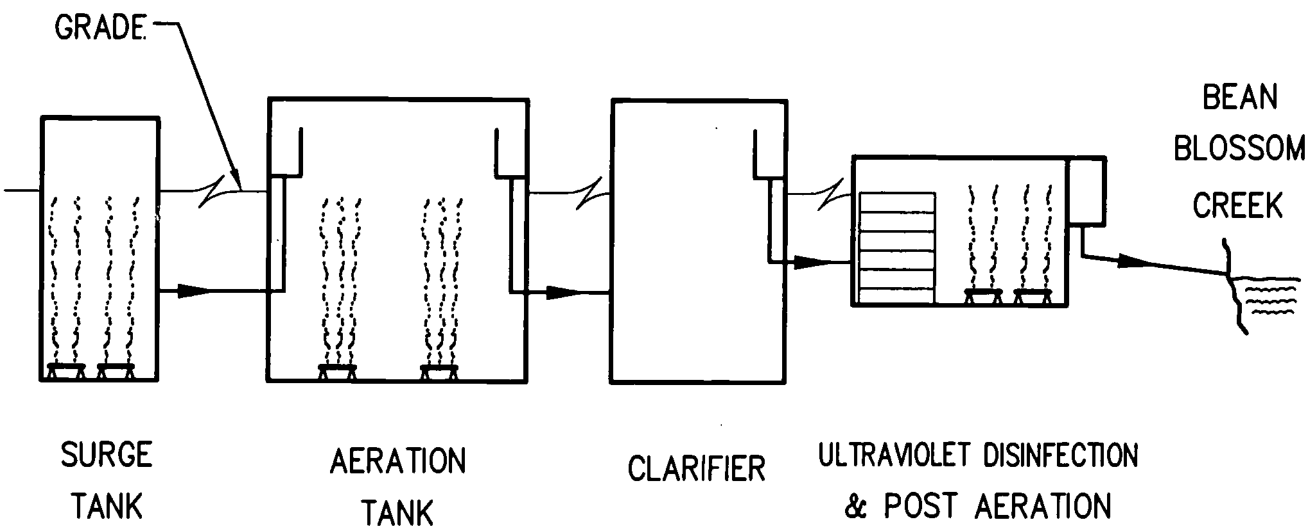
Bean Blossom Wastewater

PRELIMINARY ENGINEERING REPORT

Exhibit 5.4
VACUUM SEWER SYSTEM



FLOW SCHEMATIC – PLAN



FLOW SCHEMATIC – ELEVATION

LADD ENGINEERING, INC.
LEBANON, INDIANA

Bean Blossom
Wastewater
PRELIMINARY ENGINEERING REPORT

Exhibit 5.5

EXTENDED AERATION
ACTIVATED SLUDGE
TREATMENT PLANT

CHAPTER 6 - PROJECT PHASING AND FINANCIAL IMPACTS

6.0 Introduction

This chapter of the report provides an evaluation of project phasing schemes. An evaluation of the potential project funding sources and the magnitude of financial impacts to the users for each phasing scheme are also presented in this chapter.

6.1 Summary of Conclusions

Based on the evaluation of collection, treatment and disposal system alternatives outlined in chapter 5, the following conclusions have been drawn:

- Construct a low-pressure system collection system for the Bean Blossom, Old Settler's Road and Woodland Lake Areas
- Construct an activated sludge treatment plant, located on the east edge of Bean Blossom along Bean Blossom/Gatesville Road
- Discharge the treatment plant effluent to Beanblossom Creek

The following sections of this chapter will review the project phasing alternatives. The possible combinations for phasing are listed as follows:

- Phasing Alternative No. 1 - Bean Blossom Area collection system and 0.030 mgd Sanitaire plant
- Phasing Alternative No. 2 - Bean Blossom collection system and 0.030 mgd Aero-Mod plant
- Phasing Alternative No. 3 - Bean Blossom and Old Settler's Road Areas collection systems and 0.030 mgd Sanitaire plant
- Phasing Alternative No. 4 - Bean Blossom and Old Settler's Road Areas collection systems and 0.030 mgd Aero-Mod plant
- Phasing Alternative No. 5 - Bean Blossom, Old Settler's Road and Woodland Lake collection systems and 0.055 mgd Sanitaire plant
- Phasing Alternative No. 6 - Bean Blossom, Old Settler's Road and Woodland Lake collection systems and 0.055 mgd Aero-Mod plant

6.2 Project Costs

The total estimated project costs for the considered project phasing alternatives are shown in Table's 6.1 through 6.6.

Table 6.1 Total Project Cost Estimate – Phasing Alternative No. 1 Improvements	
Item	**Estimated Cost**
Collection System Construction Cost	$830,030
Treatment Plant Construction Cost	$631,000
Non – Construction Cost (25% of Construction)	$365,250
Subtotal	$1,826,280
Contingencies	$182,628
Total	$2,008,908

Table 6.2 Total Project Cost Estimate – Phasing Alternative No. 2 Improvements	
Item	**Estimated Cost**
Collection System Construction Cost	$830,030
Treatment Plant Construction Cost	$596,400
Non – Construction Cost (25% of Construction)	$356,600
Subtotal	$1,783,030
Contingencies	$178,303
Total	$1,961,333

Table 6.3 Total Project Cost Estimate – Phasing Alternative No. 3 Improvements	
Item	**Estimated Cost**
Collection System Construction Cost	$1,003,170
Treatment Plant Construction Cost	$631,000
Non – Construction Cost (25% of Construction)	$408,540
Subtotal	$2,042,710
Contingencies	$204,271
Total	$2,246,981

Table 6.4 Total Project Cost Estimate – Phasing Alternative No. 4 Improvements	
Item	**Estimated Cost**
Collection System Construction Cost	$1,003,170
Treatment Plant Construction Cost	$596,400
Non – Construction Cost (25% of Construction)	$399,890
Subtotal	$1,999,460
Contingencies	$199,946
Total	$2,199,406

Table 6.5 Total Project Cost Estimate – Phasing Alternative No. 5 Improvements	
Item	**Estimated Cost**
Collection System Construction Cost	$1,887,505
Treatment Plant Construction Cost	$637,800
Non – Construction Cost (25% of Construction)	$631,320
Subtotal	$3,156,625
Contingencies	$315,663
Total	$3,472,288

Table 6.6 Total Project Cost Estimate – Phasing Alternative No. 6 Improvements	
Item	**Estimated Cost**
Collection System Construction Cost	$1,887,505
Treatment Plant Construction Cost	$708,700
Non – Construction Cost (25% of Construction)	$649,050
Subtotal	$3,245,255
Contingencies	$324,525
Total	$3,569,780

6.3 Operation, Maintenance and Replacement Costs

The operation, maintenance and replacement (O,M&R) costs are typically annual recurring costs and must be provided for. These O,M&R costs include labor, energy, maintenance, insurance, chemicals, repairs, routine replacement and equipment parts costs.

The total estimated O, M & R costs for the considered project phasing alternatives are shown in Table 6.7.

Table 6.7 Estimated O, M & R Costs for Phasing Alternatives			
Item	Phasing Alternatives - Cost		
	No. 1 or No. 2	No. 3 or No. 4	No 5 or No. 6
Labor	$26,800	$27,400	$33,400
Energy/Power	$12,500	$12,500	$16,900
Materials and Supplies	$2,500	$2,550	$3,050
Repairs	$1,500	$1,550	$2,250
Replacement	$9,500	$11,300	$20,300
Outside Services (Testing, Billing, etc.)	$4,000	$4,250	$6,750
Insurance	$3,000	$3,150	$4,650
Sludge Hauling & Disposal	$4,700	$4,700	$6,700
Conferences, Training & Miscellaneous	$600	$650	$950
Total	**$65,100**	**$68,050**	**$94,950**

6.4 Evaluation of Funding Sources and Financial Impacts

6.4.0 General

This section of the report identifies potential funding sources for the recommended projects.

6.4.1 Indiana Department of Environmental Management (IDEM) State Revolving Fund Program (SRF)

The SRF is a federal loan program available to cities, towns, counties, regional sewer districts, conservancy districts and Water Authorities and is administered by the IDEM. The loan money is provided for treatment plant improvements, sewer line extensions, upgrades, combined sewer overflow corrections and infiltration/inflow projects. Projects that are solely intended for economic development are ineligible for SRF funding. Interest rates vary dependent on the applicant's Median Household Income (MHI) as derived from the 1990 or 2000 census data, and the estimated monthly user rate amount. The 1990 MHI for Jackson and Hamblen Township's is $30,683 and $35,772 respectively. In anticipation that the monthly user rate will exceed $50 per month, these 1990 MHI incomes qualify Jackson and Hamblen Township's for an interest rate of 2.9% and 3.6% respectively for a 20-year loan period.

6.4.2 Rural Development (RD)

The RD issues direct loans for wastewater projects of this type and are available to rural areas and to cities and towns with a population of 10,000 or less. Funds are available to public entities, such as municipalities, counties, special-purpose districts and Indiana tribes. In addition, funds may be made available to corporations operated on a not-for-profit basis. Priority will be given to public entities, in areas with less than 5,500 people, to construct, extend or improve wastewater facilities. The maximum term for loans is 40 years. The interest rate is based on the MHI. The current interest rate for Jackson and Hamblen Townships based on their 1990 MHI is 4.375% and 4.25% respectively and is subject to change quarterly. The RD has indicated that they anticipate that interest rates will increase in the fourth quarter of 2003. Therefore, for this study, an interest rate of 4.75% and 5% will be used for Jackson and Hamblen Township's respectively. Based on the 1990 MHI, a grant up to 45% of the eligible project costs could be available for Jackson Township, however Hamblen Township does not qualify for a grant. The utilization of the 2000 census data, which is anticipated in the near future, could possibly change the grant eligibility for each township. RD grant amounts are also based on the reasonable level of user rates determined by the RD and project need.

6.4.3 Indiana Department of Commerce (IDOC) Community Focus Fund Program (CFF)

The CFF is a grant program administered by the IDOC and funded with federal Community Development Block Grant (CBDG) dollars. These grants support a variety of construction projects that either benefit low to moderate-income persons or eliminate blight in communities. At least 51% of the population must be at the low to moderate-income level. The CFF program is generally only available to cities, incorporated towns and counties. The CFF program is very competitive and requires a minimum 10% match with the maximum grant amount being $500,000. Based on 1990 census data, the low to moderate-income level for the Jackson and Hamblen Township's is 35.89% and 29.90% respectively, which would indicate that neither is eligible for the CFF grant. However an income survey certified on August 26, 1998 by Dr. Jeffery Hornsby, Ph.D. showed a low to moderate income level of 62.15% for both the Bean Blossom and Woodland Lake Areas. Another income survey certified on February 3, 2002 by Dr. Jeffery Hornsby, Ph.D. showed a low to moderate income level of 86.42% for the Bean Blossom Area. Therefore, for this study, it is assumed that all of the considered study areas would qualify for a IDOC CFF grant.

6.4.4 Economic Development Administration (EDA)

The EDA offers grants for projects that are related to job creation. Eligible applicants include cities, towns, counties and regional sewer districts. The EDA basic grant is for 50% of the total project cost. Severely economically distressed areas may be eligible for a grant totaling 80% of the project costs. In most cases $1,500,000 is the maximum grant amount. The EDA program is not considered viable for the planning area.

6.4.5 Summary

Besides the aforementioned grant and/or low interest loan programs the project could be financed by other means such as the Bond Market or Bank loan. After the scope of work has been identified it is recommended that the Friends of Bean Blossom, along with the Indiana Rural Community Assistant Program representative, and Ladd Engineering, Inc. pursue the formation of a regional sewer district and funding source(s). A professional Rate Consultant should be hired to conduct a rate analysis based on funding source(s) so that the actual impact to the customers can be determined.

6.4.6 Financial Impacts

The estimated financial rate impacts to the customers for the various phasing alternatives based on various funding source combinations are shown in Table 6.8. The funding sources used in Table 6.8 should be considered a worst and best case scenarios The worst case scenario would be a IDEM SRF loan, and the best case a RD grant for 45% of the project costs including a $500,000 IDOC grant.

Table 6.8
Financial Impacts For Phasing Alternatives

Phasing Alternative & Funding Source(s)	Estimated Project Cost	Estimated Annual O, M & R	Estimated Total Annual Requirement	Estimated No. EDU's	Estimated Monthly User Rate Per EDU
1 – IDEM SRF	$2,008,908	$65,100	$239,031	127	$156.84
1 – RD & IDOC			$102,628		$67.34
2 – IDEM SRF	$1,961,333	$65,100	$234,912	127	$154.14
2 – RD & IDOC			$101,005		$66.28
3 – IDEM SRF	$2,246,981	$68,050	$262,594	143	$153.03
3 – RD & IDOC			$113,702		$66.26
4 – IDEM SRF	$2,199,406	$68,050	$258,475	143	$150.63
4 – RD & IDOC			$112,078		$65.31
5 – IDEM SRF (*1)	$3,472,288	$94,950	$402,589	208	$153.03 & $179.48 (*3)
5 – RD & IDOC (*2)			$219,180		$66.26 & $135.23 (*3)
6 – IDEM SRF	$3,569,780	$94,950	$411,860	208	$150.63 & $196.65 (*3)
6 – RD & IDOC			$226,860		$65.31 & $147.16 (*3)

Notes for Table 6.8:

*1 – The interest rate used for Jackson and Hamblen Township's is 2.9% and 3.6% respectively

*2 – A 45% RD grant and 4.75% interest rate was used for Jackson Township and a 0% RD grant and 5% interest rate was used for Hamblen Township. A $500,000 IDOC grant was divided equally for each township

*3 – The lower user rate applies to Jackson Township and the higher user rate applies to Hamblen Township

Based on the funding scenarios presented in Table 6.8 and the financial impacts to the monthly user rate, the following conclusions are made:

- The Bean Blossom and Old Settler's Road Areas collection systems should be completed at the same time since there is no financial benefit to separate them into two phases
- Unless the utilization of the 2000 census data qualifies Hamblen Township for RD grant funds, it is unlikely that those Woodland Lake Area users would be willing to pay a monthly user rate of $115 to $127
- It is apparent that the Aero-Mod treatment plant provides the least cost monthly user rate if constructing Phase 1 only, whereas the Sanitaire treatment plant is best if the project is constructed combining all service areas. However, due to the fact that this determination was based on estimates, both treatment plant alternatives are considered equal and the ultimate owner and operator of the system should further review both in the design phase of the project.

CHAPTER 7 - PROPOSED PROJECT

7.0 Introduction

This chapter of the report provides a summary of the proposed project and the estimated project costs. The financial impacts to the users for the proposed project are also presented in this chapter.

7.1 Recommendations

Based on the evaluation of collection and treatment system alternatives outlined in chapter 5, and the project phasing considered is chapter 6, the following recommendations are made:

Phase 1

- Construct a low-pressure system collection system for the Bean Blossom, Old Settler's Road Areas
- Construct an activated sludge treatment plant having a capacity of 0.030 mgd, located on the east edge of Bean Blossom along Bean Blossom/Gatesville Road

Phase 2

- Construct a low-pressure system collection system for the Woodland Lake Area
- Expand the activated sludge treatment plant to a capacity of 0.055 mgd

A layout of the proposed project collection and treatment systems is shown on Exhibit's 5.3 and 5.5.

7.2 Preliminary Design Summary

A preliminary hydraulic analysis for the proposed project collection system and a design summary for the proposed wastewater collection system and treatment plant is provided in Appendix K.

7.3 Proposed Project Costs

The total estimated project costs for the Phase 1 proposed project are shown in Table 7.1.

Table 7.1 Total Project Costs – Proposed Project	
Item	**Estimated Cost**
Collection System Construction Cost	$1,003,170
Treatment Plant Construction Cost	$596,400
Design & Construction Engineering	$138,050
Additional Engineering Services (*1)	$39,000
Construction Observation	$87,100
Geotechnical Investigation	$3,000
Legal & Bond Council	$20,000
Financial Advisor	$22,000
Grant Administration	$40,000
Environmental Review and Labor Standards	$5,000
Land Acquisition	$12,000
Administrative	$780
Subtotal	$1,966,500
Contingencies (10% of Subtotal)	$196,500
Total	**$2,163,000**

Notes for Table 7.1:
*1 – Includes easement preparation, operation and maintenance manual and plant site property survey

7.4 Proposed Project Operation, Maintenance and Replacement Costs

The total estimated O, M & R costs for the proposed project are shown in Table 7.2.

Table 7.2 Estimated O, M & R Costs - Proposed Project	
Item	**Amount**
Labor	$27,400
Energy/Power	$12,500
Materials and Supplies	$2,550
Repairs	$1,550
Replacement	$11,300
Outside Services (Testing, Billing, etc.)	$4,250
Insurance	$3,150
Sludge Hauling & Disposal	$4,700
Conferences, Training & Miscellaneous	$650
Total	**$68,050**

7.5 Proposed Project Financial Impacts

The estimated financial rate impacts to the customers for the proposed project based on various funding source combinations are shown in Table 7.3. The funding sources used in Table 7.3 should be considered worst and best case scenarios. The worst case scenario would be a IDEM SRF loan, and the best case a RD grant for 45% of the project costs including a $500,000 IDOC grant.

Table 7.3
Financial Impacts – Proposed Project

Funding Source Combinations	Estimated Project Cost	Estimated Annual O, M & R	Estimated Total Annual Requirement	Estimated No. EDU's	Estimated Monthly User Rate Per EDU
IDEM SRF	$2,163,000	$68,050	$255,323	143	$148.79
RD & IDOC	$2,163,000	$68,050	$110,836	143	$64.59

38 [illegible] base expense

The estimated monthly user rate should be considered an estimated average and will be impacted by the amount of grant received for the project. The actual monthly user rate will be based on the metered water usage for those customers who are connected to a public water system.

7.6 Project Implementation and Schedule

The following implementation steps are recommended for the proposed project:

- Meet with RD to discuss the conclusions and recommendations of this preliminary engineering report
- Meet with the Township Trustee and IDEM to discuss the formation of a Regional Sewer District (RSD)
- Conduct a public hearing to discuss the preliminary engineering report and anticipated implementation steps
- File a petition with the IDEM for RSD formation
- Apply to RD for grants and loans
- Submit preliminary engineering report to RD
- Prepare design plans and specifications
- Submit application for IDOC grant
- Secure construction permits
- Secure project funding
- Receive construction bids
- Issue notice to proceed(s) for construction
- Construction completion
- Project close-out

Based on the listed implementation steps, the anticipated schedule shown in Table 7.4 is provided:

Table 7.4
Implementation Schedule

Item	Estimated Date
Meet with RD	October 2003
Meet with Township Trustee & IDEM	October 2003
Conduct Public Hearing	November 2003
RSD Petition to IDEM	December 2003
Obtain RSD Status	December 2004
Apply to RD for Project Financing	December 2004
Submit Preliminary Engineering Report to RD	December 2004
Initiate Design Plans and Specifications	January 2005
Receive RD Funding Commitment	April 2005
Complete Design Plans and Specifications	June 2005
Apply to IDOC for CFF Grant	September 2005
Obtain Construction Permits	September 2005
Receive IDOC Grant	November 2005
Receive Construction Bids	January 2006
Begin Construction	March 2006
Complete Construction	December 2006
Project Close Out	January 2007

1 - [illegible] - 15
15 - 22 or Nov 12
6:00 pm

APPENDIX A

ENVIRONMENTAL REPORT

Format II Environmental Review Record

State of Indiana
Department of Commerce
Community Development Block Grant
Environmental Review Record

Cover Sheet

Grantee Name:	Brown County Commissioners	**Grant Number:**	PL-98-040
Grantee Address:	201 Gould Street P.O. Box 37 Nashville, Indiana 47448		
Grantee Phone:	(219) 988-5485		

Grantee Certification:

The grantee's Chief Elected Official certifies that:

a. **To the best of his or her knowledge, the information contained in this report was true and correct as of the report end date.**

b. **The records described in 24 CFR Part 570 are being maintained and will be maintained and will be made available upon request.**

Signature of Chief Elected Official: ______________________ Date

Typed Name of Chief Elected Official: James Gredy, President

This report prepared by:

Name: Gary L. Miller

Title: Project Manager

Company: R.W. Armstrong & Associates, Inc.

Address: 2801 South Pennsylvania Street

City, State, Zip: Indianapolis. Indiana 46225

Project Description:	Preliminary Engineering Report for the preliminary design of a sanitary collection sewer system to serve the residence in the communities of Bean Blossom and Woodland Lake Subdivision, Brown County, Indiana.

ACTIVITY DETERMINATION FORM

Grant No: PL-98-040

Budget Line Item:			
Describe Activity:			
Activity Classification:	**Exempt**	**Cat. Excluded**	**Assessed**

Budget Line Item:			
Describe Activity:			
Activity Classification:	**Exempt**	**Cat. Excluded**	**Assessed**

Budget Line Item:			
Describe Activity:			
Activity Classification:	**Exempt**	**Cat. Excluded**	**Assessed**

Budget Line Item:			
Describe Activity:			
Activity Classification:	**Exempt**	**Cat. Excluded**	**Assessed**

1 - Not Applicable to This Project 4 - Permits Required			2 - Comment Required 5 - Determination of Approval/Permits Obtained				3 - Review Required 6 - Mitigation Required
Area of Statutory-Regulatory Compliance	**1**	**2**	**3**	**4**	**5**	**6**	**Note Compliance Documentation**
Historic Properties			X				IDNR – Historic Preservation and Archaeology
Floodplain Management			X				US Army Corps of Engineers IDNR – Division of Water
Wetlands Protection			X				US Department of Interior, Fish & Wildlife US Army Corps of Engineers IDNR – Division of Water
Noise	X						
Air Quality			X				IDEM – Office of Air Quality Management
Manmade Hazards							
Thermal/Explosive	X						
Airport Clear Zone	X						
Water Quality							
Navigable Waters			X				IDEM, IDNR
Aquifers			X				IDEM, IDNR
Solid Waste	X						
Coastal Areas							
Coastal Zone Management	X						
Coastal Barrier Resources	X						
Endangered Species			X				US Department of the Interior, Fish & Wildlife IDNR – Fish & Wildlife

* Attach evidence that required actions have been taken.

Data Sources and Documentation

Historic Properties	**36 CFR 800**
Floodplain Management	**PL 93-2341, 44 CFR 59-73, 24 CFR Part 55**
Wetlands Protection	**EO 11990 24 CFR Part 55**
Noise	**HUD Regulations, 24 CFR Part 31, Subpart B**
Air Quality	**Clean Air Act of 1970, as amended, EPA 40 CFR Part 50, CFR 40 Part 51, 32, 61**
Manmade Hazards	**24 CFR Part 51, Subpart C, HUD notice 79-33, 9-10-79 CFR Part 51 and Subpart D**
Water Quality	**33 USC 1251-1376 42 USC 300 f-3--j-lb 40 CFR Parts 100-149**
Solid Waste Disposal	**42 USC 6901-6987, 40 CFR Parts 240-265**
Coastal Areas	**16 USC 1451-1464**
Endangered Species	**16 USC 1531-1543**
Farmlands Protection	**7 USC 420lt**
Wild and Scenic Rivers	**Field Observation**
State or Local Statutes	**Field Observation**

Environmental Assessment Checklist

Project Name and Identification No: Beanblossom/Woodland Lake Sanitary Sewer Sys. PL-98-040

1 – Not Applicable to This Project; 2 - Comment Required; 3 - Review Required; 4 - Permits Required; 5 - Determination of Approval/Permits Obtained; 6 - Mitigation Required

Impact Categories	1	2	3	4	5	6	Source or Documentation
Land Development							
Conformance With Comprehensive Plans And Zoning	X						
Compatibility and Urban Impact	X						
Slope	X						
Erosion		X		X			NPDES Rule 5 permit will be required to be obtained from IDEM. Contractor must complete an erosion control plan.
Soil Suitability	X						
Hazards and Nuisances, Including Site Safety	X						
Energy Consumption	X						
Noise							
Effects of Ambient Noise on Project and Contribution to Community Noise Levels	X						

Environmental Assessment Checklist

Project Name and Identification No: Beanblossom/Woodland Lake Sanitary Sewer Sys. PL-98-040

1 – Not Applicable to This Project; 2 - Comment Required; 3 - Review Required; 4 - Permits Required; 5 - Determination of Approval/Permits Obtained; 6 - Mitigation Required

Impact Categories	1	2	3	4	5	6	Source or Documentation
Air Quality							
Effects of Ambient Air Quality on Project and Contribution to Community Pollution Levels			X				IDEM – Office of Air Quality
Environmental Design and Historic Values							
Visual Quality - Comprehensive Diversity, Compatible Use, and Scale	X						
Historic, Cultural and Archaeological Resources			X				Phase Ia Survey must be completed during the design of this system. If the phase Ia survey indicates additional mitigation is needed, these additional measures must be completed. IDNR – HPA must approve mitigation measures.
Socioeconomic							
Demographic Character Changes	X						
Displacement	X						
Employment and Income Patterns	X						
Community Facilities and Services							
Educational Facilities	X						
Commercial Facilities	X						
Health Care	X						

Environmental Assessment Checklist

Project Name and Identification No: Beanblossom/Woodland Lake Sanitary Sewer Sys. PL-98-040

1 – Not Applicable to This Project	**2 - Comment Required**	**3 - Review Required**
4 - Permits Required	**5 - Determination of Approval/Permits Obtained**	**6 - Mitigation Required**

Impact Categories	1	2	3	4	5	6	Source or Documentation
Social Services	X						
Community Facilities and Services (Continued)							
Solid Waste	X						
Waste Water		X					**IDEM Construction Permit required prior to construction.**
Storm Water	X						
Water Supply	X						
Public Safety							
Police	X						
Fire	X						
Emergency Medical	X						
Open Space	X						
Recreation	X						
Cultural Facilities	X						

Environmental Assessment Checklist

Project Name and Identification No: Beanblossom/Woodland Lake Sanitary Sewer Sys. PL-98-040

1 – Not Applicable to This Project	2 - Comment Required	3 - Review Required
4 - Permits Required	5 - Determination of Approval/Permits Obtained	6 - Mitigation Required

Impact Categories	1	2	3	4	5	6	Source or Documentation
Transportation	X						
Natural Features							
Water Resources	X						
Surface Water	X						
Floodplains			X				Utility Exemption for Construction in a Floodway must be obtained from IDNR prior to construction.
Wetlands	X						
Coastal Zone	X						
Unique Natural Features and Agricultural Lands	X						Indiana Geological Survey letter, 2/28/00 US Department of Agriculture letter, 1/21/00
Vegetation and Wildlife			X				Measures to minimize impacts to flora & fauna per IDNR, F&W letter dated 4/28/00 must be followed.

Environmental Assessment

Mitigations/Modifications?

Additional Studies Performed? If so, by whom? (Please attach)

1. **Is the project in compliance with applicable laws and regulations?**

   __X__ **Yes** ______ **No**

2. **Is an environmental impact statement required?**

   ______ **Yes** __X__ **No**

3. **A finding of no significant impact (FONSI) can be made. Projects will not significantly affect the quality of the human environment.**

   ______ **Yes** ______ **No**

   A FONSI cannot be made until completion of the Phase Ia Archaeological Survey. This survey will not be completed until the project is definitely moving forward to construction because of the high cost for the survey .

DNR Indiana Department of Natural Resources

Frank O'Bannon, Governor
Larry D. Macklin, Director

Division of Historic Preservation
and Archaeology
402 W. Washington Street, W274
Indianapolis, IN 46204-2748
PH: 317/232-1646
FAX: 317/232-0693
dhpa@dnr.state.in.us

November 21, 2000

RECEIVED
NOV 28 2000
By

Timothy George
Project Manager
R.W. Armstrong & Associates, Inc.
2801 South Pennsylvania Street
Indianapolis, Indiana 46225-2399

Federal Agency: Unknown

Re: Construction of wastewater systems in Bean Blossom and Woodland Lakes

Dear Mr. George:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f) and 36 C.F.R. Part 800, the Indiana State Historic Preservation Officer (" Indiana SHPO") is conducting an analysis of the materials dated November 1, 2000, and received by the Indiana SHPO on November 3, 2000, for the above indicated project in Hamblen and Jackson townships, Brown County, Indiana.

A complete analysis of the submitted project is not possible, as the information provided is incomplete.

Please provide the indicated information to facilitate the identification and analysis of historic properties in the project area:

1) Provide a letter or a copy of a letter from the Federal agency or its delegatee indicating the authorized representatives who may act on behalf of the Federal agency.

Once the indicated information is received, the Indiana SHPO will resume identification and evaluation procedures for this project.

A copy of the revised 36 C.F.R. Part 800 that went into effect on June 17, 1999, may be found on the Internet at www.achp.gov for your reference. If you have questions, please contact our office at (317) 232-1646.

Very truly yours,

for

Larry D. Macklin
State Historic Preservation Officer

LDM:KAB:RSW:kab

B-10

Archaeological Consultants of Ossian

January 5, 2001

RECEIVED
JAN 08 2001
By__________

Mr. Gary Miller
R. W. Armstrong & Associates, Inc.
2801 S. Pennsylvania St.
Indianapolis, IN 46225-2399

Dear Mr. Miller:

Enclosed is a report entitled *An Archaeological Literature Review of the Proposed Bean Blossom Wastewater Line in Bean Blossom, Brown County, Indiana.* Archaeological Consultants of Ossian Cultural Resource Management Report #01 LR 1. Please forward this report to the Indiana Division of Historic Preservation and Archaeology.

As you will see from the report, the literature review has determined that a Phase I archaeological survey appears to be necessary.

Thank you very much for the opportunity to work with you. If there is anything more I can do for you, please do not hesitate to call me at 765 565-6803 or 765 281-0969.

Sincerely,

Larry N. Stillwell

Larry N. Stillwell
Archaeologist

enclosures: CRM Report 01 LR 1

An Archaeological Literature Review of the Proposed Bean Blossom Wastewater Line in Bean Blossom, Brown County, Indiana

by
Larry N. Stillwell
Principle Investigator

Submitted by:

Archaeological Consultants of Ossian
P.O. Box 2374
Muncie, IN 47307

Submitted to:

RW Armstrong & Associates, Inc.

January 5, 2001

Archaeological Consultants of Ossian *Cultural Resource Management Report* 01LR1

Introduction

As a result of a request by the Indiana Department of Environmental Management, R.W. Armstrong and Associates, Inc., contracted with Archaeological Consultants of Ossian to conduct an archaeological literature review and site file check of a proposed wastewater line in Bean Blossom, Brown County, Indiana (Figure 1). The area investigated consisted of the construction of a wastewater line that ties into the Woodland Lake collection system. It is anticipated that approximately 14 acres of new permanent right-of-way will be needed for this project. None of the land for the utilization of this project has ever been assessed by a professional archaeologist. The project is located in portions of the E 1/2 of Section 25, Township 10 North, Range 2 East; in portions of the NE 1/4 of Section 36, Township 10 North, Range 2 East; in portions of the SW 1/4 of Section 30, Township 10 North, Range 3 East; and in portions of the NW 1/4 of Section 31, Township 10 North, Range 3 East (Jackson Township), in Bean Blossom, Brown County, Indiana (Figure 2). This report is a summary of the results of investigations of the review.

Physical Environment

Brown County has a continental climate with cold winters and hot summers (average daily low in January = 19 degrees, average daily high in July = 86 degrees), with approximately 40.2 inches of precipitation per year (Noble 1990). Almost 57% (or 22.9 inches) of the precipitation falls between the months of April and September. The average number of days per year with minimum temperatures above 32 degrees (five in ten year probability) in Brown County is 182 (Noble 1990).

The project area lies within the Norman Upland of south-central Indiana (Schneider 1966). The Norman Upland is characterized generally by flat-topped narrow divides, steep slopes, and deep V-shaped valleys. Most of the shorter tributary streams within the upland have developed only incipient floodplains, or none at all. However, the larger streams are marked by conspicuous narrow valley flats. The upland is nearly all in slope and is well drained by an almost perfect dendritic drainage system. The heart of the Norman Upland is located within Brown County. The upland, also called the Knobstone Escarpment, is the most prominent regional feature within Indiana. It is 300-feet higher than the Scottsburg Lowland that borders the upland to the east. Two other areas of flat relief border the Norman Upland. They are the Mitchell Plain to the west, and the Tipton Till Plain to the north. Bedrock geology of the project area is composed primarily of resistant siltstones and interbedded softer shales of the Borden Group as well as Middle Mississippian age limestones (Sunderman 1987). Owing to the thin mantle of glacial drift (10-30 feet deep in the Norman Upland), the underlying bedrock has had an effect on present-day topographic features (Bleuer and Moore 1978). The thin till deposits overlying bedrock have resulted in a relatively chert-rich environment. Because till deposits are not as deep in the Norman Upland as in other physiographic regions of Indiana, bedrock exposures of cherts are known to exist near the the study area. Some of the cherts known to exist in the region, but not necessarily in the county, include Indian Creek, Lost River, St. Genevieve, and Plummer Cherts.

Soils in the project area fall within three different associations. They are the Stendal-Haymond-Steff, the Pekin-Chetwynd-Bartle, and the Hickory-Cincinnati-Rossmoyne Associations. The Stendal-Haymond-Steff Association is comprised of deep, nearly level, somewhat poorly drained to well drained soils formed in silty alluvial deposits on flood plains. The Pekin-Chetwynd-Bartle Association consists of deep, nearly level to very steep, somewhat poorly drained to well drained soils formed in silty and loamy deposits on terraces. The Hickory-Cincinnati-Rossmoyne Association contains deep, gently sloping to very steep, well drained and moderately well drained soils formed in loess and in the underlying loamy and silty glacial drift and till on uplands (Noble 1990).

Specific soils in the project area include the deep, somewhat poorly drained Avonburg silt loam, 0-2% slopes; the deep, moderately well drained Beanblossom channery silt loam, occasionally flooded; the deep, well drained Berks-Trevlac-Wellston complex, 20-70% slopes; the deep, well drained Chetwynd loam, 12-20% slopes, eroded; the deep, well drained Cincinnati silt loam, 6-12% slopes eroded; the deep, well drained Hickory silt loam, 12-70% slopes, both eroded and noneroded varieties; the deep, well drained Haymond silt loam, frequently flooded; the deep, moderately well drained Pekin silt loam, 2-12% slopes, both eroded and noneroded varieties; the deep, moderately well drain Rossmoyne silt loam, 2-6% slopes, eroded; and the deep, moderately well drained Wilbur silt loam, frequently flooded (Noble 1990).

The parent material of each soil type noted above is as follows: Avonburg and Rossmoyne soils are formed in loess and in the underlying silty drift. They are located on ridges in the uplands of Brown County. Beanblossom soils are formed in very channery or extremely channery alluvium/colluvium and are found on alluvial fans, flood plains, or on colluvial benches within the region. Berks soils are common upland soils and are formed in material weathered from interbedded siltstone, sandstone, and shale bedrock. Chetwynd soils are formed in stratified loamy outwash and are situated on outwash plains within the area. Cincinnati soils are formed in loess and in the underlying glacial drift. Like Berks soils, they are common upland soils in Brown County. Haymond and Wilbur soils are formed in silty alluvial deposits and are situated on flood plains of major drainage ways in the region. Hickory soils are formed in a thin mantle of loess and in the underlying glacial till. They are also common upland soils in Brown County. Pekin soils are terrace soils that are formed in silty and loamy alluvial deposits.

The hydrology of the area suggests that lack of water would not have been a concern for prehistoric and early historic occupants of the project area. Brown County is drained by a mosaic of creeks and intermittent streams that feed into the White River located outside of the county. The project area is drained by both Hoppers Branch and Beanblossom Creek. Other sources of water near the project area include manmade ponds, Woodland Lake, Lick Creek, North Fork, and Happy Landing Lake. The project area is considered to be within the watershed known as the East Fork of the Lower White River.

Presettlement vegetation of the area appears to be a transitional zone between beech-maple hardwood forest and oak-hickory hardwood forest (Petty and Jackson 1966). The General Land Office survey of the area noted maple as the dominate tree species. Other tree species noted were ironwood, hornbeam, cherry, buckeye, redbud, hackberry, hickory, basswood, etc. (Hendricks 1820).

Taken as a whole, the environmental data (soils, hydrologic, and vegetational) all suggest that the area has a high probability to contain archaeological sites and was likely to have been occupied by prehistoric Native Americans as well as Euroamerican settlers. The combination of well drained soils (i.e. Cincinnati soils et.al.) near constant waterways (i.e. Beanblossom Creek), in a vegetational zone that provides abundant resources has consistently yielded relatively high densities of archaeological sites in previous surveys (e.g., Hart and Jeske 1989; Jeske 1992). Climatological, vegetational, and edaphic variables all point to the probability that the area would have been an attractive draw to both hunter-gatherers and early horticulturalists in this portion of the Midwest.

Culture Sequence

The archaeology of Brown County is relatively poorly known, although some research has been conducted as a result of cultural resource management surveys (i.e. federal highway projects) and sponsored research, and county wide surveys. The following section attempts to organize certain salient information on the archaeology of the region. This discussion is seated within a general prehistory of Indiana. Specific fieldwork that has been conducted in the southern and central regions of Indiana by noted authors (Black 1967, Winters 1969, Miller 1936, Kellar 1973, Dorwin 1971, Jeske 1992, etc.) is also included in this discussion. The discussion of the culture history of Indiana is not intended to be an exhaustive synthesis of all the past research and cultural resource management surveys that have been conducted in the area. Rather, it is meant to serve as a contextual framework for the archaeological sites discussed later in this report. The interpretations and dates given here are tentative and meant to serve as general guides.

PaleoIndian Period (12,000 – 9,000 B.P.)

The first people to reach the interior of the New World are known to archaeologists as PaleoIndians. These people produced an efficient chipped-stone tool kit, which included distinctive tools known as fluted points. Fluted points are found throughout North America and much of South America. The earliest variant of this type of tool is known as the Clovis point. Later types include Folsom points and Plano points. These tools were first found at sites on the Great Plains in association with the remains of mammoths and bison, giving rise to the mistaken notion that PaleoIndians were primarily big-game hunters. From sites found all over the continent, we now know that PaleoIndian peoples hunted and gathered a variety of foods, including deer, small mammals, and nuts (Fagan 1991). Large mammals were most likely a rare or seasonally taken resource; in fact, there are only a few sites east of the Mississippi River with evidence for the hunting of elephants or other megafauna by humans. Evidence also suggests that PaleoIndian groups were highly mobile, and traveled across large territories in order to exploit resources when and where they became available. Population size was small, and local groups were likely no larger than 25 or 30 related individuals with a relatively simple social structure. One consequence of this highly mobile lifestyle is that little trash accumulated in one spot, making the location and identification of PaleoIndian sites very difficult. Kellar (1973) notes Dorwin's study of PaleoIndian artifacts in 1966. Dorwin's study noted a third of all PaleoIndian projectile points he examined were from the Ohio River Valley in southern Indiana, and that PaleoIndian sites are usually located on older topographical landforms (i.e.high river terraces or in upland areas). These locations did not flood, offered easy access to aquatic plant and animal resources and served as vantage points for locating larger game. PaleoIndian tools known from Indiana include: Clovis, Folsom, and Hi-Lo points (Justice 1987).

Archaic Period (9,000 – 3,500 B.P.)

The Archaic is a long period of time during which important long-term trends of southern Indiana prehistory are begun. One of these trends is a focus on artifact styles resembling those of the Mississippi River dominated Midwest rather than those of the Lake Erie Basin in northeastern Indiana. Archaeologists usually divide the Archaic into three parts. The **Early Archaic** (9,000-8,000 B.P.) is separated from the preceding PaleoIndian period primarily by the conspicuous lack of fluted points. Large spear points or knives with beveled edges and deep notches are found at Early Archaic sites, as well as smaller points with bifurcate bases. Sites from this time period are fairly common, with the same general geographic distribution seen in PaleoIndian sites (Springer 1985).separated from the preceding PaleoIndian period primarily by the conspicuous lack of fluted points. Large spear points or knives with beveled edges and deep notches are found at Early Archaic sites, as well as smaller points with bifurcate bases. Sites from this time period are fairly common, with the same general geographic distribution seen in PaleoIndian sites (Springer 1985).

The **Middle Archaic** (8,000-5,000 B.P.) is a period of population growth in Indiana (Winters 1969). Projectile points tend to be smaller with side notches and straight bases. T-shaped drills are also common. In addition, a wide variety of ground stone tools such as milling stones, pestles and grooved axes are found from this period. During the Middle Archaic, a long-term warming and drying period, called the hypsithermal, reached its peak. Previously pine dominated forests were replaced by deciduous forests dominated by oak, hickory, and elm, which is more productive for human needs. In addition, all of the major rivers and their associated floodplains in the region were established by this time. Because of the rich resources available on river floodplains, people settled into larger, more permanent villages. Foods utilized during the Middle Archaic included deer, small mammals, fish, migratory waterfowl, a wide variety of nuts, and some domesticated plants such as squash.

The **Late Archaic** (5,000-3,500 B.P.) is a period in which a number of trends seen earlier (e.g., increased population, decreased mobility, domestication of plants) continue. In addition, several technological innovations were introduced-- most notably the manufacture of pottery. Typical artifact styles in the Late Archaic include long spear points with square bases and smaller points with stemmed bases. Ground and polished stone artifacts called bannerstones also are found during the Late Archaic. They are usually found with human burials. A trade network was developed during the Late Archaic, along which artifacts and raw materials such as galena and copper were exchanged. These traded materials often were deposited in burials. Resources utilized during the Late Archaic include all those mentioned for the Middle Archaic, with an increasing utilization of seed plants such as goosefoot (lamb's quarters) and sumpweed. The Late Archaic is well represented in Indiana, with numerous village and mortuary sites reported. Some of the more famous Late Archaic sites can be found in the central Wabash Valley and include Robeson Hills, Swan Island, and Riverton (Winters 1969). Late Archaic sites tend to be larger and contain more tools and debris than sites of any preceding time period. They are usually located on well-drained soil near water.

Woodland Period (3,500 – 500 B.P.)

The Woodland period was a time of major changes in food choices and social organization in the Midwest. Like the Archaic, the Woodland is divided into three parts. Until recently the **Early Woodland** (3,500-2,100 B.P.) was separated from the Archaic by the use of pottery. However, in the southern Midwest, pottery is now known to have been utilized as early as 4550 B.P. (well within the Late Archaic). Early Woodland/Late Archaic pottery tends to be thick and porous, with fiber or course grit temper. Other than the increasingly common use of pottery, there is little difference between the Early Woodland and Late Archaic in terms of technology. It is during this period, however, that mortuary activities first included the building of earthen mounds.

The **Middle Woodland** (2,100-1,600 B.P.) is most notable for the extensive use of large burial mounds and geometric earthworks, and a widespread trading network known as the Hopewell Interaction Sphere. Artifacts and raw materials such as obsidian from the Rocky Mountains, copper from northern Michigan, mica from the Appalachians, shark teeth and marine shells from the Gulf of Mexico, and a wide variety of cherts were exchanged throughout most of the eastern United States. Centers for this activity were the Scioto River Valley in south-central Ohio, the Illinois River Valley in west-central Illinois, and the Ohio River Valley. Snyders points are characteristic of this period, as are grooveless axes or celts. Pottery was grit tempered, better made, and more often decorated than in the Early Woodland period. Subsistence activities changed, with horticulture becoming a major supplement to the hunting-gathering lifestyle. Goosefoot, sumpweed, and sunflower were important plants which were actively cultivated. Maize (corn), a tropical import, was not an important part of the diet at this time. Central and Southern Indiana, within the central region of the Hopewell phenomenon, has a number of Middle Woodland village, earthworks, and mound sites.

The **Late Woodland** (1,600-500 B.P.) is a period of increasing population size and increasing dependence upon maize as a dietary supplement. The number of frost-free days for growing the strains of corn available during this period, the presence of plentiful, fertile flood plains of the Ohio River drainage probably made corn more important to the occupants of southern Indiana than to people Lake Erie Basin. The Hopewell Interaction Sphere of the Middle Woodland period was no longer a part of the social and economic lives of Midwesterners; there was a general return to the use of local resources for tool manufacture. Pottery was typically grit-tempered, and harder and thinner than Middle Woodland pottery. The bow and arrow was introduced during this time, and small, triangular, notched arrow points were a common tool type. Evidence for violence, notably projectile points imbedded in human bone and scalp wounds on skulls, is noted from many sites in the Midwest during this time period, including Indiana. Violence is probably associated with increasing population size, resulting in the increasing use of cultivated crops and sedentism.

Mississippian

After A.D. 900, people in the Ohio river valley of the Midwest began to follow a lifestyle characterized by a dependence upon corn, the use of shell-tempered pottery, the building of pyramidshaped mounds, and population aggregation into hierarchically ordered settlement communities (Black 1967, Kellar 1973). This lifestyle, termed **Mississippian**, was not a part of northern Indiana culture history to the same extant as found in the southern portions of the state (Jeske 1992). Evidence suggests that Native American groups in southwestern Indiana adopted the classic Mississippian material culture attributes found in other states like Illinois, Arkansas, etc. These groups intensively cultivated maize, beans, and squash as well as lesser seed crops and tobacco, which in combination with resident plants and animals, provided an abundant and varied food supply. They lived in large villages or towns sometimes extending over hundreds of acres, which suggests populations of several thousand people. The settlements were permanently established, with a population that was tied to ceremonial and/or trade centers like those found at Cahokia and Angel Mounds. The placement of these centers appears to indicate long-range planning. Unlike previous periods in prehistory, stylistic changes in artifact forms such as projectile points and pottery occur on a more rapid scale and the quantity of goods appear in greater numbers. To deal with the rapid changes, the Mississippian period is broken down into several phases. In southwest Indiana, these phases are represented by the Angel Phase, Vincennes Culture, and Caborn-Welborn Phase. Most of the phases last for a couple hundred years, with some phases overlapping one another (Dorwin 1971, Kellar 1973, 1979; Stafford, Anslinger, Cantin, and Pace 1988; Tomak 1970, 1993).

Protohistoric and Historic (A.D. 1450 – A.D. 1846)

The nature and extent of Native American **Protohistoric (A.D. 1450-ca. 1680)** occupation of the southern Indiana area immediately prior to European contact is obscure. However, archaeological evidence from the "Mouth of the Wabash Site" in Posey County indicates that a Mississippian lifestyle continued in Indiana until Historic contact. In 1973, Munson and Green reexamined artifacts from the site. A brass artifact was contained within the collection which indicated that Europeans were starting to impact Mississippian culture probably through trade routes to the southern United States (Kellar 1973), and that Mississippian culture in the region begins to fragment into many micro-cultures and phases. The **Historic Period (ca. A.D. 1680-1846)** is much better understood. We do know that several trends seen during the prehistoric periods change markedly during the Protohistoric period. Most of the Midwest appears to have suffered a dramatic population decline by A.D. 1450. By the time of European contact in the late seventeenth century, the indigenous (?) Mississippian and Upper Mississippian groups of Indiana had been replaced by the historic Potawatomi and Miami (including Piankashaw, Wea, and Shawnee), along with smaller groups such as the Ottawa and Fox. Shortly after encountering European culture, most native artifacts such as pottery and stone tools were abandoned in favor of trade goods such as brass kettles, crockery, and steel knives

The Potawatomi were Algonquian speakers who began expanding their control of trade and territory south from Green Bay along the western shore of Lake Michigan by 1670. In 1695, they moved around the southern end of the Lake, eventually extending their territory across all of northern Indiana and southern Michigan to Detroit (Berthrong 1974). The Miami also were Algonquian speakers with close ties to the peoples of the Illini confederacy. Widely dispersed throughout the western Great Lakes region, the Miami originally comprised at least six bands or groups: the Atchatchakonguen (Crane), Kilatika, Mengakonkia, Pepicokea, Wea and Piankashaw. By 1680, the Atchatchakonguen were referred to as the Miami by the French. Some Miami-speakers were living near Chicago/South Bend and the area around southern Lake Michigan, although other Miami-speaking groups were scattered throughout northern Indiana, Illinois, and Wisconsin. The Mengakonkia, Kilatika, and Pepicokea disappear from historical documents during the next century, probably incorporated into the Crane, Wea, and Piankashaw bands (Berthrong 1974). The Miami were displaced from the Lake Michigan area by the aggressive Potawatomi and migrated east into northern Indiana after 1695, eventually settling along the Upper Wabash River Valley and at the three rivers junction in Fort Wayne. The area is the continental divide between the Mississippi River Drainage and the Lake Erie Basin, and the Miami were able to take advantage of their control of this strategic portage area in their relationships with Europeans and other historic tribes.

EuroAmerican westward expansion resulted in the conflict between the Native Americans and EuroAmerican invaders. Despite the victories of Little Turtle over the American army in the late 18th century, the Miami were broken by military forces of the United States in 1795. The Wea were removed in 1805, the Piankashaw in 1820. The Potawatomi were removed to reservations in Wisconsin and Kansas by 1841. The last remaining bands of Miamis were resettled in Kansas in 1846, although many of the tribe evaded removal, thanks to the negotiations of Jean Baptiste de Richardville, the Miami Civil chief who engineered land grants to individual Miami families in exchange for territory. A small number of Miami retained personal reservations or reserves (i.e., Richardville, Cicott, Seek) and continued to reside in the state. Nonetheless, the settlement of Indiana after 1846 by EuroAmericans was swift and complete, effectively ending a successful and rich cultural Native American tradition that spanned some 14,000 years. The Eastern Miami, those left with private landholdings, became largely assimilated into White Society, and in 1898, they were removed illegally from the Department of Interior's roll of Indian Tribes.

Euroamerican Historic (ca. 1680-present)

The first Europeans who came to what is known as Indiana were French traders and trappers. LaSalle portaged near South Bend in 1769 (Lockridge 1980). Shortly after, other Frenchmen came to the river valleys of the area to trap fur and trade with the Native Americans. Set astride the most direct link between the St. Lawrence and the Mississippi, the French had established three main centers to help control the flow of goods and people through the territory. Fort Miamis (Fort Wayne) was established at the junction of the St. Joseph, St. Mary's, and Maumee river in northeastern Indiana before 1700, while Fort Ouiatanon, on the Wabash River near modern Lafayette, was settled in 1717 (Carmony 1966). These two forts were within Canada. Fort Vincennes, established in 1732, was located on the lower Wabash, and was considered part of the Louisiana Territory. Although there was no permanent settlement at Indianapolis, it is highly likely that the French exploited the area.

The French lost control of this strategic territory to the British after the French and Indian War (1754-1763). The British never had a strong presence in the region, not occupying Vincennes until 1777 (Barnhart and Riker 1971). They lost control of the region to the American Colonists in 1783, who began to exert their power in the area. Known as the Northwest Territory, the region included all of the area which was to become Ohio, Indiana, Illinois, Michigan, Wisconsin, and eastern Minnesota. Gaining military victory and political control of the territory in 1795, the Americans began to settle the region in earnest.

The settlement of Indiana was part of a westward flow of immigrants into the valley of the Mississippi between 1792 and 1860 that resulted in 15 new states admitted to the Union (Carmony 1966). Indian was settled initially by people from the upper south (I.e. Virginia, North Carolina, and Kentucky), along with some smaller number from the Middle Atlantic (Hudson 1988). White settlement in Indiana generally was a northward flow from which began in the Ohio Valley. Most of the settlers of central Indiana were American-born protestants of British descent, and moved to central Indiana from southern Indiana (Rudolph 1980).

The population grew quickly, and in 1816, Indiana entered the Union with its capitol at Corydon. Corydon was far too south for convenience, and Indianapolis, at the confluence of the White River and Fall Creek was established by commission as the new capitol in January, 1821. After 1830, non-American born immigrants began to arrive in Indiana in greater numbers, principally from Germany and Ireland. The growth of the largely Catholic immigrant population was viewed with alarm by the protestant residents from the upper south, and paved the way for the rise of the Ku Klux Klan within the state (Carmony 1966).

The Civil War impacted the state politically and economically. While considered by some an "ambiguous" state, Indiana sent over 200,000 men to the Union cause, and was a critical supplier of food and other war-related material (Barnhart 1980). Along with other impacts, the state began a long, slow transition from a strictly agricultural economy to an industrial economy.

Immigration into the state peaked during the years between the Civil War and World War I (Carmony 1966). These immigrants were still principally Germans and Irish, but included southern and eastern Europeans as well. In addition, the African American population increased. The large immigrant population and the changing economy resulted in enough fear among long-established protestant populations that the Ku Klux Klan became a dominant political force in the 1920's, but whose influence waned shortly after (Carmony 1966). By World War II, Indiana had made the transition to an industrialized economy and the Klan was no longer a major political force.

Brown County was established in 1836. It was once part of Bartholomew, Monroe, and Jackson Counties. It was named after Major General Jacob Brown, a soldier in the War of 1812. The first permanent settlers arrived in Brown County in 1820. They settled near Schooner Creek and Elkinsville. Nashville, the county seat, was founded in 1836.

Background Review

The archaeological site files and maps at the Indiana Department of Historic Preservation and Ball State University were examined as part of the background review for this project. Historical documents such as county plat maps (Anonymous 1876) and notes and maps of the General Land Office were also examined. Other sites around the region are known from interviews with private collectors. Some are known from historic sources (e.g.,Guernsey 1932, Black 1936), while others were discovered as a result of cultural resource management projects (Westermeier 1996, Stillwell 2000a, 2000b, 2000c). All of these were reviewed for comparative data.

The results of cultural resource management surveys conducted in the area suggest that sites contained within the region vary in size from small ephemeral lithic scatters to fairly significant prehistoric deposits. As of 2000, over 202 archaeological sites have been recorded for Brown County. Three of the archaeological sites are located within one mile of the proposed project area. Two of the sites, 12-Br-35 and 12-Br-36, are historic structures which relate to the early industrial development within the Town of Bean Blossom. They are recorded as a commercial factory, and as a cannery. The remaining site, 12-Br-154, is listed as a camp of unknown prehistoric age. This last site was not thought to be significant.

All phases of prehistoric occupation are represented in or around Brown County, including over 5 Paleo-indian sites (Ellis 1990 et.al.).

Site density for Brown County is thought to be one site per 12.08 acres. This figure was attained from an archaeological field reconnaissance conducted around Mineral City by Indiana State University (Stafford et al. 1988). Another site density figure for the region, and based upon a project testing Late Archaic settlement models, suggests a density of one site per 5.83 acres (Ellis et al. 1990). This data is somewhat biased, however, since the project was not only looking at Late Archaic sites, but surveyed only well-drained soils in valley settings as well. It should be noted that these studies represent tentative estimates for the project area. To date no large scale cultural resource management systematic survey has been conducted extensively within the region. And thus, no reliable site density figures are available for the area.

Historic sources such as the General Land Office survey notes for the area did not indicate any sites present within the project area. County plat maps of Brown County (Anonymous 1876) did reveal the presence of two schoolhouses, three houses, and the Town of Bean Blossom/Georgetown within a mile of the project area.

Conclusions and Recommendations

The environmental data indicate that the project area contains the potential for prehistoric sites and probably historic sites as well. Given the fact that portions of the project area is situated on well drained soils in a deep alluvial setting of a major drainage, and most of the remaining soils within the wastewater line right-of-way are well drained, coupled with the fact that approximately 14 acres of new permanent right-of-way will be required for the project which has not been specifically addressed by a professional archaeologist, it is our conclusion that an archaeological field reconnaissance is warranted. A Phase I archaeological field reconnaissance will determine if significant cultural materials and/or archaeological sites are present within the proposed project area.

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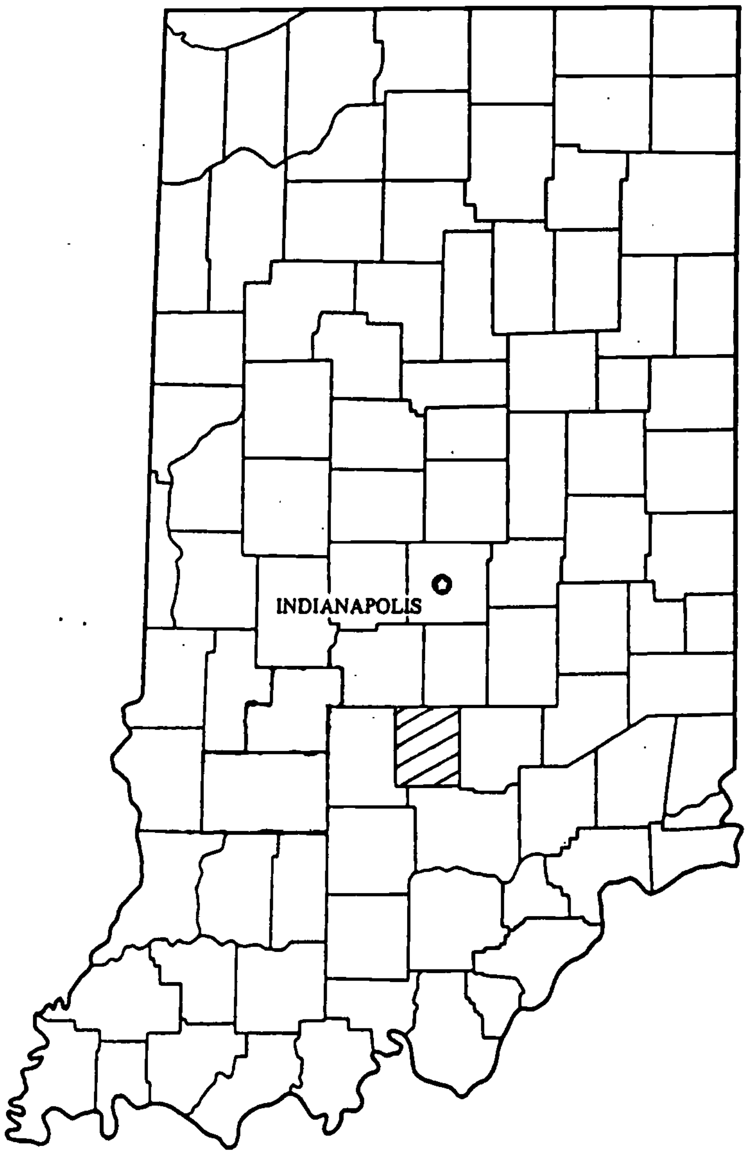

Figure 1. Location of Brown County within the State.

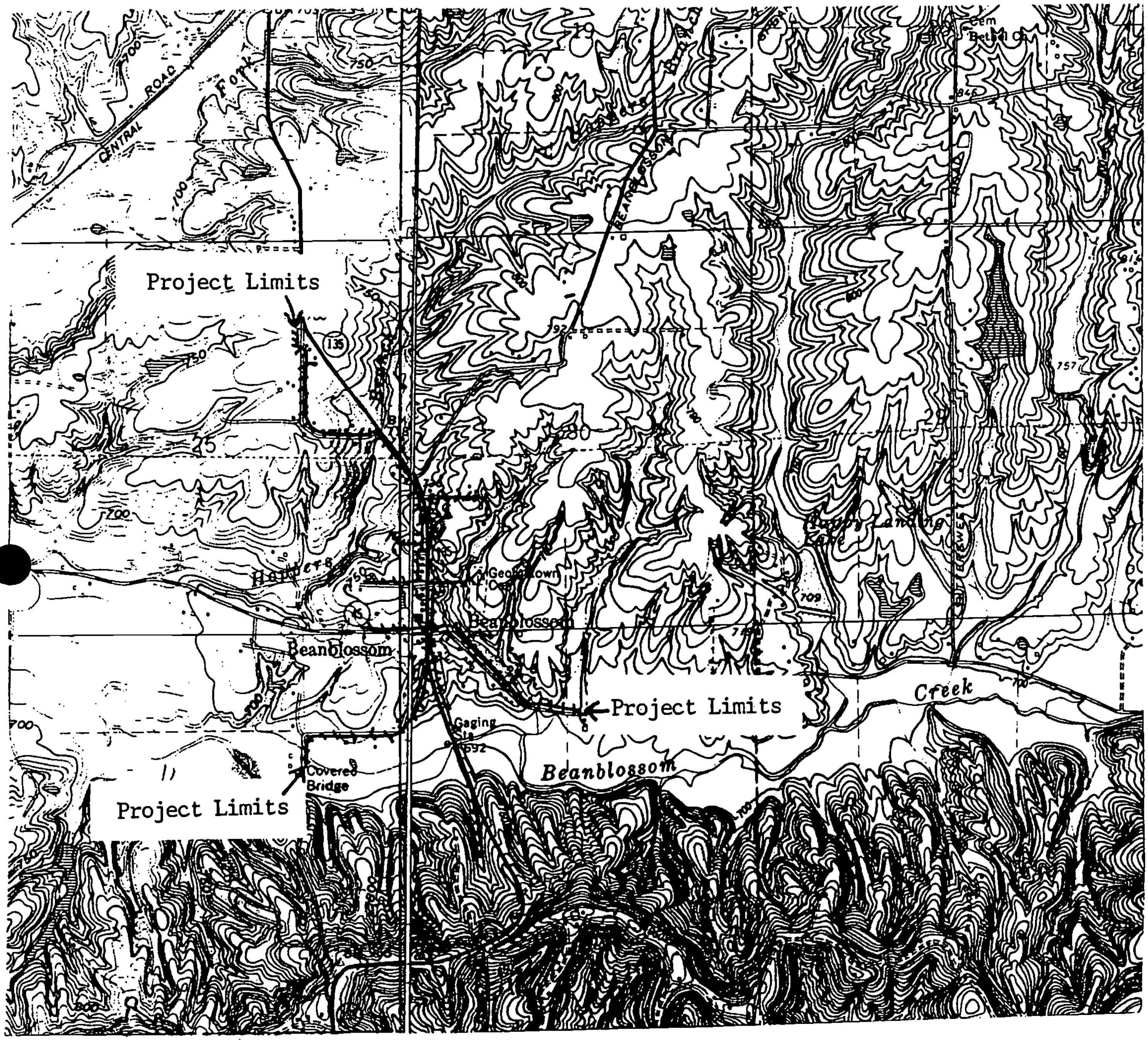

Figure 2. Portion of USGS 7.5' Morgantown and Bean Blossom, Indiana Quadrangles showing project location.

Frank L. O'Bannon
Governor

Richard D. Feldman, M.D.
State Health Commissioner

Indiana State Department of Health

An Equal Opportunity Employer

RECEIVED
NOV 1 3 2000
By______

DATE: November 8, 2000

TO: Timothy George
R.W. Armstrong
2801 South Pennsylvania Street
Indianapolis, IN 46225-2399

RE: Wastewater Facilities Projects
Helmsburg R.S.D.

In regards to the above referenced project, I am responding to the environmental review documents received by our office.

_X_ We have no reservation about the proposed project and forsee no significant environmental disturbance.

____ We believe this proposed project will have environmental detriment to the community and have attached supporting documents or intend on requesting more information for our consideration.

If you have any questions, please contact Dennis H. Ehlers, at AC 317/233-7177.

Sincerely,

Howard W. Cundiff

HOWARD W. CUNDIFF, P.E., DIRECTOR
CONSUMER PROTECTION

DHEhlers/kk
cc: Brown County Health Department

(Rev. 12/10/99) s:\saneng\pr\forms\envrev.doc

INDIANA UNIVERSITY

INDIANA
GEOLOGICAL SURVEY

November 14, 2000

Mr. Timothy George
Project Manager
R.W. Armstrong
2801 South Pennsylvania Street
Indianapolis, IN 46225-2399

Dear Mr. George:

The Helmsburg Regional Sewage District project should neither be affected by the geology nor affect the geology.

Yours truly,

Carl B. Rexroad

Carl B. Rexroad
Geologist
Environmental Geology Section

RECEIVED
NOV 17 2000
By

1 North Walnut Grove
Bloomington, Indiana
47405-2208

Fax: 812-855-2862

United States Department of the Interior

FISH AND WILDLIFE SERVICE
BLOOMINGTON FIELD OFFICE (ES)
620 South Walker Street
Bloomington, Indiana 47403-2121
(812) 334-4261 FAX 334-4273

IN REPLY REFER TO:

November 30, 2000

RECEIVED
DEC - 4 2000
By

Timothy George
R.W. Armstrong & Associates, Inc.
2801 South Pennsylvania Street
Indianapolis, Indiana 46225-2399

Work Type: Helmsburg Regional Sewage District Wastewater Collection Facilities
County(ies): Brown

Dear Mr. George:

This responds to your letter dated November 1, 2000, requesting U.S. Fish and Wildlife Service (FWS) comments on the aforementioned project.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

According to the information you provided our office, you propose to install new sewer lines within the communities of Bean Blossom and Woodland Lake and install a new force main connecting Woodland Lake and Bean Blossom to the existing wastewater treatment plant in Helmsburg. The new sewer mains within Bean Blossom and Woodland Lake will be within existing rights-of-way along roads. The new force main will be within existing rights-of-way along State Road 45 from Helmsburg to Bean Blossom.

It appears that the section of new force main from Bean Blossom to Woodland Lake will be within existing rights-of-way along a power utility line. This should eliminate any need for tree clearing; however, this route traverses hilly terrain, requiring several ravine and/or stream crossings. We are concerned about the potential for severe erosion during construction. If adequate erosion control and stream protection measures are incorporated into final plans, we have no objection to the project as currently proposed. If project plans change so that the existing right-of-way along the power utility line is not utilized, we recommend selecting an alternate route that would use existing rights-of-way along roads.

Based on a review of the plans you provided, we recommend the following mitigation measures be included in the final project plans to minimize adverse impacts on fish and wildlife resources:

1. Minimize removal of woody vegetation, especially mature trees.

2. Restrict below low-water work in stream channels to the minimum necessary for line installation and restore the stream channel's original bottom contours. Attach water lines to existing bridge structures if possible. Use directional drilling for stream crossings wherever feasible.

3. Minimize the extent of artificial bank stabilization.

4. If riprap is utilized for bank stabilization, extend it below low-water elevation to provide aquatic habitat.

5. Implement temporary erosion and siltation control devices as necessary, especially on slopes and near waterways.

6. Revegetate all disturbed soil areas immediately upon project completion.

7. Avoid channel work during the fish spawning season (April 1 through June 30).

ENDANGERED SPECIES

The proposed project is within the range of the federally endangered Indiana bat (*Myotis sodalis*) and federally threatened bald eagle (*Haliaeetus leucocephalus*). The proposed project is not likely to adversely affect these two species.

This precludes the need for further consultation on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. However, should new information arise pertaining to project plans or a revised species list be published, it will be necessary for the Federal agency to reinitiate consultation.

A permit under Section 404 of the Clean Water Act may be needed for the proposed project. We would probably not object to issuance of such a permit if the applicable aforementioned recommendations are incorporated into final project plans as currently proposed.

We appreciate the opportunity to comment at this early stage of project planning. If project plans change such that fish and wildlife habitat may be affected, please recoordinate with our office as soon as possible. If you have any questions about our recommendations, please call Barbara Hosler at (812) 334-4261 ext. 209.

Sincerely yours,

Michael A. Litwin

for Scott E. Pruitt
Acting Supervisor

cc: Steve Jose, IDNR, Division of Fish and Wildlife, Indianapolis, IN
Max T. Henschen, IDEM, Office of Water Management, Indianapolis, IN

USDA

d States
L . artment of
Agriculture

Natural
Resources
Conservation
Service

6013 Lakeside Blvd.
Indianapolis, IN
46278-2933
(317) 290-3200
FAX 290-3225

December 1, 2000

Timothy George
Project Manager
R.W. Armstrong & Associates, Inc.
2801 South Pennsylvania Street
Indianapolis, Indiana 46225-2399

Dear Mr. George:

The project to construct wastewater sewers in Brown County, Indiana, referred to in your letter of November 1, 2000, will not impact resources within our area of concern.

If you need more information, please contact John Reynolds, 317-290-3200, extension 341.

Sincerely,

Jane E. Hardisty

JANE E. HARDISTY
State Conservationist

RECEIVED
DEC - 7 2000
By________

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059
FAX: (502) 315-6677

RECEIVED DEC - 6 2000 By

November 28, 2000

Operations Division
Regulatory Branch (North)
ID no. 200001509-jea

This is in response to your request for comments concerning:

Project: Wastewater Facilities Project
Helmsburg Regional Sewage District
Bean Blossom/Woodland Lakes
Brown County, Indiana

Structure No: N/A

Description: The project is the construction of wastewater systems which will consist of gravity sewers, pressure sewers, lift stations, and force mains. The wastewater collection system will be connected to the existing Helmsburg sanitary sewer system with treatment provided at the Helmsburg Wastewater Treatment Facility in Helmsburg. The project is located along Route 45 into the communities of Beanblossom and Woodland Lakes in Hamblem and Jackson Townships, Brown County, Indiana.

Name of Organization requesting early coordination:

R.W. Armstrong & Associates, Inc.

We do not have any comments on the general environmental impacts of the proposed project(s). This agency is not funded or authorized to provide general environmental assessments for all federally related development proposals. Our lack of comments on specific potential environmental impacts should not be construed as concurrence that no significant environmental damage would result from the project.

1. The proposed improvement may impact the following waterway(s) under our jurisdiction:

Two crossings of Beanblossom Creek, one crossing of Hoppers Branch, one unnamed tributary of Beanblossom Creek in the community of Beanblossom, and two unnamed tributaries of Beanblossom near Woodland Lakes.

2. Current and/or future plans to develop the waterway(s) include:

None

None

3. The following Corps of Engineer's projects and/or studies are located within the area:

N/A

4. The depth or elevation of Ordinary High Water (OHW) is:

____ Feet mean sea level.

_X_ The OHW elevation is the line on the bank established by the changing water surface and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; and other indications as determined upon inspection of the area. If additional information is needed for the OHW you may contact our Hydrology & Hydraulics Branch by calling (502) 315-6456.

5. The project site is within flood elevations:

____ Flood plain information is available by writing this office directly and requesting a floodplain delineation for a specific area. However, we are required by law to collect a fee for this service. The fee varies with the scope and complexity of the request. If you are interested in receiving this service please re-submit this request to the above address, ATTN: CELRL-PMP or call (502) 315-6892 and we will provide information on the fee schedule. Otherwise you may be able to obtain this information from local agency sources such as planning commissions.

6. Wetlands:

____ are located on the site as indicated on the attached sheet.

_X_ To our knowledge, no wetland mapping of your proposed project site has been done, nor does the Corps of Engineers have any future plans to delineate and map jurisdictional wetlands for public or private use. If you suspect wetlands would be impacted by the discharge of dredged or fill material, a wetland delineation report conforming to the "Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1," would have to be submitted. Members of our regulatory staff having expertise in this area, would evaluate and verify the wetland delineation report as part of our review process. If you need assistance in preparing a wetland delineation, there are several environmental consultants in your geographic area having this expertise.

7. If your project would impact any "waters of the United States," including wetlands, then you should submit a Department of the Army (DA) permit application for review by this office.

Copies of DA permit application forms can be obtained by writing to the above address ATTN: CELRL-OP-FN or by calling (502) 315-6733.

Jane Archer

Jane Archer
Project Manager
Regulatory Branch

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Governor

Lori F. Kaplan
Commissioner

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Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.state.in.us/idem

January 12, 2001

RECEIVED
JAN 16 2001
By__________

Mr. Timothy George, Project Manager
R.W. ARMSTRONG
2801 South Pennsylvania Street
Indianapolis, Indiana 46225-2399

Dear Mr. George:

RE: WW Facilities Project/Helmsburg RSD
Bean Blossom/Woodland Lakes
Brown County, Indiana

The Indiana Department of Environmental Management (IDEM) has reviewed the above-noted project with consideration to potential effects on the environment at or about the project location.

The following topics were considered during our review process:

WATER AND BIOTIC QUALITY

Recommended water pollution control measures.

1. Contact the Department of Natural Resources - Division of Water, 317/232-4160, regarding the need for permits for work within floodways of water bodies impacted by this project.

2. Contact the Department of Natural Resources - Division of Fish and Wildlife, 317/232-4080, regarding possible adverse impacts from this proposed project on fish and botanical resources.

3. Contact the Office of Water Quality - Permits and Compliance Branch (317/233-1864) regarding the need for a Rule 5 Storm Water Permit for construction activity (which includes clearing, grading, excavation and other land disturbing activities) that results in the disturbance of five (5) acres or more of total land area. If the land disturbing activity results in the disturbance of less than five (5) acres of total land area, but is part of a *larger common plan of development or sale* (such as the development of a subdivision or industrial park), it is still subject to storm water permitting.

4. Contact the Office of Water Quality - Planning and Restoration Branch (317/232-8675) regarding the need for permits to construct wastewater facilities and sewer lines.

AIR QUALITY

The project should be designed to minimize any impact on ambient air quality in or about the project area. The project must comply with all federal and state air pollution regulations.

Consideration should be given to the following:

1. What disposal method is being used for organic debris from land clearing and other waste materials? Open burning is allowed for certain types of maintenance purposes with specific conditions. If burning is allowed by the rule and is being considered, evaluate the economic and technical feasibility of non-combustion disposal options, for example-removal, mulching and burial. Open burning approvals may be granted for certain projects by OAM. Open Burning Rule 326 IAC 4-1 should be taken into consideration.

2. Reasonable precautions must be taken to minimize fugitive dust emissions from construction and demolition activities. Example precautions are wetting the area with water, constructing wind barriers, or treating the area with chemical stabilizers (such as calcium chloride or several other commercial products). Dirt tracked out from unpaved areas should be minimized. Please refer to Fugitive Dust Rule 326 IAC 6-4 for details. If construction or demolition is conducted in a wooded area where large blackbirds have roosted or abandoned buildings or building sections in which pigeons or bats have roosted for 3-5 years precautionary measures should be taken to avoid an outbreak of histoplasmosis. This disease is caused by the fungus Histoplasma capsulatum, which stems from bird or bat droppings that have accumulated in one area for 3-5 years. The spores from this fungus become airborne when the area is disturbed and can cause infections over an entire community downwind of the site. The area should be wetted down prior to cleanup or demolition of the project site. For more detailed information on histoplasmosis prevention and control, please contact the Acute Disease Control Division of the Indiana State Department of Health at (317) 233-7272.

3. Ensure that asphalt paving plants are permitted and operate properly. The use of cutback asphalt, or asphalt emulsion containing more than seven percent (7%) oil distillate, is prohibited during the months April through October. Please refer to 326 IAC 8-5 Asphalt Paving Rule for details.

4. If demolition or renovation of a structure will take place, asbestos and lead-based paint rules may apply. An inspection should be performed by an accredited asbestos inspector to determine if asbestos containing materials are present. If asbestos is present, rules governing project licensing will apply. Projects that involve lead-based paint activities should take the proper safety precautions to ensure the health of the buildings occupants and the safety of the environment. In projects that involve asbestos, notification rules and set schedules apply to renovation operations above a certain size and all demolition projects.

The following rules may apply to either projects involving asbestos or lead-based paint:

40 CFR 745 Lead: Requirements for Lead-Based Paint Activities in Target Housing and Child Occupied Facilities.
326 IAC 14-2 Emissions Standard for Asbestos;
326 IAC 14-10 Emissions Standard for Asbestos; Demolition and Renovation Operations, and
326 IAC 18-1 and 18-3 Asbestos Personnel Accreditation Rules.

5. If this project is the construction of a new source of air emissions or the modification of an existing source of air emissions, it will need to be reviewed for an air emissions permit or registration according to 326 IAC 2-1 Permit Review Rules. Applications for permit review can be obtained by calling 317-232-8369.
   New sources that use or emit hazardous air pollutants may be subject to Section 112 of the Clean Air Act and corresponding state air regulations governing hazardous air pollutants.

OFFICE OF LAND QUALITY

1. The Office of Land Quality (OLQ) does not believe the site is or represents an environmental problem, based on the information provided. However, OLQ reserves the right to reassess the site if new or additional information becomes available.

2. If the site is found to contain any areas used to dispose of solid or hazardous waste, you shall contact the OLQ at 317-232-3210.

3. If any contaminated soils are discovered during this project, they may be subject to disposal as either special or hazardous waste. Please contact the OLQ at 317-232-4473 to obtain information on proper disposal procedures.

4. There may be PCB issues related to this site. Please contact the Special Waste Section of OLQ at 317-232-3111 for information regarding management of any PCB wastes from this site.

5. There may be asbestos issues related to this site. Please contact the Special Waste Section of OLQ at 317-232-3111 for information regarding management of any asbestos wastes from this site.

The Office of Land Quality is making file information pertaining to the Environmental Impact Statement Early Coordination program available to the public. These files are open to the public during regular business hours. The file room is located at 2525 N. Shadeland on the second floor.

If you need any additional information or have any questions, please contact the following person:

Ms. Anne Black 317-232-4524

FINAL REMARKS

We reserve the right for further review if the scope of the project, or any of its aspects, should change significantly from that which has been proposed, or we are made aware of factors which could have detrimental environmental effects.

Please note that this letter does not constitute a permit, license, endorsement or any other form of approval on the part of either the Indiana Department of Environmental Management or any other Indiana state agency.

Should you have any questions relating to our review, please contact the following program area people responsible for this review:

Water and Biotic Quality Andrew Pelloso	317-233-2481
Air Quality Kennye' Johnson	317-233-0430
Land Quality Debby Baker	317-232-0066
Review Coordinator Gary Starks	317-232-8795

Sincerely,

Len Ashack

Len Ashack, Chief
Permits & Compliance Branch
Office of Water Quality

Project No. 3540

APPENDIX B

HELMSBURG RSD – CORRESPONDENCE REGARDING WARNING OF NONCOMPLIANCE

IDEM

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.state.in.us/idem

December 28, 1999

VIA CERTIFIED MAIL: P 126 010 438

Mr. Richard Rosebrook, President
Helmsburg Regional Sewer District
P.O. Box 174
Helmsburg, Indiana 47435

Dear Mr. Rosebrook:

Re: Noncompliance with the Indiana Administrative Code and NPDES Permit No. IN0058416

WARNING OF NONCOMPLIANCE

You are hereby notified that this office has reviewed the compliance status of the Helmsburg Regional Sewer District with its NPDES Permit and the Indiana Administrative Code (IAC). Our review revealed violations of the following:

1. 327 IAC 5-2-8(1), which states, in part, that the permittee must comply with all terms and conditions of the permit.

Part I.A.1. of the NPDES permit, which sets forth the effluent limitations applicable to the discharge from outfall 001.

A review of the Discharge Monitoring Reports from January 1997 through October 1999 reveals that your facility failed to meet NPDES Permit effluent limitations as follows:

The limitations for total suspended solids (TSS) were not met as follows:

August and September 1997
June through September 1998
May through July, and September 1999

The limitations for ammonia-nitrogen were not met as follows:

November 1998
April and September 1999

The daily *minimum* limitation for total residual chlorine (chlorine contact tank) was not met as follows:

August and October 1997
April, May, August, and October 1998
April, June through October 1999

The monthly average limitation for total residual chlorine (final effluent) was not met as follows:

September 1997

The daily maximum limitation for total residual chlorine (final effluent) was not met as follows:

August and September 1997
September 1999

The limitations for carbonaceous biochemical oxygen demand (CBOD) were not met as follows:

July through September 1998

2. 327 IAC 5-2-8(1), which states, in part, that the permittee must comply with all terms and conditions of the permit.

Part I.A.1. of the NPDES permit, which sets forth effluent limitations and monitoring requirements, including flow measurement.

IDEM inspection reports of September 15, 1999 and December 18, 1998 indicate the flowmeter was not working properly and has not worked properly since the plant went on line. The flow chart needle was very erratic and there was no display.

3. 327 IAC 5-2-8 identifies conditions applicable to all permits and states, in part, that the permittee must comply with all terms and conditions of the permit.

Part I.B.3. of the NPDES permit states, in part, that the permittee shall submit monitoring reports and shall be postmarked no later than the 28th day of the month following each completed monitoring period. These reports shall include the Discharge Monitoring Report [DMR] and the

Monthly Report of Operation [MRO].

Part I.B.8 of the NPDES permit, which states, in part, that the permittee shall retain, for a minimum of three (3) years, all records and information resulting from the monitoring activities required by this permit, including all records of analyses performed. In cases where the original records are kept at another location, a copy of all such records shall be kept at the permitted facility.

The September 15, 1999 inspection report indicates that monthly reports have been submitted to IDEM late. Also, no records (DMRs/MROs, sampling records, lab records) were on site for review by the IDEM inspector.

Please be advised that, due to the number and frequency of NPDES effluent limitation violations for TSS and Total Residual Chlorine, your facility has been designated as being in Significant Noncompliance (SNC) for these parameters. A determination of SNC brings a facility under a high level of scrutiny from both the enforcement staff of this agency and that of U.S. EPA. Facilities in SNC are our top priority in determining when enforcement action should be initiated.

It is the belief of this office that the above noted violations are of a serious nature and deserve your immediate attention to return to compliance with the terms and conditions of the NPDES Permit and the Indiana Administrative Code. It is therefore requested that you advise the Compliance Evaluation Section, Office of Water Management, in writing, within twenty (20) days of the date of this correspondence, of the reasons for the violations as herein noted, along with any mitigating circumstances as to why enforcement action should not be pursued by this office. Specifically, please submit a **compliance plan** describing any corrective measures which will be taken to assure compliance in the future, **with a schedule** including time frames for implementation and completion. *The correspondence must be submitted and signed by you, the Regional Sewer District President*, and directed to the attention of Pam Grams. Failure to respond to this notice will result in an enforcement action being initiated by this office.

If you have any questions concerning this notice, please contact Pam Grams at 317/232-8651.

Sincerely,

Matthew C. Rueff
Assistant Commissioner
Office of Water Management

c: Brown County Health Department

Pam Grams
Indiana Department of Environmental Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015

Dear Pam Grams,

This letter is in response to the recent Warning of Noncompliance letter that was sent to The Helmsburg Regional Sewer District NPDES Permit No. IN 0058416.

Total Suspended Solids (TSS) violations: The TSS violations are the result of not being able to use the rapid sand filters. The plant is located next to a large wooded area and has a major problem with leaves. The sand filters became clogged with leaves in early 1998 and have been out of service since. Before we clean out the sand and leaves we feel we should first address covering the plant with some sort of a building to eliminate the source of the problem. While this has been discussed the town is on a very limited budget. R.W. Armstrong the town engineers are looking at applying for a D.O.C. grant to address funding for covering the plant.

Chlorine Residual violations: The plant is equipped with a table feed system in which chlorine tablets are used to chlorinate. It is very difficult to control the chlorine residual because of very long detention times in the chlorine contact tank. The long detention times are attributed to the plant being vastly under loaded (25000-gpd plant with an average daily flow of 3000 gpd). The D.O.C. grant would also be used to change from the table feed system to UV disinfection.

B.O.D. violations: The three B.O.D violations in 1998 I simply do not know what the problem was at that time. I do know that in the summer months when the permit limits are lower I have a more difficult time meeting those summer limits.

Ammonia violation: In September of 1999 the violation was due to having a problem with the aerators. For some reason we were having a problem with the belts frequently breaking and therefore periods of time with out aeration. As for the two other violations I am unsure of what the problem was.

Flowmeter: As I have indicated on the MRO, s the flowmeter has been out of service since April of 1997. The town will have the flowmeter fixed or replaced within 3 months but probably sooner.

As for the record keeping, copies of all DMR's and MRO"s are on file at my office at the Whiteland WWTP. All reports have been caught-up and submitted on time since September of 1999. Please be advised that this will not be a problem in the future and accept my apologies for not submitting my reports in a timely manner.

To help with staying in compliance with our NPDES Permit the town has hire John Johnson, a local resident and R.S.D. Vice President, to check on the plant on a daily basis and notify me if there or any problems. We feel that by identifying problems early the plant will meet it's permit limits. We will submit a schedule after meeting with Helmsburg R.S.D. Board on January 27th 2000.

John Johnson

Helmsburg R.S.D. Vice President

Chris Shank

Certified Operator

Monday, January 17, 2000

Cc: Brown County Health Deprtment

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February 25, 2000

Mr. Richard Rosebrook, President
Helmsburg Regional Sewer District
P.O. Box 174
Helmsburg, Indiana 47435

Dear Mr. Rosebrook:

Re: Helmsburg RSD Response to the Warning of Noncompliance dated December 28, 1999

We have received a response [not dated] to our Warning of Noncompliance from John Johnson, Vice President, and Chris Shank, Certified Operator, on January 21, 2000. After a review by staff, the following recommendations are being provided in order to facilitate compliance by the District.

1) TSS violations. The rapid sand filters should be cleaned, with fresh media replacing the old and placed back in service *as soon as possible*. The fact that these filters have been out of service for nearly two (2) years without being addressed is cause for great concern. Waiting to construct a building over the plant is unacceptable. It would be a significant amount of time before this could be accomplished since you have yet to even apply for a grant, or other funding. A screen may be placed over the sand filters to stop debris from falling into them. This should be completed within ninety (90) days of the date of this correspondence.

2) Chlorine violations. As you indicate, the tablet feed system will not provide proper dosing – it is very difficult to control the chlorine residual. If you choose to change your disinfection method to U.V. sometime in the future, that would be acceptable. But that prospect appears to be a long way off since the funding has not been acquired. Since disinfection season is only about six (6) weeks away, another solution will have to be in place by then. It is suggested you switch to sodium hypochlorite liquid. The feed rate should be regulated by a signal from the final effluent flow meter to the dosing pump. This should be in place by April 1, 2000.

3) CBOD violations. Your failure to determine the cause of these violations and take appropriate corrective action means they are likely to recur. It is recommended you begin weekly process control testing of activated sludge to determine the mean cell residence time (MCRT) and sludge volume index (SVI). This will require knowledge of the thirty (30) minute settleability, MLSS, and aeration tank volume and flow. This data should be collected over the next ninety (90) days.

4) Ammonia violations. Aeration equipment must be reliable to provide adequate air for nitrification to proceed. A Preventive Maintenance Schedule and a good supply of spare belts, etc. is needed. This should be in place within ninety (90) days.

5) Flow meter. Per your letter the flow meter will be fixed or replaced "within 3 months" (or by mid-April 2000).

6) Monthly reports/records. All monitoring records (originals or copies) must be kept on file *at the permitted facilty* for a minimum of three (3) years (Part I.B.8.of your NPDES permit), and available for inspection. Keeping them only at an alternate site is in violation of your NPDES permit. All records must be available at the site within ninety (90) days.

Thank you for your prompt attention to correcting violations at the wastewater treatment plant in an effort to return to compliance with the Indiana Administrative Code and your NPDES permit. If you have any questions regarding the above recommendations, please contact Ron Pearson at 317/308-3302, or Pam Grams at 317/232-8651.

Sincerely,

Len Ashack

Len Ashack, Chief
Permits and Compliance Branch
Office of Water Management

c: John Johnson, Vice President
Chris Shank, Certified Operator
Brown County Health Department

April 5, 2000
Pam Grams
Indiana Department of Environmental Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015

Dear Pam Grams,
This letter is in response to the recent Warning of Noncompliance letter that was sent to The Helmsburg Regional Sewer District NPDES Permit No. IN 0058416

On March 29th the Helmsburg R.S.D. had a meeting to discuss the letter received from Mr. Len Ashack on addressing the problems at wastewater treatment plant.

1) TSS violations. The rapid sand filters will be cleaned out and the media replaced. The Board gave me the OK to order new Anthracite from Unifilt Corp. and we will obtain the sand ourselves. The media will be replaced according to specifications. Enclosed is a copy of the order for the Anthracite. We will also make some type of a temporary cover to stop debris from entering these filters.

2) Chlorine violations. We are going to attempt to continue using the current tablet feed system after making some adjustments at the plant. I have adjusted the floats in the raw sewage wet well to try to have more constant flow. By lowering the on float we hope to increase the number of times per day that we discharge, although this will be fewer gallons per discharge it will increase the number of discharges per day and hopefully we can meet our permit limits. We will be monitoring this on a daily basis when John Johnson checks the plant. If after 30 days this does not work we will switch to the recommended dosing pump and sodium hypochlorite. Enclosed are copies of a quote from Ulrich Chemical for the sodium hypochlorite and the dosing pump that the board is prepared to purchase in the event this method does not work.

3) CBOD violations. We feel that with a more intensive approach of over seeing the plant (daily) that it will help out greatly. I will however conduct more process control testing to monitor this more closely.

4) Ammonia violations. The aeration equipment will be maintained and replacement belts kept on hand. Again, we feel that with daily plant checks many of these problems will be eliminated.

5) Flow meter. The flow meter was reinstalled 3-23-2000 and is working properly. Enclosed is a report from it being repaired and calibrated.

6) Monthly reports and records. Copies of all DMR's and MRO's will be available for review on site.

The R.S.D. Board and myself are committed to getting the plant back into compliance. If you have any questions please feel free to call me at my office at 317-535-7627.

Respectfully,
Chris Shank
Certified Operator
Helmsburg WWTP
cc: Sharon Riverbark
Roger Young

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October 11, 2000

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BROWN

Ms. Sharon Rivenbark, President
Helmsburg Regional Sewer District
P.O. Box 147
Helmsburg, IN 47435

Dear Ms. Rivenbark:

Re: Warning of Noncompliance
Helmsburg Regional Sewer District
NPDES Permit No. IN0058416

This letter is to advise you that it has been determined by this office, subsequent to the issuance of the above-referenced Warning of Noncompliance (WONC) dated December 28, 1999, that you have complied with the terms of the WONC and therefore this matter is now closed. Although, it has been noted during the review of your monthly reports, that the "Precipitation – Inches" column on the Monthly Reports of Operation (MROs) is not being completed as required. Please be certain that monthly reports are filled in completely.

We appreciate your attention to the problems identified in the warning. If compliance with the terms and conditions of your NPDES permit and the applicable rules and statutes is not maintained, an enforcement action may be initiated.

If you have any questions concerning this action, please contact Pam Grams at 317/233-8652.

Sincerely,

Donald R. Daily, Chief
Compliance Evaluation Section
Office of Water Management

c: Brown County Health Department

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July 23, 2002

VIA CERTIFIED MAIL: 7000 0600 0026 8546 6525

To: Ms. Sharon Rivenbark, President
Helmsburg Regional Sewer District
P.O. Box 147
Helmsburg, IN 47435

Re: Adoption of Agreed Order;
Commissioner, Indiana Department
of Environmental Management
vs.
[redacted]
Case No. 2001-11094-W[redacted]

Dear Mr. Robinson:

This is to inform you that the Agreed Order in the above-referenced case has been approved and adopted by the Indiana Department of Environmental Management. A copy of the Agreed Order is enclosed.

You are no doubt familiar with the terms of compliance contained in the Agreed Order. The time frames for compliance are effective upon your receipt of this correspondence. Please note that the civil penalty is due within thirty (30) days after the effective date of the Agreed Order. Payment should be made payable to the Environmental Management Special Fund and sent to Cashier, IDEM, 100 N. Senate Avenue, P.O. Box 7060, Indianapolis. Indiana 46207-7060. Please include the Case Number on the front of the check

If you have any questions, please contact Dave Knox at 317/233-5975.

Sincerely,

for Mark W. Stanifer, Chief
Water Section
Office of Enforcement

Enclosure

cc: U.S. EPA, Region 5, Office of Water (w/enclosure)
[redacted]unty Health Department (w/enclosure)
Roger Young, Attorney (w/enclosure)
http://www.state.in.us/idem (enclosure only)

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STATE OF INDIANA	)	BEFORE THE INDIANA DEPARTMENT OF
	) SS:	ENVIRONMENTAL MANAGEMENT
COUNTY OF MARION	)	

COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT,	)	
Complainant,	)	CAUSE NO. 2001-11094-W
v.	)	
HELMSBURG REGIONAL SEWER DISTRICT	)	
Respondent.	)	

AGREED ORDER

The Complainant and the Respondent desire to settle and compromise this action without hearing or adjudication of any issue of fact or law, and consent to the entry of the following Findings of Fact and Order.

Pursuant to IC 13-30-3-3, entry into the terms of this Agreed Order does not constitute an admission of any violation contained herein. The Respondent's entry into this Agreed Order shall not constitute a waiver of any defense, legal or equitable, which the Respondent may have in any future administrative or judicial proceeding.

I. FINDINGS OF FACT

1. Complainant is the Commissioner ("Complainant") of the Indiana Department of Environmental Management ("IDEM"), a department of the State of Indiana created by IC 13-13-1-1.

2. The Respondent, Helmsburg Regional Sewer District ("Respondent"), owns and operates a Class II, 0.025 MGD, extended aeration wastewater treatment plant. The facility is authorized by NPDES Permit No. IN 0058416 to discharge to receiving waters named the

Bean Blossom Creek in accordance with stated effluent limitations, monitoring requirements, and other conditions. The facility is located in Brown County, Indiana.

3. IDEM has jurisdiction over the parties and subject matter of this action.

4. Pursuant to IC 13-30-3-3, IDEM issued a Notice of Violation via Certified Mail to:

Ms. Sharon Rivenbark, President
Helmsburg Regional Sewer District
P.O. Box 147
Helmsburg, IN 47435

5. Pursuant to 327 IAC 2-4-1, a person, firm or corporation that operates a municipal, industrial, commercial or agricultural waste treatment plant control facility or discharges wastewaters to the waters of the state of Indiana shall submit to the Commissioner monthly reports of operation (MROs), which shall include flow measurements and wastewater characteristics. The Respondent failed to submit the required MROs for the months of June through September 2001, in violation of 327 IAC 2-4-1.

6. Pursuant to 327 IAC 5-2-15, the NPDES Permit requires the Respondent to submit Discharge Monitoring Reports (DMRs) to the commissioner. In addition, because the facility is a publicly-owned treatment plant (POTW), the Respondent is also required to submit Monthly Reports of Operation (MROs) to the commissioner. These reports shall be submitted as often as required by the permit and shall include the results of any monitoring specified by the permit pursuant to 327 IAC 5-2-13. Failure to comply with any of these reporting requirements constitutes a violation of the permit. The Respondent failed to submit the required DMRs and MROs for its facility for the months of June 2001 through September 2001, in violation of 327 IAC 5-2-15.

7. Pursuant to 327 IAC 5-2-8(1), the NPDES permit requires the Respondent to comply with all terms and conditions of its NPDES permit; any non-compliance constitutes a violation of the Clean Water Act (CWA) and the Environmental Management Act (EMA) and is grounds for enforcement action. Part I.B.3. of the NPDES Permit No. IN0058416 specifically requires the Respondent to submit monitoring reports to IDEM containing results obtained during the previous month by no later than the 28th day of the month following each completed monitoring period. The Respondent has failed to submit the required DMRs and MROs for its facility for the months of June 2001 through September 2001. The Respondent also submitted late DMRs and MROs for the months of January through July 1999; August, October, November, and December 2000; and January through May 2001. The Respondent's failure to submit timely reports is in violation of 327 IAC 5-2-8(1) and the NPDES Permit No. IN0058416. Part I.A.1. of the NPDES Permit No. IN0058416 specifically requires the Respondent to meet effluent limitations for certain parameters at a location representative of the discharge. The Respondent has failed to meet the effluent limitations for the following parameters: Total Suspended Solids (TSS) for the months of May, June, July, and September 1999; Ammonia Nitrogen (NH4-N) for the months of April,

June, July, August, and September 1999, and April and May 2000. The Respondent's failure to meet effluent limitations is in violation of the NPDES Permit No. IN0058416.

8. A settlement conference was held on March 27, 2002, at which Respondent noted that DMRs and MROs for June through December 2001 had been recently submitted on February 27, 2002. The problem of timely receipt was discussed, and Respondent indicated all future reports will be mailed via certified mail, so that Respondent can confirm and document timely submission. Respondent expressed the belief that most of the reports were timely submitted, but that the reports were lost or misplaced either en route to or at IDEM. IDEM found no reason why any reports that were timely mailed would not have reached the proper destination within IDEM, and why any reports would not have been properly entered into the data management system and public files. Effluent violations were also discussed, as well as future plans to improve treatment by increasing present low flow volumes to the facility by adding more users to the system.

9. In recognition of the settlement reached, the Respondent waives any right to administrative and judicial review of this Agreed Order.

II. ORDER

1. This Agreed Order shall be effective ("Effective Date") when it is approved by the Complainant or her delegate, and has been received by the Respondent. This Agreed Order shall have no force or effect until the Effective Date.

2. Within sixty days of the Effective Date of this Agreed Order, Respondent shall develop and submit to IDEM for approval a Compliance Plan (CP) which identifies the actions that Respondent will take to achieve immediate compliance with 327 IAC 2-4-1, 327 IAC 5-2-15, and the monitoring requirements of Part I.B.3. of its NPDES permit.

3. The CP shall include an implementation and completion schedule, including specific milestone dates for full compliance with all effluent limitations required by the NPDES permit Respondent shall, during the six (6) month period beginning six months after the Effective Date and ending twelve (12) months after the Effective Date (the "Performance Period"), demonstrate three (3) consecutive months of compliance with the the above rules and associated effluent limitations contained in its Permit ("Compliance Demonstration"). In the event that Respondent fails to make the Compliance Demonstration, Respondent shall,within sixty days of becoming aware that the Compliance Demonstration cannot be achieved, develop and submit to IDEM, for approval, a plan which identifies the actions that Respondent will take to achieve compliance with the effluent limitations and monitoring requirements contained in its NPDES Permit. The plan, if required, shall include an implementation and completion schedule, including specific milestone dates.

4. The CP required by Paragraphs 2 and 3 is subject to IDEM approval. If a CP is deemed inadequate by IDEM, a revised plan shall be submitted within fifteen days of receipt of notice from IDEM of the inadequacies thereof. If, after submission of the revised document, IDEM still finds the document to be inadequate, then IDEM will request further modification of the CP as necessary to meet IDEM's requirements. If the

will suggest specific modifications to be made to the CP and require re-submittal by a specific date. If the IDEM-suggested modifications are not incorporated into the CP by the Respondent (or an alternative plan is not submitted by the Respondent) by the specified date or are not approved by IDEM, the Respondent will be subject to stipulated penalties as described below. The Respondent, upon receipt of written notification from IDEM, shall immediately implement the approved plan and adhere to the milestone dates therein. The approved plan shall be incorporated into the Agreed Order and shall be deemed an enforceable part thereof.

5. The Respondent is assessed a Civil Penalty of Nine Hundred and Fifty Dollars ($950). Said penalty amount shall be due and payable to the Environmental Management Special Fund in ten (10) consecutive monthly installment payments. The first installment payment shall be in the amount of $50 and shall be due within thirty days of the Effective Date of this Agreed Order. Each of the following nine installment payments thereafter shall be in the amount of $100 and shall be due within thirty (30) days of the preceding month's due date.

6. In the event the following terms and conditions are violated, the Complainant may assess and the Respondent shall pay a stipulated penalty in the following amounts:

Violation	Penalty
Failure to comply with Order Paragraphs 2, 3	$250 per each week, or part thereof, that Respondent fails to meet any milestone date set forth in the approved CP.
Failure to comply with Order Paragraph 4	$250 per each week, or part thereof, that Respondent fails to submit or modify the CP, as required;

7. Stipulated penalties shall be due and payable within thirty (30) days after Respondent receives written notice that the Complainant has determined a stipulated penalty is due. Assessment and payment of stipulated penalties shall not preclude the Complainant from seeking any additional relief against the Respondent for violation of the Agreed Order. In lieu of assessment of the stipulated penalty given above, the Complainant may seek any other remedies or sanctions available by virtue of Respondent's violation of this Agreed Order, or Indiana law, including but not limited to civil penalties pursuant to IC 13-30-4.

8. Civil and stipulated penalties are payable by check to the Environmental Management Special Fund. Checks shall include the Case Number of this action and shall be mailed to:

Cashier
IDEM
100 N. Senate Avenue
P.O. Box 7060
Indianapolis, Indiana 46207-7060.

9. In the event that any civil penalty installment payment required by paragraph 5 is not paid within thirty (30) days of its due date, Respondent shall pay interest on the unpaid balance at the rate established by IC 24-4.6-1-101. The interest shall continue to accrue

10. This Agreed Order shall apply to and be binding upon the Respondent, its officers, directors, principals, agents, successors, subsidiaries, and assigns. The signatories to this Agreed Order certify that they are fully authorized to execute this document and legally bind the parties they represent. No change in ownership, corporate, or partnership status of the Respondent shall in any way alter its status or responsibilities under this Agreed Order.

11. In the event that any terms of this Agreed Order are found to be invalid, the remaining terms shall remain in full force and effect and shall be construed and enforced as if the Agreed Order did not contain the invalid terms.

12. The Respondent shall provide a copy of this Agreed Order, if in force, to any subsequent owners or successors before ownership rights are transferred. Respondent shall by contract require that all contractors, firms, and other persons acting for it comply with the terms of this Agreed Order.

13. This Agreed Order shall remain in effect until Respondent has complied with all terms and conditions of Section II., Paragraphs 2 through 9 of this Agreed Order, and Complainant has issued a close-out letter.

TECHNICAL RECOMMENDATION:
Department of Environmental Management

By: Mark W. Stanifer
Mark Stanifer, Section Chief
Office of Enforcement

Date: 4-26-2002

RESPONDENT:

By: Sharon Rivenbark, President
Sharon Rivenbark, President
Helmsburg Regional Sewer District

Date: 7-10-02

COUNSEL FOR COMPLAINANT:
Department of Environmental Management

By: Michael S. Byron
Michael S. Byron, Attorney
Office of Legal Counsel
Department of Environmental Management

Date: 7/17/02

COUNSEL FOR RESPONDENT:

By:
Roger A. Young, Attorney
Helmsburg Regional Sewer District

Date: 7-10-02

APPROVED AND ADOPTED BY THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT THIS 18 DAY OF July, 2002.

FOR THE COMMISSIONER:

Felicia A. Robinson
Deputy Commissioner for Legal Affairs

APPENDIX C

HELMSBURG REGIONAL SEWER DISTRICT WASTEWATER TREATMENT AND COLLECTION DESIGN SUMMARY'S

II. DESIGN DATA

1. **Current Population:** 176

2. **Design Year and Population:** 2,015 and 200

3. **Design P.E.:** 208

4. **Design Flow:**

A.	**Domestic:**	24,500 gpd
B.	**Industrial/Commercial:**	500 gpd
C.	**Infiltration/Inflow:**	0 Pressure System

5. **Average Design Peak Flow:** 110,880 gpd

6. **Maximum Plant Flow Capacity:** 86,400 gpd

7. **Design Waste Strength:**

A.	**CBOD:**	200 mg/l
B.	**TSS:**	200 mg/l
C.	**NH -N**	25 mg/l

8. **NPDES Permit Limitation on Effluent Quality:**

		Summer	Winter
A.	**CBOD:**	15 mg/l	25 mg/l
B.	**SS:**	18 mg/l	30 mg/l
C.	**NH-N:**	1.3 mg/l	1.9 mg/l
D.	**Chlorine Residual:**	< .05 mg/l	
E	**pH:**	6.0 to 9.0	
F.	**D.O.:**	6.0 mg/l	5.0 mg/l

9. **Receiving Stream:**

A.	**Name:** Bean Blossom Creek
B.	**Tributatory to:** Lake Lemon
C.	**Stream Uses:** Recreational, Partial Body Contact
D.	**7-day, 1-in-10 year low flow:** 0.0 cfs

III. TREATMENT UNITS

FLOW EQUALIZATION

1. **Number and size of units:** 1 Unit 11'-11" x 9'-3" x 9'.6" SWD
   7,500 Gallons
2. **Method of flow diversion to unit:** In-line
3. **Air and mixing provided:** Yes 1 - 1 HP Blower Rated at 20 cfm at 5 PSI
4. **Method and control of flow return:** 2 - Submersible Pumps Rated at 30 GPM at 15 feet TDH Each
5. **Method of sludge removal:** Drain Piping

FLOW METERS:

1. **Type:** 1-inch Parshall Flume with Ultra Sonic Meter
2. **Location:** Effluent Metering Manhole
3. **Indicating, Recording and Totalizing:** Yes

SCREENS:

1. **Type:** Course Bar
2. **Number and Capacity:** 1 and 100,000 gpd
3. **Bar spacing and slope:** 1-inch and 45°
4. **Method of cleaning:** Manual
5. **Disposal of screenings:** Dumpster

ACTIVATED SLUDGE

1. **Type of activated sludge process:** Extended Aeration with Single Stage Nitrification.
2. **Number and size of units:** 1 Unit 37'-9" x 11'-11" x 9'-6" SWD
   31,250 Gallons or 4,178 C.F.
3. **Detention time (hours):** 30 Hours

4. Organic Loading (lb BOD/1,000 cf): 9.78 lb BOD/1,000 cf

5. Type of aeration equipment: Coarse Bubble

6. Type and size of blowers: 2 Blowers 5 HP each and rated at 150 cfm at 5 PSI each

7. Air required (itemize, cfm):

BOD	34.0 cfm
NH-N	13.2 cfm
Airlifts	10.0 cfm
Post Air	10.0 cfm
Sludge Holding	10.2 cfm
Total	**77.4 cfm**

8. **Provision for Speed adjustment:** Belt and Sheeve

9. **Air provided:** 150 cfm with largest blower out of service

10. **Number and capacity of return sludge pump:** 2 - 2½ inch airlifts; 0 to 26 gpm capacity each

11. **Method of return sludge rate control:** Air valves

12. **Return sludge rate as % of design flow:** 0% to 150%

13. **Provisions for return rate metering:** Sludge metering box

14. **Location of return sludge discharge:** Aeration Tank

SECONDARY CLARIFIERS:

1. **Type of clarifiers:** Dual Hopper Clarifier

2. **Number and size of units:** 1 Unit
5,320 Gallon Clear Water Zone
1,545 Gallon Sludge Blanket Capacity

3. **Surface settling rate (gpd/sf):**

   A. at the design flow: 262 gpd/sf
   B. at the equalized flow: 452 gpd/sf
   C. at the peak influent Pumping rate 904 gpd/sf

4. **Detention time (hours):** 5.1 hours

5. **Type of sludge removal mechanism:** 2 - 2½ inch airlifts

6. **Weir overflow rate:** 3,125 gpd/lf

7. **Disposal of scum:** Aeration tank

RAPID SAND FILTRATION:

1. **Number and size of filters:** 2 filter cells 5' x 3.5' x 6' depth each
8.68 sf filter area each

2. **Filtration rate:**

   A. **at peak flow rate:** 3.4 gpm/sf
   B. **at average flow rate:** 1.0 gpm/sf

3. **Type, depth, and grain size of filter media:** Sand, 8", 0.80 to 1.20 MM
Anthracite, 12", 1.08 MM

4. **Backwash rate:** 10.25 gpm/sf

5. **Air scour:** Provided 20 cfm at 4 PSI

6. **Capability to chlorinate ahead of the filter:** No

7. **Backwash pumps (number and capacity):** 2 pump, 1 HP each
89 gpm at 17' TDH each

8. **Source and capacity of backwash water:** Source: Sand Filter Filtrate
Size of Clearwell: 8.92' x 3' x 6.5 depth; 1,303 Gallons

9. **Holding capacity of dirty water tank:** 1,368 Gallons

10. **Facilities for unit isolation:** Yes

POST AERATION:

1. **Type of Aeration:** Course Bubble Diffuser

2. **Number of Units:** 1 unit

3. **Size of Units:** 3' x 1' x 5'-4" SWD, 120 Gallons

4. **Aeration Provided:** 10 cfm

5. **Expected Effluent DO:** 6 mg/l

DISINFECTION:

1. **Type of disinfection used:** Chlorine Tablets

2. **Size of contact tank:** 521 gallons
3' x 3.8' x 6' Depth

3. **Contact time:** 30 Min. at Average Flow Rate
18 Min. at Equalized Flow Rate

4. **Type of disinfection feeders:** Tablet feeder

5. **Capacity of the feeders:** 50,000 gpd

6. **Disinfectant dosage:** 8 mg/l

7. **Drain for tank:** Yes

DECHLORINATION:

1. **Chemical used:** Sodium bisulfite

2. **Type of feeders:** Tablet

3. **Capacity of feeders:** 50,000 gpd

4. **Dosage:** 1.46 mg/l per 1 mg/l chlorine residual

5. **Diffuser location:** Effluent end of chlorine contact tank

6. **Equipment location:** In-line mounted

SLUDGE HOLDING TANK:

1. **Number and size of units:** 1 Unit - 11'-11" x 3' x 9.5' swd
340 cf or 2,500 Gallons

2. **Detention time:** 19 day SRT

3. **Organic Loading:** 61.18 lbs VSS/1,000 cf

4. **Air supply:** 10.2 cfm

5. **Decanting method:** Overflow Pipe

SLUDGE DISPOSAL:

1. **Ultimate disposal method of sludge:** Nashville, Indiana WWTP

2. **Expected solids content of sludge (by the principal method of disposal):** 3%

3. **Availability of sludge transport Equipment:** Local Septic Hauler

IV. SEWER COLLECTION SYSTEM

SEWER:

1. **Type of sewer material:** PVC SDR 21 Low Pressure Force Main

2. **Diameter and length of sewer (indicate length for each size):**

Size	Length
1.25"	1,428 L.F.
1.50"	1,189 L.F.
2.00"	2,189 L.F.
2.50"	1,119 L.F.
3.00"	1,792 L.F.
4.00"	1,110 L.F.
8.00" (Outfall)	1,792 L.F.

3. **Stream, highway, and railroad crossing:** 1 - Highway Crossing
   1 - Railroad Crossing

4. **Separation of combined sewer or new sewer:** New Sewers

5. **Number of manholes:** 5 Manholes, 1 Metering Manhole

6. **Water main protection:** 10 Feet Horizontal Separation , 18-Inch Vertical Separation

INDIVIDUAL GRINDER PUMPS:

1. **Location:** As shown on the Plans.

2. **Number of pumps:** 59

3. **Capacity of pumps:** 15 gpm at O TDH, 9 gpm at 138 TDH

4. **RPM and TDH:** 1,725 RPM, 138 TDH

5. **Volume of the wet well:** 23.5 Gallons

6. **A gate valve and a check valve in the discharge line:** Yes

7. **Ventilation:** Yes

8. **Alarm:** Visual

V. MISCELLANEOUS

A. **Laboratory Equipment:** (Contracted)

B. **Safety Equipment:** Yes

C. **Plant Site Fence:** Yes

D. **Handrail for the tanks:** Yes

E. **Units, unit operation, and plant bypasses:** Unit Bypass only

F. **Flood elevation (10, 25, or 100 year flood):** 657 MSL (100 year)

G. **Consistency with EPA Reliability Technical Bulletin:** Yes

H. **Standby power equipment:** Yes

I. **Site inspection:** Sanco Engineering & Associates, Inc.

J. **Statement in the specifications as to the protection against any adverse environmental effect (e.g., dust, noise, soil erosion) during construction:** Yes

K. **Hoists for removing heavy equipment:** No

L. **Adequate sampling facilities:** Yes

M. **Hydraulic Gradient:** Provided

APPENDIX D

PROJECT NEED INFORMATION

Nearly all of the residences and small businesses in Bean Blossom are experiencing at least minor problems with their septic systems and several of them are experiencing major problems. This appendix contains background information that documents Bean Blossom's situation and identifies the problems that must be addressed.

Problem Assessment

The community of Bean Blossom currently uses individual on-site septic systems for wastewater treatment. Many of the existing systems are more than 50 years old and are experiencing frequent failures. In addition, several of the businesses in the Bean Blossom area have been in decline because they do not have the land needed to repair or upgrade their septic systems. The Brown County Health Department (BCHD) has cited several homeowners in the area for septic system failures and has denied issuing septic permits to several potential businesses and residences.

The failing septic systems have had an adverse environmental impact on the area, mainly through the pollution of surface and ground water, which has caused health concerns for community residents. Water quality testing performed by the BCHD during the summer of 2000 showed *Escherichia coli* (*E. coli*) counts of greater than 2,400 parts per 100 milliliter (mL) sample in Hopper's Branch Creek and 690 parts per 100 mL in a roadside ditch along Covered Bridge Road. (See Figure A1.) Indiana's Water Quality Standards set an average of less than 126 *E. coli* colonies per 100 mL of water as the standard safe level (IDEM, 2000).

<u>Major Problem Areas</u>

Information provided by the client identified three areas experiencing major problems with their septic systems. These major problem areas consist of a small commercial business, the community's trailer court, and the commercial businesses at the intersection of State Road 45 and State Road 135. (See Figure

A1.) Each of these locations is suffering from three telltale signs of septic system failure:

- Surface flow of wastewater
- Unpleasant odor
- Abnormal plant growth and abnormally green grass near the septic system

This section documents the existing conditions of each of these areas and reveals the extent of Bean Blossom's wastewater problems. Figures A2 through A8 are photographs, grouped by site, documenting each problem area.

NO SCALE

LEGEND

Stream

Roadway

Problem Area

Monarch

FIGURE NO. A1
Bean Blossom Wastewater Treatment Alternatives

MAJOR PROBLEM AREAS

Problem Area One

Problem area one is Mother's Cupboard, a small commercial business at the northern end of the community. The business has had numerous problems with its septic system and residents claim that during wet weather the area smells of raw sewage.

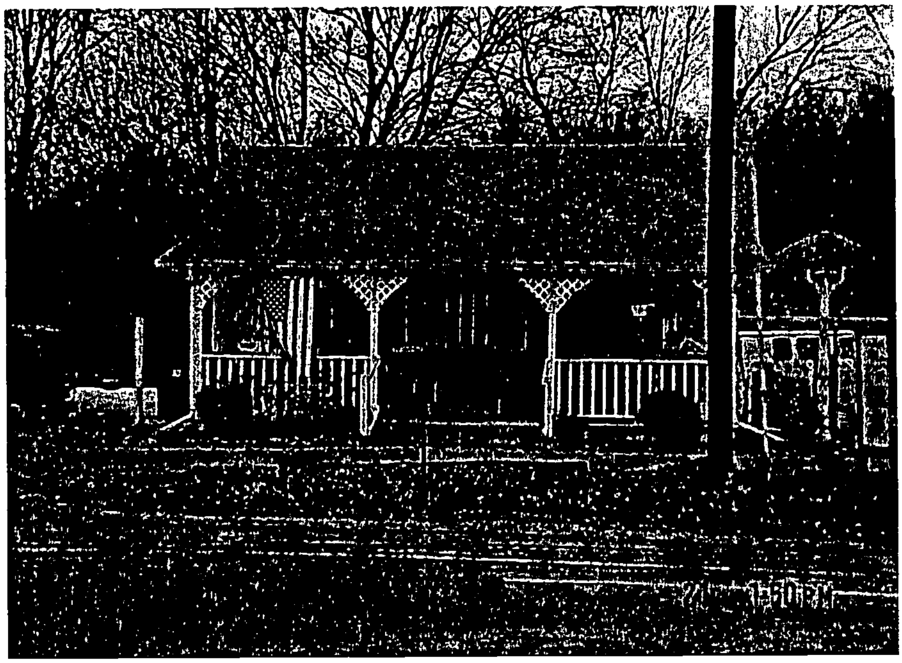


Figure A2: A view of the business from across State Road 135, looking west. The property's septic tank is located to the left of the building down a short slope.

Figure A3: A view of what is believed to be the business's septic tank. The building is located uphill, to the right of the photo.

Problem Area Two

Problem area two is the 31-lot mobile home park located on the north end of the community. The park has an undersized and poorly maintained septic system that is discharging wastewater onto the ground and into nearby Hoppers Branch Creek. It is probably to blame for the extremely high *E. Coli* counts found in the creek during the summer of 2000. The situation presents a major health concern to the entire community.

Figure A4: A view of one of the mobile home park's septic tanks, looking southwest. Notice the dark wastewater being discharged from the tank. The trailer court is located to the left, uphill of this scene.

Figure A5: A view directly east of the septic tank illustrated in Figure A4. Note the dark wastewater resting on the ground and the abnormal plant growth, evidence of a failing septic system. This wastewater has been seeping into Hoppers Branch Creek, located in the middle of the picture. Note the pipe running through the right side of the picture. The pipe leads uphill to the mobile home court.

Figure A6: A view of the trailer court's leach field, located west of the septic tank shown in Figure A4. Again, dark wastewater and abnormal plant growth are present.

Problem Area Three

Problem area three is the northwest corner of the intersection of State Road 135 and State Road 45. There are several small businesses at this location, including a supermarket. The market has had to greatly reduce its water usage in order to limit the amount of wastewater being treated by its failing septic system. In addition, the problems have forced the small business on the corner (Figure A8) to close its restrooms. Connection to a functional wastewater treatment system would greatly improve the economic conditions in this vicinity.

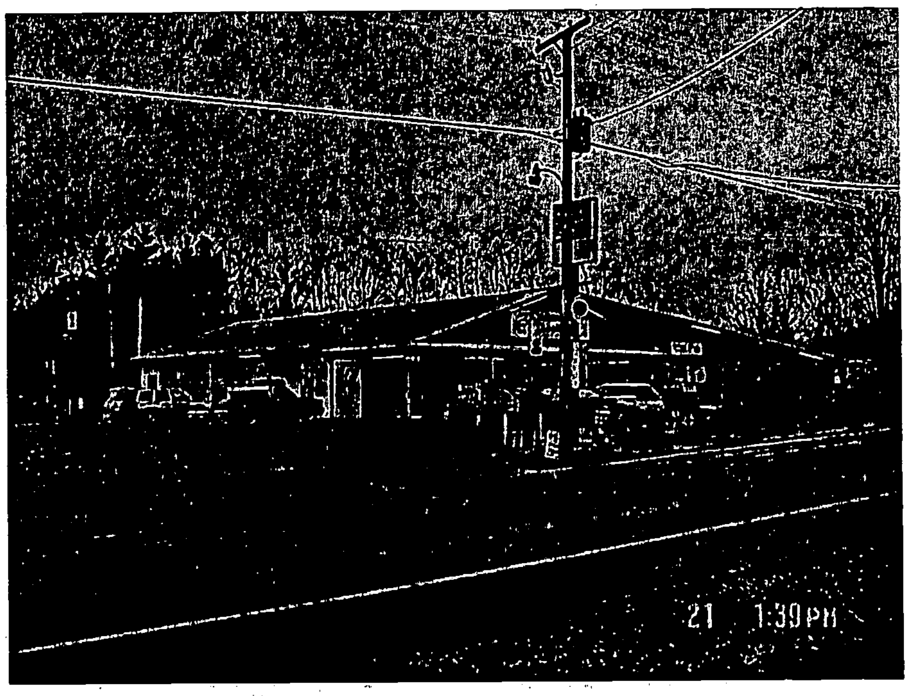


Figure A7: A view of the supermarket from across State Road 135, looking northwest.

Figure A8: A view of another small business at the intersection, located just south of the supermarket. The building doesn't have working restrooms because of the failing septic systems at the location.

APPENDIX E

PROJECTED WASTEWATER FLOWS

Present Wastewater Flow Rates

The design of the wastewater collection and treatment system is to be based on a 20-year planning period and should consider the existing and potential future service area. This section contains an evaluation of the existing service area.

<u>Current Population Data</u>
A recent income survey estimated the current population of the Bean Blossom planning area at 160 people (Hornsby, 2002), 87% of whom earn low or moderate income. Because more than 51% of the population earns low or moderate income, the community meets median income requirements for Rural Development funding.

<u>Building Roster</u>
A survey was completed to document the number and types of buildings found in Bean Blossom. There are a number of residences and small businesses found in the original planning area:

- Fifty-seven (57) residential homes
- One (1) eight-unit motel
- One (1) volunteer fire department
- Three (3) churches
- One (1) campground and music festival park
- Eleven (11) small commercial businesses
- One (1) 31-lot mobile home park

<u>Daily Wastewater Flow Rate Estimation</u>
The design of the wastewater collection and treatment system requires knowledge of the community's wastewater flow rates. To adequately estimate the amount of wastewater produced in the planning area, the water usage data from Bean Blossom must be analyzed. The amount of wastewater produced is directly related to the water demand, since potable water is the source of almost all wastewater. The relationship between water demand and wastewater flow varies from situation to situation, but wastewater flow is between 50% and 100% of the water demand (Reynolds and Richards, 1996). We have assumed that the wastewater flow equals the average water consumption. Water usage records from the local water utilities provide the data for an analysis the community's wastewater flows. See Section C.8 at the end of this appendix for the actual water usage records.

The Brown County Water Company serves a total of 33 customers within the planning area. These customers include:

- One (1) 31-lot mobile home park
- One (1) small commercial business
- One (1) church
- One (1) campground and festival park

- One (1) volunteer fire department
- Twenty-eight (28) residential homes

The Town of Nashville Water Utility serves a total of 26 customers located within the planning area. These customers consist of:

- One (1) eight-unit motel
- Two (2) churches
- Ten (10) small commercial businesses
- Thirteen (13) residential homes

The Town of Nashville did not release the water usage data for each individual customer in the area, therefore, the average water pumped to these 26 customers was considered to be the daily water usage of each customer.
In addition to the water supplied by the water utilities, approximately 11 residential homes in the planning area get their water from private wells. An estimate of the daily water usage of these homes was based upon the existing water usage of the 28 residential customers served by the Brown County Water Company.

Table 1 contains the calculations performed to determine the water usage within the planning area. These totals give an accurate estimate of the expected daily wastewater flow rates. The results, which are summarized in Table 2, show that the Brown County Water Utility supplies 10,696 gallons per day (gpd) to the planning area, the Town of Nashville supplies 2,927 gpd, and private wells supply an additional 1,239 gpd. This puts the total wastewater flow rate from the planning area's existing facilities at 14,862 gpd.

Future Wastewater Flow Rates
Proper design of a wastewater collection and treatment system must account for future development within and expansion of the planning area (Table C2). Future growth and expansion will only increase the amount of wastewater flow in the collection and treatment system. The client requested that future expansion of the service area be costed as a separate, second phase of design, as it will likely be built after the construction of the collection and treatment in the original planning area. However, all design will be based upon the wastewater flow rates from the future service area.

Table 1: Bean Blossom planning area water usage calculations.

Brown County Water Utility
Records from November 2001 – October 2002

Totals on data sheets are in thousand gallons and are for a one year period. To get the total daily water usage in gallons per day, the yearly usage must be multiplied by 1000 and divided by 365.

Residential Customers on S.R. 135 (5)
42.1 + 1.8 + 5.9 + 70.7 + 33.7 = 154.2
(154.2)(1000 gal)/(365 day) = 422.5 gpd

Mother's Cupboard (Commercial)
(24.3)(1000 gal)/(365 day) = 66.6 gpd

Campground and Music Festival Park
(1241.1)(1000 gal)/(365 day) = 3400.3 gpd

Residential Customers on S.R. 45 (6)
17.7 + 40.8 + 73.8 + 80.0 + 46.8 + 5.1 = 264.2
(264.2)(1000 gal)/(365 day) = 723.8 gpd

Residential Customers on Covered Bridge Rd. (7)
99.7 + 35.0 + 99.6 + 81.7 + 42.6 + 7.0 + 13.9 = 379.5
(379.5)(1000 gal)/(365 day) = 1039.7 gpd

Residential Customers on Gatesville Rd. (10)
43.5 + 69.5 + 86.5 + 43.2 + 50.9 + 3.7 + 13.2 + 0.0 + 42.0 + 0.0 = 352.5
(352.5)(1000 gal)/(365 day) = 965.8 gpd

Volunteer Fire Department
(17.6)(1000 gal)/(365 day) = 48.2 gpd

Mobile Home Park
(1447.8)(1000 gal)/(365 day) = 3966.6 gpd

Church on S.R. 45
(22.5)(1000 gal)/(365 day) = 61.6 gpd

Total Residential Customer Usage (28)
422.5 gpd + 723.8 gpd + 1039.7 gpd + 965.8 gpd = 3151.8 gpd
(3151.8 gpd)/(28 Customers) = 112.6 gpd
This represents the average daily water usage per household.

Town of Nashville Water Utility
Records from November 2001 – October 2002

34-metered customers are served from this supply, 26 of who are in the planning area.

Month	Usage
11/01	111.98
12/01	31.00
1/02	97.00
2/02	82.00
3/02	95.00
4/02	98.00
5/02	132.00
6/02	167.00
7/02	148.97
8/02	137.80
9/02	144.20
10/02	151.98
Total = 1396.93	

(1396.93)(1000 gal)/(365 day) = 3827.2 gpd
(3827.2 gpd)(26)/(34) = 2926.7 gpd

To account only for the 26 customers in the planning area.

NOTE: The Town of Nashville would not release individual water usage information for its customers due to privacy requirements.

Private Well Water Usage Calculations
From November 2001 – October 2002

These calculations are based on the average daily water usage per household, which was calculated in the Brown County Water Utility section.

11 residences with private well water supplies:
(112.6 gpd)(11) = 1238.6 gpd

Table 2: Estimated wastewater flow rates from existing facilities in the Bean Blossom planning area.

Town of Nashville Water Utility Customers	
26 Customers	2,927 gpd
Brown County Water Company Customers	
1 31-Lot Mobile Home Park	3,967 gpd
1 Volunteer Fire Department	48 gpd
1 Church	62 gpd
1 Campground and Festival Park	3,400 gpd
1 Small Commercial Business	67 gpd
28 Residential Homes	3,152 gpd
33 Total Customers	10,696 gpd
Private Well Water Supplies	
11 Residential Homes	1,239 gpd
Total Wastewater Flow from Existing Facilities	**14,862 gpd**

Future Development

Approximately 90% of the land zoned residential or commercial in the planning area is developed into either single-family homes or small commercial businesses. A survey performed by our project team revealed that the remaining 10% of the land is comprised of five undeveloped residential and five undeveloped commercial lots. It is reasonable to assume that the construction of a sanitary sewer system will result in the development of these parcels. Table 3 contains the projected planning area wastewater flow after development of the undeveloped lots. The resulting increase in wastewater flow is expected to be 763 gpd, bringing the total wastewater flow up to 15,625 gpd.

Future Service Area

The client requested that future expansion of the wastewater collection and treatment system be considered as a distinct second phase of construction. This phase two construction is to encompass the Old Settlers Road area and the greater Woodland Lake area. Including these areas in the planning of Bean Blossom's wastewater.

Table 3: Estimated wastewater flow rates from existing and future facilities in the Bean Blossom planning area.

Total Wastewater Flow from Existing Facilities	**14,862 gpd**
Projected Flow From Future Development	
5 Residential Lots (112.6 x 5)	563 gpd
5 Commercial Lots (40 x 5)	200 gpd
Total Wastewater Flow from Existing and Future Facilities	**15,625 gpd**

collection and treatment system will increase the chances of obtaining Rural Development funding for the project by increasing the size and population of the service area. It will also provide wastewater treatment to several other needy regions, both of which are experiencing septic system failures and are suffering many of the same problems as Bean Blossom.

An older income survey estimated the population of the future service area at 470 people (Hornsby, 1998), 63% of whom earn low or moderate income. Because more than 51% of the population earns low or moderate income, the entire future service area also meets median income requirements for Rural Development funding. Obviously, future expansion of the service area will also increase the amount of wastewater flow in the collection and treatment system. Proper design of the system requires consideration of this increased wastewater flow.

The Old Settler's Road Area is located directly north of the Bean Blossom Study Area and is comprised of:

- Sixteen (16) residential homes
- One (1) church
- One (1) commercial business

The Brown County Water Utility serves all of the customers in the Old Settler's Road Area. Water usage records were collected from the utility to determine the expansion area's current water usage. The Brown County Water Utility also provides water to an estimated 90 residential customers in the greater Woodland Lake Area. However, water usage records for this area were not collected. Instead, an estimate of the daily water usage of these homes was based upon the existing water usage of the 28 residential customers in Bean Blossom served by the water utility (Table 1).

Table 4 contains the calculations performed to determine the current water usage of the phase two expansion areas. These totals give an accurate estimate of the amount of daily wastewater to be serviced by the wastewater collection and treatment system. The results, which are summarized in Table 5, show that the water utility supplies 2,581 gpd to the Old Settler's Road Area and 10,134 gpd to the greater Woodland Lake Area. This puts the total wastewater flow from the existing facilities in the phase two expansion at 12,715 gpd, bringing the total service area wastewater flow to 28,340 gpd.

There are also several undeveloped lots in each of the expansion areas. The Old Settlers Road Area has four undeveloped residential lots and the greater Woodland Lake area has seven such undeveloped residential lots. It is reasonable to assume that, in the presence of a functional wastewater treatment system, these lots will be developed within the 20-year planning period. Table 6 contains the projected wastewater flow after development of these lots. The resulting increase is expected to be 1,239 gpd, bringing the total service area wastewater flow from existing and future facilities to 29,579 gpd.

Table 4: Phase two expansion area water usage calculations.

Brown County Water Utility
Records from November 2001 – October 2002

Totals on data sheets are in thousand gallons and are for a one year period. To get the total daily water usage in gallons per day, the yearly usage must be multiplied by 1000 and divided by 365.

Old Settlers Road Area
Residential Customers on S.R. 135 (2)
83.9 + 20.0 = 103.9
(103.9)(1000 gal)/(365 day) = 284.7 gpd

Residential Customers on Old Settlers Road (14)
6.7 + 139.4 + 62.1 + 61.7 + 92.1 + 44.4 + 151.9 + 12.1 + 33.1 + 71.4 + 20.1 + 30.4 + 16.0 + 37.4 = 778.8
(778.8)(1000 gal)/(365 day) = 2133.7 gpd

Bean Blossom Inn (Commercial)
(14.1)(1000 gal)/(365 day) = 38.6 gpd

Shepard of the Hills Church
(45.2)(1000 gal)/(365 day) = 123.8 gpd

Greater Woodland Lake Area

These calculations are based on the average daily water usage per household, which was calculated in Table C11.

There are an estimated 90 residential customers served by the Brown County Water Utility in the area.
(112.6 gpd)(90 customers) = 10,134 gpd

Table 5: Estimated wastewater flow rates from existing facilities in the phase two-expansion areas.

Total Wastewater Flow from Phase One Existing and Future Facilities	**15,625 gpd**
Old Settlers Road Area	
16 Residential Homes	2,418 gpd
1 Commercial Business	39 gpd
1 Church	124 gpd
18 Total Customers	2,581 gpd
Greater Woodland Lake Area	
90 Residential Homes	10,134 gpd
Total Wastewater Flow from Existing Facilities	**12,715 gpd**
Total Service Area Wastewater Flow	**28,340 gpd**

Table 6: Estimated wastewater flow rates from existing and future facilities in the phase two expansion areas.

Total Service Area Wastewater Flow	**28,340 gpd**
Projected Flow from Future Development	
11 Residential Lots (112.6 x 11)	1,239 gpd
Total Future Service Area Wastewater Flow	**29,579 gpd**

Increased Water Usage

Certainly, the community's water usage has been cut back due to the poor condition of the existing septic systems and their inability to treat all of the community's wastewater. With the construction of a wastewater collection and treatment system, the community will increase their water usage. This increase is reflected in an expected water usage increase of 20% throughout the entire service area. Table 7 illustrates the effect that the expected water usage increase will have on the total wastewater flow. The results show that the wastewater flow will increase by 5,916 gpd, putting the total service area wastewater flow rate at 35,495 gpd.

Table 7: Estimated wastewater flow rates after project water usage increase.

Total Service Area Wastewater Flow	**29,579 gpd**
Increase Water Usage (20% Increase)	5,916 gpd
Total Projected Service Area Wastewater Flow	**35,495 gpd**

Design Flow Rates

The analysis of the current and future situations (Table's 1 through 7) shows that the projected average daily wastewater flow to be serviced by the wastewater collection and treatment system is 35,495 gpd. According to the "Ten States Standards," a peaking factor should be used in conjunction with this number to account for infiltration and hourly peak flows. The peaking factor to be used for a service area with a population of approximately 500 people is 4.0 (Great Lakes, 1997). This puts the hourly peak flow, to be used for design, at 141,980 gpd.

Water Usage Records

The following pages contain the actual water usage records obtained from the Bean Blossom Water Utility in calculating the wastewater flow rates.

[illegible]
TERMINAL: [illegible]

[illegible] COUNTY [illegible]
HISTORY [illegible] BY ACCOUNT NUMBER
MONTHLY LISTING (SUMMARY FORMAT)
FOR [illegible]

SERVICE: W WATER
RATE TABLE: ALL

ACCOUNT RANGE [illegible] THRU [illegible]

[illegible] CLASS RANGE: [illegible]
MASTER METER RANGE: ALL

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible] ANDERSON [illegible]	[illegible] GATESVILLE RD	MORGANTOWN	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible] JOHNSON	[illegible] GATESVILLE RD.	MORGANTOWN	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	CARLTON [illegible]	[illegible] GATESVILLE RD.	MORGANTOWN	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	2.5	4.6	4.4	6.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.6	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	[illegible] GATESVILLE RD	MORGANTOWN	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	BROWN COUNTY [illegible]	GATESVILLE RD.	NASHVILLE	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	GATESVILLE RD	MORGANTOWN	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	[illegible] GATESVILLE RD	MORGANTOWN	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	GATESVILLE RD.	NASHVILLE	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MONTHLY LISTING (SUMMARY FORMAT)
FOR 11 2001 THRU 10/2002

SERVICES: W WATER   ACCOUNT RANGE: 02-2240-02 THRU 02-2215-1   ACCOUNT CLASS RANGE: [illegible]
RATE TABLE: ALL   [illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
02-2240-01	RAYMOND L. SMITH	6352 ST RD 135	MORGANTOWN	46160		W	R

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	7.7	2.4	0.0	6.3	2.9	2.4	4.7	[illegible]	3.2	4.3	30.9	17.5	71.0

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
02-2241-01	EUGENE BAKER JR.	6316 ST RD 135	MORGANTOWN	46160		W	R

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	7.2	4.7	4.9	11.6	6.1	4.2	5.3	5.5	5.9	7.5	7.8	6.5	70.4

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
02-2242	MARY L. SCOTT	6194 ST RD 135	MORGANTOWN	46160		W	R

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	0.5	0.0	[illegible]	0.1	0.0	2.0	[illegible]	0.8	0.0	1.0	0.5	0.5

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
02-2250	SHIRLEY SMITH	5984 ST RD 135	MORGANTOWN	46160		W	R

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	0.4	0.5	0.2	0.4	0.4	0.2	0.2	0.4	0.5	0.4	0.4	3.7

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
02-2250	[illegible] MACDONALD [illegible]	5974 ST RD 135	MORGANTOWN	46160		W	R

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	3.4	3.6	7.6	[illegible]	7.3	7.7	5.5	[illegible]	4.7	7.8	[illegible]	4.5	55.7

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible] & RUTH ALTON	5902 ST RD 135 N	MORGANTOWN	46160		W	R

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	1.7	0.7	0.4	0.3	0.3	0.0	0.2	0.7	1.0	0.2	1.4	1.3	8.4

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
02-2271-01	MARK & [illegible]	5844 ST RD 135 N	MORGANTOWN	46160		W	R

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
02-2212	SHEPHERD OF THE HILLS	5802 OLD SETTLERS RD	NASHVILLE	47448		W	R

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	65.0

BROWN COUNTY WATER UTILITY, INC.
HISTORY TRACKING BY ACCOUNT NUMBER
MONTHLY LISTING (SUMMARY FORMAT)
FOR 11/2001 THRU 10/2002

SERVICES: W WATER
PRINT TOTALS: ALL

ACCOUNT RANGE: 02-2[illegible]-01 THRU 02-2[illegible]-[illegible]

ACCOUNT CLASS RANGE: [illegible] THRU [illegible]
MASTER METER RANGE: ALL

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	BEAN BLOSSOM INN	3771 OLD SETTLERS RD	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	6.3	[illegible]	[illegible]	0.0	[illegible]	[illegible]	5.5	0.0	[illegible]	[illegible]	[illegible]	[illegible]	14.[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
022235-01	EDWARD L. BROWN	3771 OLD SETTLERS RD	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	0.0	[illegible]	0.0	0.0	0.0	[illegible]	0.6	1.[illegible]	3.7	2.[illegible]	3.6	6.7

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
022251	RANDALL SIZEMORE #2	3724 OLD SETTLERS RD.	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	14.[illegible]	9.6	10.5	12.3	10.9	6.4	13.5	8.8	9.1	16.[illegible]	15.[illegible]	10.[illegible]	139.[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
022252-01	JERRY & JEAN VOILS	1661 ST RD 135 N	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	4.0	4.0	7.0	7.5	7.0	6.1	5.0	4.7	6.[illegible]	10.[illegible]	13.[illegible]	8.[illegible]	93.[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[FINAL [illegible]]	3737 OLD SETTLERS RD.	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	4.[illegible]	4.7	4.8	5.5	5.8	[illegible]	[illegible]	5.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	3707 OLD SETTLERS RD.	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	5.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	61.[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]-01	GARY N. [illegible]	1646 ST RD 135 N	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	2.[illegible]	1.5	1.[illegible]	[illegible]	[illegible]	[illegible]	1.6	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[FINAL [illegible]]	[illegible] OLD SETTLERS RD.	[illegible]	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]
TERMINAL [illegible]

[illegible] COUNTY WATER UTILITY, INC.
HISTORY TRACKING BY ACCOUNT NUMBER
MONTHLY LISTING SUMMARY FORMAT
FOR 11/2001 THRU 10/2002

PROGRAM [illegible]

[illegible]
RATE TABLE: ALL

ACCOUNT RANGE: [illegible] THRU [illegible]

ACCOUNT CLASS RANGE: [illegible]
MASTER METER RANGE: ALL

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	(FINAL TOUCH [illegible] #4)	5560 OLD SETTLERS RD.	MORGANTOWN	46160		W	

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible] ROCH	5541 OLD SETTLERS RD	MORGANTOWN	46160		W	2

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	6.8	[illegible]	4.1	[illegible]	[illegible]	4.0	4.7	5.0	4.5	57.7

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	ROGER ROBBINS	5622 OLD SETTLERS RD	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	8.[illegible]	6.4	5.4	6.5	5.7	14.5	6.5	9.7	7.1	97.1

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	5607 OLD SETTLERS RD	MORGANTOWN	[illegible]		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	69.6

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	(FINAL TOUCH [illegible])	[illegible] OLD SETTLERS RD	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	0.0	[illegible]	[illegible]	[illegible]	0.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	KEITH HAMPTON [illegible]	5575 OLD SETTLERS	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	MELVIN [illegible]	5570 OLD SETTLERS RD	MORGANTOWN	46160		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	OLD SETTLERS	MORGANTOWN	46160		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	71.4

[illegible] DATE: [illegible]
TERMINAL: [illegible]

[illegible] COUNTY WATER DISTRICT [illegible]
HISTORY TRACKING BY ACCOUNT NUMBER
MONTHLY BILLING SUMMARY FORMAT
FOR [illegible] THRU [illegible]

SERVICE: [illegible] WATER
RATE TABLE: [illegible]

ACCOUNT RANGE: [illegible] THRU [illegible]

ACCOUNT CLASS RANGE: [illegible]
[illegible] METER RANGE: [illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SERVED ID	SERVICES	CLASS
[illegible]	JANICE ALLISON	5573 OLD SETTLERS RD	MORGANTOWN	42261		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SERVED ID	SERVICES	CLASS
[illegible]	JANET [illegible]	[illegible] OLD SETTLERS RD	MORGANTOWN	42261		[illegible]	

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SERVED ID	SERVICES	CLASS
[illegible]	BARBARA JEAN [illegible]	5539 OLD SETTLERS RD.	MORGANTOWN	42261		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SERVED ID	SERVICES	CLASS
[illegible]	[illegible]	[illegible] OLD SETTLERS RD	MORGANTOWN	42261		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SERVED ID	SERVICES	CLASS
[illegible]	CHRISTOPHER [illegible]	[illegible] OLD SETTLERS RD	MORGANTOWN	42261		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SERVED ID	SERVICES	CLASS
[illegible]	RAYMOND [illegible]	[illegible] ST RD 125 [illegible]	MORGANTOWN	42261		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SERVED ID	SERVICES	CLASS
[illegible]	[illegible]	[illegible] ST RD 125 N	MORGANTOWN	42261		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SERVED ID	SERVICES	CLASS
[illegible]	[illegible] VOL FIRE DEPT	[illegible] ST RD 125 N	MORGANTOWN	42261		[illegible]	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BROWN COUNTY WATER UTILITY, INC.
HISTORY TRACKING BY ACCOUNT NUMBER
MONTHLY LISTING (SUMMARY FORMAT)
FOR 11/2001 THRU 10/2002

SERVICE, W WATER
RATE TABLE: ALL

ACCOUNT RANGE: [illegible]

ACCOUNT CLASS RANGE: [illegible]
MASTER METER RANGE: ALL

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	ROBERT [illegible]	5148 ST RD 135 N	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	148.7	[illegible]	[illegible]	151.5	112.5	100.8	[illegible]	[illegible]	109.9	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	5104 ST RD 135	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	0.0	0.0	0.0	0.0	0.0	0.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible] JEFFREY [illegible]	[illegible] ST RD 135	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible] ROBERTS	5056 ST RD 135 [illegible]	[illegible]	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	5.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible] ROBERTS [illegible]	5066 ST RD 135 N	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	3.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	BRAD [illegible]	5163 ST RD 135	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	71.5	[illegible]	[illegible]	118.9	[illegible]	122.5	[illegible]	59.4	131.4	[illegible]	49.8	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	NASHVILLE UTILITY	ST RD 135	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	401.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
[illegible]	[illegible]	[illegible] ST RD 135	MORGANTOWN	46160		W	[illegible]

ITEM	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTALS
BILLING USE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	74.6

BROWN COUNTY WATER UTILITY, INC.
HISTORY TRACKING BY ACCOUNT NUMBER
MONTHLY LISTING (SUMMARY FORMAT)
FOR 01/2002 THRU 12/2002

SERVICE: W WATER
RATE TABLE: ALL

ACCOUNT RANGE: 04-1560 THRU 05-1560

ACCOUNT CLASS RANGE: A THRU Z
MASTER METER RANGE: ALL

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
051290	NEW LIFE TABERNACLE	ST RD 45	NASHVILLE	47448		W	M

ITEM	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTALS
BILLING USE	1.9	1.9	1.4	1.4	2.0	1.7	1.2	2.6	4.0	1.7	3.3	1.5	24.6

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
051300	BARBARA WILLIAMS	307 ST RD 45	NASHVILLE	47448		W	R

ITEM	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTALS
BILLING USE	1.3	1.9	2.0	2.4	1.6	1.1	1.3	1.1	2.7	0.0	0.0	0.0	15.4

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
051310	JAMES BANCROFT	244 ST RD 45	MORGANTOWN	46160		W	R

ITEM	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTALS
BILLING USE	2.5	3.1	2.8	2.6	4.2	3.2	3.2	4.8	3.7	4.3	2.1	0.6	37.3

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
051320	CATHY OWEN	234 ST RD 45 W	MORGANTOWN	46160		W	R

ITEM	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTALS
BILLING USE	2.9	4.7	4.6	5.0	5.3	4.1	6.4	7.7	10.1	13.7	7.2	6.8	78.5

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
051330	MARTHA JESSUP	75 ST RD 45	MORGANTOWN	46160		W	R

ITEM	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTALS
BILLING USE	6.9	6.2	5.3	6.8	7.8	6.7	4.3	9.0	4.0	8.1	6.3	5.2	76.6

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
051340	JACK McDONALD	64 ST RD 45	MORGANTOWN	46160		W	R

ITEM	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTALS
BILLING USE	3.5	2.5	2.0	6.1	1.9	5.2	8.3	5.3	0.0	4.8	12.4	12.0	64.0

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
051350	MARTHA JESSUP #3	73 ST RD 45	NASHVILLE	47448		W	R

ITEM	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTALS
BILLING USE	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.1	1.2	2.1	0.0	0.1	5.2

ACCOUNT	CUSTOMER'S NAME	SERVICE CITY	CITY	ZIP CODE	SS/FED ID	SERVICES	CLASS
~~051360~~	~~LUTHER F. SMITH JR~~	~~4769 COVERED BRIDGE RD~~	~~NASHVILLE~~	47448		W	R

ITEM	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTALS
BILLING USE	7.5	9.4	8.3	7.4	9.8	7.4	7.0	8.1	8.0	7.7	6.9	6.7	93.8

APPENDIX F

LOCAL RESIDENTS AND BUSINESS LETTERS

Mike Ahern
5140 N. Meridian St.
Indianapolis, In 46208

Re: Bean Blossom Sewer Expansion Project

Dear Members of the Helmsburg Sewer Board,

I am one of your new neighbors at Woodland Lake. My wife Sherry and I purchased a lakeside home at 5681 N.West Shore Drive for a weekend getaway and for Sherry to use as an art studio. For some time we've been searching Brown County for just the right property, and we're convinced that we've found it. We've stayed many weekends at rental cabins and hotel rooms, and we probably know the back roads and villages of Brown County as well as anyone. And, of course, I've done countless news stories for my television station about the scenery and history of Brown County. Now, at last, we are residents, and anxious to take an active part in the community.

However, we are first-time property owners, and as such we're not as familiar as we should be with Woodland Lake and efforts to extend the service area of the Helmsburg Regional Sewer District. What I <u>do</u> know is that we are 100 percent behind a feasibility study for this project. Since buying our home, we've heard of several septic problems experienced by Woodland Lake residents, and I understand that the previous owners of our house had some serious problems at one time. We purchased our home with the intention of staying for some time, and I know that having a dependable sewer system will help make our time there more enjoyable, and more profitable in the long run.

I hope this letter will be of some use to you in deciding what steps to take toward extending this sewer district to residents of Woodland Lake. Count us as two enthusiastic supporters.

Sincerely,

Mike Ahern

Mike Ahern
5681 N. West Shore Dr
Woodland Lake

3-16-98

Beverly & Thomas Mattingly
5710 East Shore Dr.
Morgantown IN 46160

Bean Blossom Sewer Expansion Project
To Whom it May Concern:

We very much favor the sewer project! Being able to have the sewer system would eliminate the septic problem, and would increase property values!

We moved to Woodland Lake in 1988, and put in a new septic system in 1991, at quite an expense, and great trouble! We've "babied" this system, hoping never to have to go through all the mess of bulldozers, damaged trees, etc!, not to mention expense! I use enzymes (RID-X) on a regular basis, and I take all of our laundry to Nashville, to wash at the laundry-mat there, usually once a week. This is a cost of $1,300.00 a year, just to wash clothes! This is only what I actually spend at the laundry mat, in addition there is the cost of driving (20 miles, rd. trip) my time, etc!

We pump the tank every few years, usually at $100, to $125.00 per visit.

March 13, 1998
Richard Byers
5878 N. West Shore Dr.
Morgantown, Indiana 46160

Re: Bean Blossom Sewer Expansion Project

Dear Sirs,

I support the expansion of the Helmsburg Regional Sewer District to the Bean Blossom Area.

I am currently having problems with my septic system, including seepage onto my neighbors property, and a lack of suitable soil to add a conventional system on my property. After having a soil analysis done, in June of 1996, the Brown County Health Dept. determined that I need an "at grade" system with a second tank, a pump, float chamber, and alarm system. I then obtained an estimate of $8,897.00. Later, while pumping the existing tank, we found that it was a small 500 gallon, home made tank, that would also have to be replaced. This additional cost would be approximately $600.00. These prices were at September 1996 prices, so as you can see I am probably looking at about a $10,000.00 repair. I have still not made this repair at this time, as I have heard that

/

this type of system is not very efficient, and is no longer reccomended. I am told that now an even more expensive "mound" system is being used.

At any rate I will have to do something in the very near future. This problem is causing a health concern & unwanted friction with my neighbor. I believe the sewer expansion to the Woodland Lake Area is the answer to my problem.

Thank you for your consideration in this matter

Sincerely,
Richard Byers
ph. 812-988-0743

P.S. I have included a copy of my estimate & soil surveys with this letter.

B-8.2

February 5, 1998

Bob and Wanda Sedgwick
3303 Busy Bee Lane
Indianapolis, IN

RE: Sewer Line to Bean Blossom

To Whom it may Concern:

I own two properties in Bean Blossom at State Road 135 and McDonald Drive. I am in favor of extending the sewer line to Bean Blossom and will support and cooperate with all efforts.

I cannot attend the February 10, 1998 meeting.

Please count on my support.

Sincerely,

Bob and Wanda Sedgwick

Cottonwood Group, Inc.

P.O. Box 726
Nashville, Indiana 47448

Phone (812)988-8480; (800)942-2[illegible]
Fax (812)988-6420

February 5, 1998

Nina Jo McDonald
Century 21 Village Realty
S. Jefferson Street
Nashville, IN. 47448

RE: Sewer service to Bean Blossom

Nina Jo:

As property owners in the Bean Blossom area we would like to express our support for the extension of sewer service to the Bean Blossom area. As you are aware we are proposing a 30+ site development near the intersection of S.R. #135 and the north end of Old Settlers Road.

You can count on the Cottonwood Group's (Dick Houston, Ed Freese, Mike Flanders, Bill Voland) support and cooperation in the project.

Respectfully,

Bill Voland
Sec.-Treasurer
Cottonwood Group, Inc.

Pastor and Mrs. John Hrynk
1514 N. Faith Road
Kokomo, IN 46901

April 18, 1998

2117 South Shore Drive
Morgantown, IN 46160

Bean Blossom Sewer Expansion Project
To Whom It May Concern:

We hope we are not too late to add our opinion into the vast storehouse of knowledge you have already compiled. We apologize for taking so long to write, but life does get busy at times and the last month or so has been just that.

Nevertheless, please accept this letter as our support for the Helmsburg Regional Sewer District to expand and include the Bean Blossom Area. We currently own two lots on the Woodland Lake subdivision and presently have a cottage on one. We have only had it for a year, and use it on a weekly basis so we can't honestly say we are having problems with our septic field or toilets. We are planning to rebuild the cottage over the next several years however, and eventually retire at Woodland Lake, so any sewer improvements would be welcomed.

I do however know that several of my neighbors have had problems with their septic systems especially in wet weather, and with us still being on well water this concerns me.

Thank you for your consideration in this matter and please be assured that we shall be lifting this project up in prayer, as well as those who have the responsibility of dealing with it. God bless.

Love in Christ
John & Patty Hrynk

John + Patty

March 18, 1998

Raymond Grimes
5306 State Rd 135 No
Morgantown. In. 46160

Dear Sirs!

I support the Helmsburg Regional Sewer District to the Bean Blossom area.

I am currently having no problems however I do support the sewer project. I feel We need it.

Sincerely
Raymond Grimes

Christian A. Gerber & Tracy L. Hector-Gerber

12250 South Widmer St., Olathe, KS 66062

March 13, 1998

Bean Blossom Sewer Expansion Project
To Whom It May Concern

Dear Sirs:

As a current land owner in the Woodland Lake area of Morgantown, Indiana it is our intent to build our home within the next few years. When my wife and I purchased this property we were concerned with the problems associated with septic tanks. Our concerns are not just the financial burden typically encountered with septic tank maintenance, but also with the environmental implications to the community.

We believe that a long term community planning effort should incorporate a policy to limit the use of septic tanks wherever possible. With the incremental improvement to the property values each homeowner will experience with a sewer system the community receives a higher tax base and ultimately better services that drive positive planned growth. It simply makes good business sense.

Our intent is to build a home we feel comfortable to raise our child in for years to come. It is very encouraging to hear this dialog taking place. I want to thank you in advance for your consideration in this matter.

Sincerely,

I support the expansion of the Helmsburg Sewer Project. Thank you for your consideration in this matter.

Sincerely,

Mary Catherine Hall
3-15-98

3-15-98

Daniel R. + Mary C. Hall
2150 N. Shore Drive
Morgantown, In 46160-8691

Bean Blossom Sewer Expansion Project
To Whom It May Concern,

Dear Sirs:

I support the expansion of the Helmsburg Regional Sewer District to the Bean Blossom Area.

I am currently having problems with my septic system, including not being able to have a washing machine because my current system cannot handle the extra water. Currently we have our system pumped out about 2 years. Although it seems to be fine now I would prefer to be on a sewer line because then I could do washing (clothes) at home instead of going to the laundromat every week. I wouldn't have to worry about my system every time we get heavy rains. We always worry about the rain because it could saturate the ground and seep into the system and cause problems.

3-17-98
Louis & Bonnie Tucker
5941 Eastshore Drive
Morgantown, In 46160

Bean Blossom Sewer Expansion Project
To Whom it may Concern:

Dear Sirs:

We support the expansion of the Helmsburg Regional Sewer District to the Bean Blossom Area.

I am currently having problems with my septic system, including:

Unable to have a washer due to the inability of our system to handle the water.

Unable to flush toilet when we have a lot of rain.

We need to pump our system every spring.

Thank you for your consideration in this matter.

Sincerely,
Louis & Bonnie Tucker

03-11-98

Tim T. and Linda C. Richardson
5796 East Shore Drive, Woodland Lake
Morgantown IN 46160

Bean Blossom Sewer Expansion Project
To Whom It May Concern:

Dear Sirs:

We support the expansion of the Helmsburg Regional Sewer District to the Bean Blossom area. Though we are newly built and are not experiencing problems we are concerned for the future both from an environmental standpoint and from the fact that we cannot use this 50x100 foot area for purposes other than a septic field.

We look forward to being on sewers in the future.

Sincerely,

Tim Richardson

Linda Richardson

17 MARCH 98

CHRISTINA DALLAS
5682 E. SHORE DR
MORGANTOWN IN 46160

BEAN BLOSSOM SEWER EXPANSION PROJECT
TO WHOM IT MAY CONCERN:

DEAR SIRS:

I SUPPORT THE EXPANSION OF THE HELMSBURG REGIONAL SEWER DISTRICT TO THE BEAN BLOSSOM AREA.

I AM CURRENTLY HAVING PROBLEMS WITH MY SEPTIC SYSTEM, INCLUDING THE TIME'S WHEN IT RAINS I HAVE SEEPAGE IN MY YARD IF I DO LAUNDRY OR TO MANY SHOWERS. EVERY ONCE IN A WHILE WHEN I DO LAUNDRY IT SMELLS IN MY KITCHEN

MY MAIN CONCERN THOUGH IS THE LAKE. WITH SO MY PEOPLE NOW LIVING ON THE LAKE AND HEARING ABOU SEPTIC PROBLEMS I'M AFRAID WE ARE POLLUTING THE LAK

I WOULD MISS THE FRESH WATER CLAMS.

THANK YOU FOR YOUR CONSIDERATION IN THIS MATTER.

SINCERLY

March 17, 1998

John F. McCann, Jr.
Mary Louise McCann
5702 E. Shore Drive (Woodland Lake)
Morgantown IN 46160

RE: Bean Blossom Sewer Expansion Project

To Whom It May Concern:

We strongly support the expansion of the Helmsburg Sewer District.

Currently, with just the two of us in our home, our septic system operates on in almost normal manner as long as it does not rain, which of course does happen in Indiana. We are very careful in using our system, trying to be judicious about flushing the toliet, doing laundry and taking showers (all of which have become normal everyday habits). (Forgot about doing dishes.)

We would like to have the opportunity to hook on to a central sewer system as we own only a lot and do not have acres of ground upon which to expand our system at this time. Also, our system is 18 years old and I'm sure at some point there could be some serious problems.

Any consideration given to the possibility of a sewer in this area would be most appreciated.

Thank you for your attention in this matter.

Sincerely,

Mary Lou McCann

Mary Lou McCann

March 16, 1998

TO: Helmsburg Regional Sewer Board of Directors
Helmsburg, IN
All Others Concerned

SUBJECT: Bean Blossom Sewer Expansion Project

Ladies and Gentlemen:

I support the expansion of the Helmsburg Regional Sewer District to include the Bean Blossom Area and the Woodland Lake Estates Area. We have owned Lot 97 on Woodland Lake since 1980, and have experienced septic (waste water) problems, especially during periods of substantial rainfall. During those times we are unable to flush our toilet; the toilet gurgles; and we smell sewer gas in our home. To help the problem we have to have our septic tank pumped at least once or twice a year.

In addition, there are times when I observe what I believe to be seepage from my neighbor's septic tank, with some odor, as it is higher than our property. I believe a waste water sewer system would correct these problems and also prevent sickness to humans and wildlife by diminishing possible pollution of Woodland Lake where many people swim, boat and fish. Your favorable consideration will be appreciated.

Very truly yours,

Richard O. Regnier

Richard O. Regnier

Margaret A. Regnier

Margaret A. Regnier
Lot 97, Woodland Lake Estates

Mailing address:
322 Columbia Avenue
Tipton, IN 46072
Phone: 765-675-4928

Saturday, March 14, 1998

Bean Blossom Sewer Expansion Project
To Whom It May Concern:

We wholeheartedly support the expansion of the Helmsburg Regional Sewer District to the Bean Blossom Area, including the residents on Woodland Lake.

We have had situations with wet areas in the septic field, especially in the Spring, and times of hard rains.

Thank you for your consideration in this matter.

Sincerely,
Georgina A Rowland
John L Rowland

Mr. John L. Rowland
5741 N. West Shore Dr.
Morgantown, IN 46160

Margie Hanrohan
2181 South Shore Dr.
Woodland Lake

March 14, 1998

Bean Blossom Sewer Expansion Project

Dear Sirs:

I am unable to attend the meeting on March 17. However, I am very interested in the possibility of sewers at Woodland Lake.

I am currently experiencing few problems with my septic system. At the time of purchase it had (supposedly) been inspected, but I had definite leakage which was noticeable as soon as I moved into my home. Over the next two years I spent much time, grief and money to make the system minimally adequate. Now I use a minimum of water to keep from having further trouble. I never use my dishwasher or garbage disposal. Much of the time my toilet needs repeated flushings. The clay absorbs so poorly I was told that even with my extended system I shouldn't hope for any better situation.

Now, however, I have hope we will be added to the Helmsburg Sewer System.

Sincerely,
Margie Hanrohan

March 17, 1998

Walter and Jane Land
395 State Rd. 45 W
Morgantown, Indiana 46160

Bean Blossom Sewer Expansion Project
To Whom It May Concern

Dear Sirs:

We support the expansion of the Helmsburg Regional Sewer District to the Bean Blossom Area.

We currently have problems with our septic system, including Seepage in our yard. We have our septic tank drained at least once a year or as we see the seepage occurring.

We consider the lack of a sewer system one of our biggest problems in living in the Bean Blossom area. We support the ongoing sewer project study in a great way.

Sincerely,

Walter Land Jane Land

Walter and Jane Land

phone: (812) 988-1411

Bean Blossom Sewer Project
5023 North S. R. 135
Nashville, In 47448

5828 East Shore Drive
Morgantown, In 46160
Ph: 988-7741

March 17, 1998

To Whom It May Concern:

This is to advise that I support the expansion of the Helmsburg Regional Sewer District, providing the costs connecting to the sewer and the monthly fee is not prohibitive.

I presently have a septic system which I am primarily satisfied with. However, during prolonged rainy periods the system does become a little sluggish but still functions as intended.

I have had the system cleaned once in the past 20 years.

Obviously, a sewer system would be better. In addition, many of us on Woodland Lake, have lake front properties and there is always the risk of the present system polluting the lake.

Sincerely,

Walter P. Wilson

Walter P. Wilson

3-15-98
James W Fox
5034 ST. Rd. 135 N.
Morgantown IND-46160

Bean Blossom Sewer Expansion Project
To Whom It May Concern
I do Support the Expansion of the Helmsburg Regional Sewer District to the Bean Blossom area
at this time I am (not) having problems with my Septic System but I do know that we need a Sewer System because In Wet Warm weather the hole Town smells like septic

Sincerely.
James W. Fox

MAR 12, 1998

PATRICIA L PEAKER
1466 N LINWOOD AV INDPLS 46201
LOT 117 E. SHORE DR
MORGANTOWN IN 46160

BEAN BLOSSOM SEWER EXPANSION PROJECT
TO WHOM IT MAY CONCERN

DEAR SIRS:

I SUPPORT THE EXPANSION OF THE HELMSBURG REGIONAL SEWER DISTRICT TO THE BEAN BLOSSOM AREA.

I'VE BEEN TRYING TO GET BROWN COUNTY WATER FOR ALMOST A YEAR. I'M SURE MY SEPTIC SYSTEM ISN'T UP TO PARR BECAUSE MY WATER TANK WON'T WORK UNLESS IT RAINS FOR 6 WKS.

ANY UPGRADE IN THIS AREA WOULD BE GREATLY APPRECIATED.

THANK YOU FOR YOUR CONSIDERATION IN THIS MATTER

SINCERELY,
Patricia L. Peaker

March 17, 1998

From: Charlotte and Gary McClurg
5821 Bittersweet Road
Morgantown, IN 46160

To: Bean Blossom Sewer Expansion Project

To Whom it May Concern:

We wanted to let you know we support the Helmsburg Regional Sewer District to the Bean Blossom area. Even though we have a Morgantown address, we live just a mile and a half from Bean Blossom and State Road 135.

Living on a small lake that has 18 households around it, we see a definite need for sewers. Personally we have a aeration system which we feel keeps the soil, water and air clean but on a day like today after having considerable rain, the system does not work until the water table goes down.

However we have had neighbors with septic problems and have seen evidence of raw sewage standing in yards and must invariably run off into the lake because the slope around the lake. This is our water supply and is definitely harmful to our bodies.

To protect our people and our envirionment we feel it is imperative that a sewer system be developed for our area. We will do whatever we can to support you in this.

Thank you for your consideration in this matter.

Sincerely yours,

Charlotte and Gary McClurg

Charlotte and Gary McClurg

Cottonwood Group, Inc.

P.O. Box 726
Nashville, Indiana 47448

Phone (812)988-8480; (800)942-2808
Fax (812)988-6420

February 5, 1998

Nina Jo McDonald
Century 21 Village Realty
S. Jefferson Street
Nashville, IN. 47448

RE: Sewer service to Bean Blossom

Nina Jo:

As property owners in the Bean Blossom area we would like to express our support for the extension of sewer service to the Bean Blossom area. As you are aware we are proposing a 30+ site development near the intersection of S.R. #135 and the north end of Old Settlers Road.

You can count on the Cottonwood Group's (Dick Houston, Ed Freese, Mike Flanders, Bill Voland) support and cooperation in the project.

Respectfully,

Bill Voland
Sec.-Treasurer
Cottonwood Group, Inc.

3-17-98

Edith Phillips
5724 East Shore Dr.
Morgantown, IN 46160

writer 3040 Ainsworth Ave.
Spring Hill, Florida
34609

Bean Blossom Sewer Expansion Project

To Whom It May Concern,

My neighbor, Edith, asked that I write this letter for her, expressing her support for the sewer project. She maintains a home in Florida through the winter, and returns to spend the summer months at Woodland Lake.

She lives alone and feels her septic system is adequate for her needs, but is concerned that if she wished to sell her property, it would not be adequate for more people. Even living alone, she limits her laundry to once a week, and will wait longer if the weather has been extremely wet, soaking her system. She also avoids flushing the toilet too often during wet weather.

She pumps her system every 5 years or so.

March 13, 1998

Ralph + Marjane Litz
5842 East Shore Dr
Morgantown, In 46160

Bean Blossom Sewer Expansion Project

To Whom it May Concern

Dear Sirs:

I support the expansion of the Helmsburg Regional Sewer District to the Bean Blossom Area.

We are not currently having a problem with our septic system but it is comming up on 25 years since it was put in. We realize the problem with septic systems in the heavy clay soil that we have in this area.

We live lake-side and are concerned with the polution of the lake should our system fail

In our community (Woodland Lake) we have a concentration of homes in relatively close proximity to each other. Many of these homes were origonally built to be summer homes. Over the years they have become year round homes with families. It stands to reason that lake polution is more of a hazzard every year.

We therefore apeal to the powers that be that we be considered for hook-up to the Helmsburg System

Thank you for your consideration in this matter.

Sincerely

Marijane Fitz
Ralph E. Fitz

3-17-98

Michael's Motel
4931 State Rd. 135 North
Nashville In 47448

Bean Blossom Sewer Expansion Project
To Whom it May Concern

Dear Sirs:

I am definitely supportive of the Helmsburg Regional Sewer District expansion to the Bean Blossom Area.

As a new owner, I cannot honestly list any current problems, or anticipation either. But I definitely support the expansion relying on past experiences with septic systems etc.

Thank You
[illegible] & Angela Gibson

over Please

3-17-98

Linda Gibson
4931 State Rd 135 North
Nashville IN 47448

Bean Blossom Sewer Expansion Project
To Whom it May Concern

Dear Sirs:

I am a new resident of Bean Blossom & cannot furnish much information, but am in full support of the Helmsburg Regional Sewer District expansion into to Bean Blossom area. This is progress & anyone who has experienced both septic systems & sewer syttems would realize the need for this project.

Thank You
Linda Gibson

3-17-98

To Whom It may Concern:

I am writing to you about the possible Septic Plan that you are meeting about tonight we are in favor of this Septic Plan it is drastically needed on Woodland lake. We are wanting to build on to our home and we are affraid that are Septic Tank will not be big enough if we do this. most people who are on this Lake can not do there laundry at home, so they have to go to the laundromat. Please help us with this Problem.

Sincerely

5759 Westshore Dr Jim & Susan
Morgantown, IN Christie
46160

PAT SIDDIQ - OIL PAINTINGS
5763 N. East Shore Dr., Morgantown, IN 46160

March 16, 1998

Bean Blossom Sewer
Expansion project

To whom it may concern:

I support the expansion of the Helmsburg Regional Sewer District to the Bean Blossom - Woodland Lake area.

I am currently concerned that the septic systems on the lake could pollute the lake.

Thank you for your consideration. Sincerely, Pat Siddiq

APPENDIX G

AIRVAC CORRESPONDENCE (VACUUM SEWER SYSTEM)

AIRVAC®
THE WORLD LEADER IN
VACUUM SEWER TECHNOLOGY

CORPORATE OFFICE
AIRVAC, INC.
4217 N. Old US 31, P.O. Box 528
Rochester, IN 46975 U.S.A.
Phone: (574) 223-3980
Fax: (574) 223-5566
Web: www.airvac.com

August 7, 2003

Mr Gary Ladd, P.E.
Ladd Engineering
1127 Brookside Dr.
Lebanon, In 46052

Re: Beanblossom, Indiana
Vacuum Sewer Collection System – Budget Estimate and Layout

Dear Mr. Ladd:

Following you will find the Budget Estimate and Layout for the Service Area you outlined for Beanblossom, Indiana. A few brief comments may help explain how the Budget Estimate was prepared and what assumptions were made.

First, the layout is not radically different from that done for this area in 1998 for R.W. Armstrong. The greatest difference is that the Vacuum Collection Station has been moved. This was done primarily because now the sewage is being treated at a new Wastewater Treatment Plant to be constructed east of Beanblossom along Beanblossom Creek. We assumed that there would be sufficient space available for a Vacuum Station on this same site, thus minimizing the Force Main length. This WWTP site is at a relatively low elevation so that also helps us in locating the Vacuum Station there.

Using the USGS map provided, along with others we previously had, it was judged that the area to the north of Hoppers Branch could not be sewered by vacuum due to the topography. This would be the homes west of Indiana 135 and north of Hoppers Branch. (Hoppers Branch, we assume, is a small creek flowing into Beanblossom Creek.) Therefore, these approximate 23 homes will need to be served by grinder pumps or a small gravity lift station. This flow will pump to a dual valve buffer tank located on the layout south of the Indiana 135/Hoppers Branch bridge and their flow will be absorbed into the vacuum system there. These homes were not included in the number of REU's on our Budget Estimate. However, the flow from these homes is used to size the lines and vacuum station equipment since this sewage will all flow through the vacuum lines and station.

The remainder of the homes in the Service Area can be served by vacuum. As we agreed, it will take some research to determine how best to serve the campground near the Bill Monroe Museum on the north end of the vacuum system. As you suggested we are now placing a Dual Valve Buffer Tank at this property until further information becomes available. We feel this will be the minimum service required at this location.

The fairly large Mobile Home park on the west side of Hwy. 135 will be served with two single valve Buffer Tanks—one at the end of each row of Mobile Homes. We are showing 6" vacuum sewers to these, which is the minimum size of vacuum service to any Buffer Tank.

The line running south along Hwy. 135 is 8", primarily due to the high peak flows expected periodically at the campground. The other lines on the layout are sized as shown. We used 6" pipe on Covered Bridge Road and on the short section of Hwy. 45 due to the possibility of expansion and to help minimize the static loss on these lines. An easement will be required from Covered Bridge Road to Hwy. 45 to accommodate the topography. The contour of the land prevents us from keeping the vacuum sewers along the highway. This was also done on previous estimates for this area.

We have used unit prices for this project that have been fairly consistent recently in the Midwest on Vacuum Sewer projects. If you wish to use different unit prices, please adjust accordingly. You will see on the layout and the Budget Estimate that we have included Division Valves. These are resilient wedge gate valves placed at various locations, generally line intersections. Airvac does not provide these Division Valves. However, they are generally easily obtained from the pipe supplier.

Included are 45 Valve Pit Packages. These are the Airvac valves, sumps, pits and other miscellaneous items except the gravity stub-outs that are installed at each location. The $3500 we have allotted for this includes the cost of such items and an estimate of the contractor's cost for installation. The 3" service line from the valve pit to the vacuum main is often called a 'Crossover', and is estimated at $300 each.

The TMVP you see listed is a Trailer Mounted Vacuum Pump that is used by the contractor to test his vacuum lines during construction. It includes a belt driven vacuum pump and a 20 HP motor, along with controls, piping, valves, etc., mounted on a trailer for towing. A slightly less expensive unit is also available if requested. These units will be purchased by Airvac at the end of the project if not turned over to the Sewer District, depending upon the specifications.

We have not included Airvac Field Services in this Budget Estimate. It is not known to what extent that they will be required. It is estimated that 14 weeks will be required for the vacuum portion of this project, in case complete Field Services are desired. If costs for this service are needed please contact Mr. Todd Olson, Airvac's Area Sales Manager for your region, or Clint Hawn of the Airvac Service Department.

Also not included in this Budget Estimate is the Force Main from Vacuum Station to the WWTP, which we have now put on the same site. The length of this line is unknown, although should be minimal, as well as the pipe material and diameter. Other items you will need to include for a complete project are such things as easements, land acquisition, restoration, fees, permits and numerous other costs.

The Vacuum Collection Station costs are often difficult to determine. We have allowed $75000 for the Station building and other various estimated costs are as shown. These costs can change drastically if larger buildings are needed for various reasons. Airvac's equipment package includes the collection tank, controls, piping, vacuum pumps and sewage pumps mounted on a steel skid deck. This factory-tested unit will be installed in the Collection Station building prior to roof installation.

We have attempted to estimate the Operations and Maintenance costs based on our experience on similarly sized systems. This O&M Estimate is included with the Cost Estimate. As stated before, if you have knowledge of wages or power costs that will affect this O&M Estimate please adjust accordingly.

Included with the other information are a faw drawings that you might find helpful in explaining the vacuum system to you or your clients. We have many others that may also be of some benefit. If you have questions, give us a call at your convenience and we'll try to help.

Thank you for the opportunity to provide this Budget Estimate and Layout. If we can be of further assistance please call any time.

Sincerely,
Airvac, Inc.

Denny Moss

Denny Moss
Sr. Project Engineer

Cc: Todd Olson, Airvac Area Sales Manager
Don Mink, DW Squared, Airvac Factory Representative
Tampa office
file

APPENDIX H

CENTRALIZED TREATMENT PLANT SITE INFORMATION

Proposed Centralized Treatment Sites

The client also provided information that identified several possible sites for a centralized treatment system. A centralized system within the community is one possible solution to Bean Blossom's current problem. In analyzing the feasibility of this option, it is necessary to understand the characteristics of each particular site.

Figure B3 is an aerial photograph illustrating the locations of possible centralized treatment facilities and the planning area boundary. Figure B4 illustrates the planning area boundary and the site locations on a topographic map. Note that all of the sites are at a lower elevation than the rest of the community and are relatively flat and undeveloped. Along with the low housing density in the area, these characteristics make these the best prospective treatment sites in the planning area. In addition, there is an electrical power distribution station in close proximity to each of the sites. The distribution station is also identified on each figure.

The letters on each figure correspond to a particular centralized treatment site, each of which has been photographed. These site photographs can be found at the end of this Appendix.

Property Ownership Map

Figure B5 shows the size and owners of each parcel of land in the Bean Blossom area. This information is important in selecting locations for a centralized collection and treatment system and essential collection system elements (i.e. pump stations). The figure shows the possible locations for centralized treatment and identifies the parcel containing the electrical distribution station. Communication with the client has revealed that the owners of the proposed treatment sites are willing to discuss sale of their land, and that residents to the west of State Road 135 along Covered Bridge Road are responsive to the possibility of a pump station being placed in their area.

Wetland Inventory

Figure B6 identifies the existing wetlands found in the vicinity of the planning area. Most of the wetlands located on the map are found outside of the planning area boundary or are located in areas are not likely to be affected by the construction of a wastewater collection and treatment system. Thus, the impact of a wastewater system upon the region's wetlands should be very low.

FIRM Flood Information

Figure B7 illustrates the areas of the 100- and 500-year flood. This map reveals that proposed sites on the south side of Gatesville Road (sites C and D) are located within the 100-year flood boundary. The proposed sites on the north side of Gatesville Road next to the distribution station (sites A and B) are outside of the boundaries of the 100- and 500-year flood.

Prime Farmland

Construction of a wastewater collection and treatment system in the Beam Blossom region should leave as much prime farmland intact as possible. Figure B8 shows the prime farmland found in the vicinity of Bean Blossom. The figure reveals that the proposed sites located to the south of Gatesville Road (sites C and D) are located in areas designated as prime farmland. Those proposed sites to the north (sites A and B) are outside of the prime farmland boundaries.

Soil Survey

Figure B9 provides information on the types of soils found in the Bean Blossom region. Poor soil types can affect the construction and operation of a wastewater treatment system. Bartle silt loam is found on proposed sites A, B, and C, and presents no real problems to a wastewater collection and treatment system. Wilbur silt loam, which is frequently flooded, is found on proposed site D. Frequent flooding makes the site less desirable as a centralized treatment site.

Proposed Centralized Treatment Sites - Photographs

Figures 1 through 6 are photographs, grouped by site, documenting the four proposed treatment plant sites.

Site A

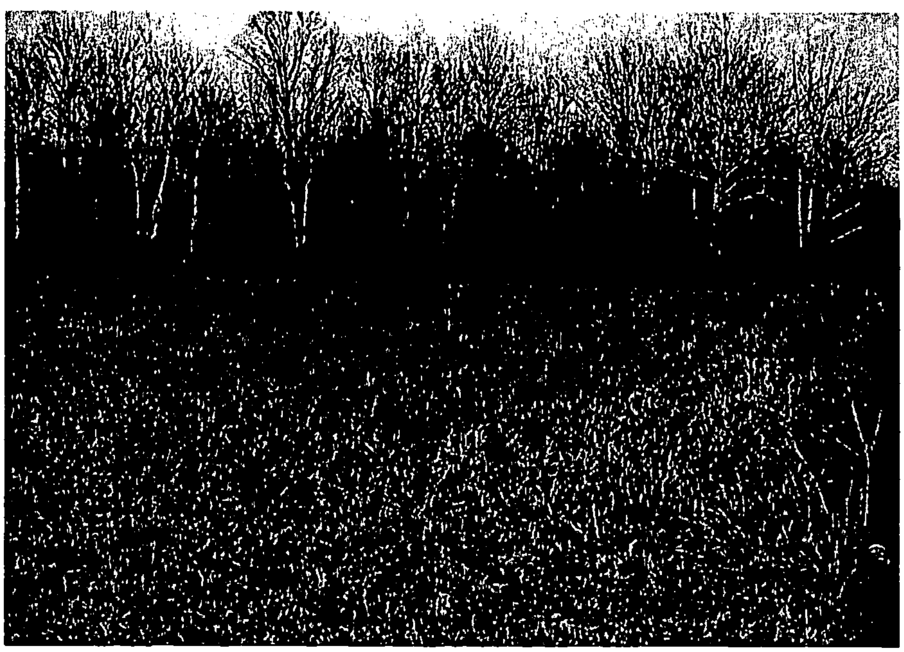


Figure 1: View of proposed site A, looking east.

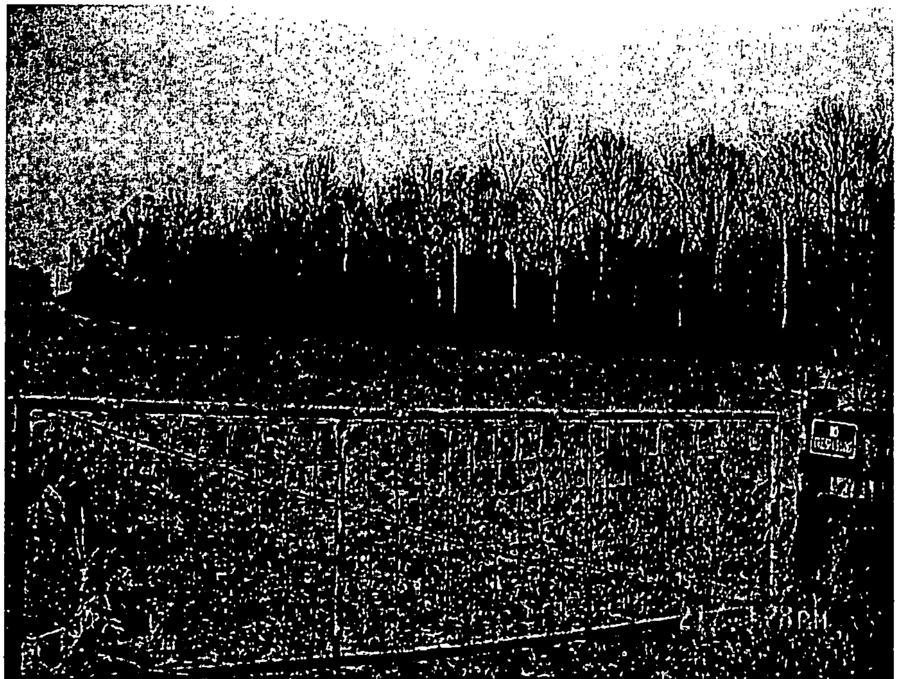


Figure 2: A view of proposed site A, looking north from Gatesville Road through a gate.

Site B

Figure 3: A view of proposed site B, looking north from Gatesville Road.

Site C

Figure 4: A view of proposed site C, looking south from Gatesville Road. There is a drainage ditch that divides the site on the left edge of the photo.

Figure 5: Another view of proposed site C, looking south along the drainage ditch. Bean Blossom Creek is located in front of the tree line in the photo's background.

Site D

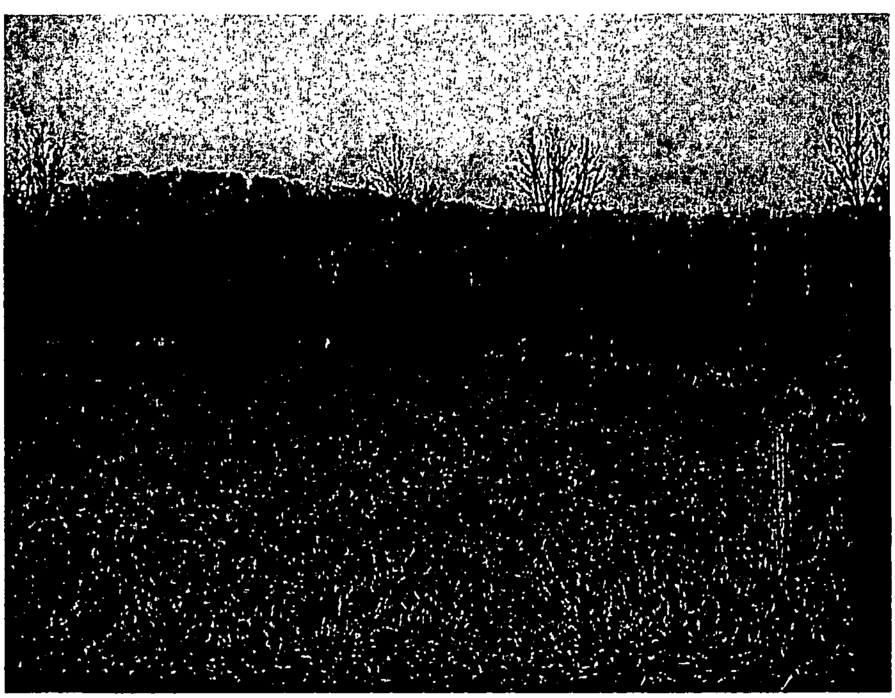


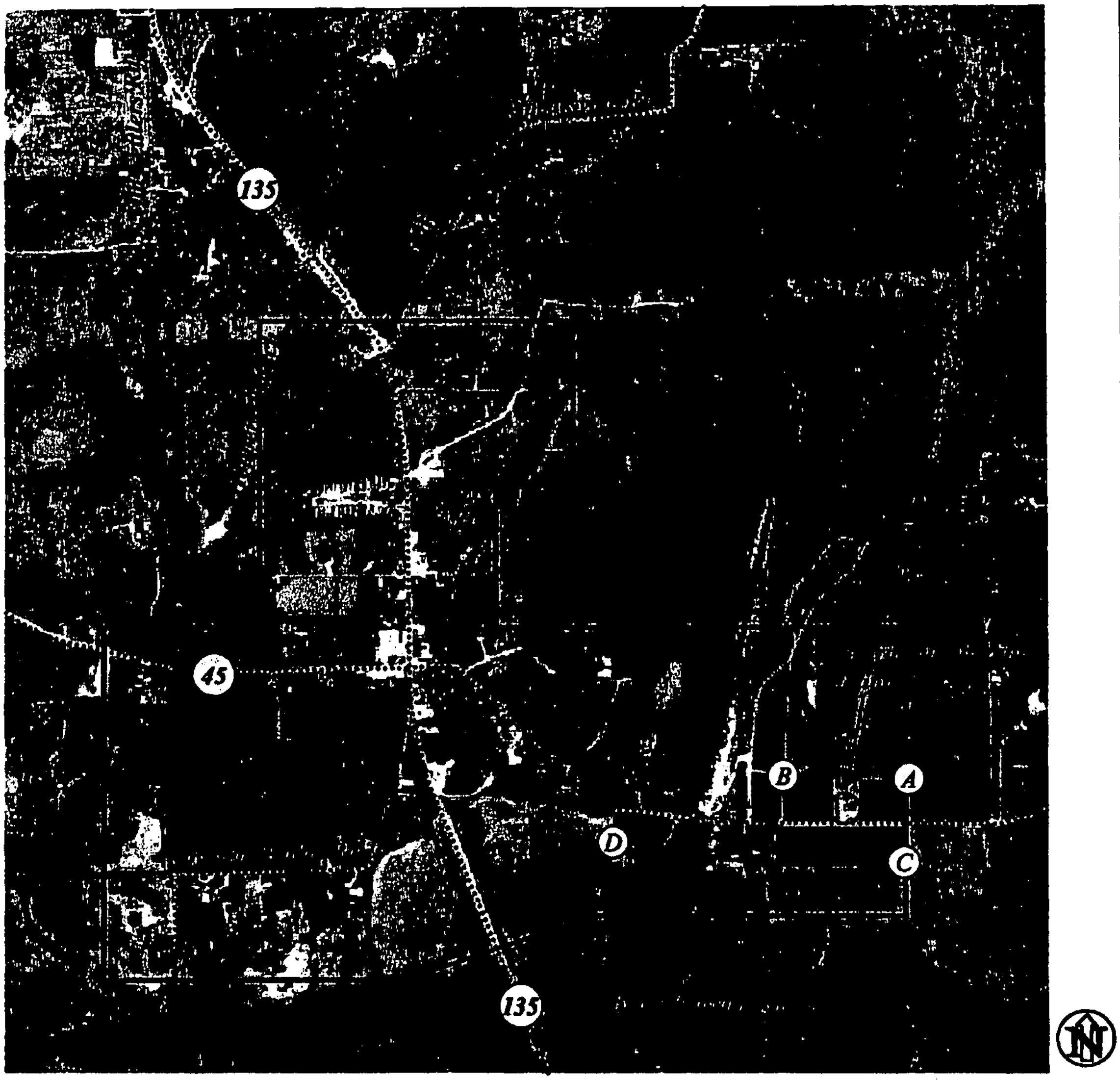
Figure 6: A view of proposed site D, looking south from Gatesville Road.

Bean Blossom Creek

Bean Blossom Creek is the largest stream in the area. The client has stated that dams recently built in the watershed have reduced the creek's flow and flooding frequency. Due to the location of the possible treatment sites, the creek will be the receiving stream for any effluent from a centralized treatment system built in Bean Blossom. Figures 7 and 8 are photographs of the creek taken in late November, 2002.

Figure 7: A view of Bean Blossom Creek from the State Road 135 Bridge, looking west.

Figure 8: A view of Bean Blossom Creek from the State Road 135 Bridge, looking east.



NO SCALE

LEGEND

Stream

Roadway

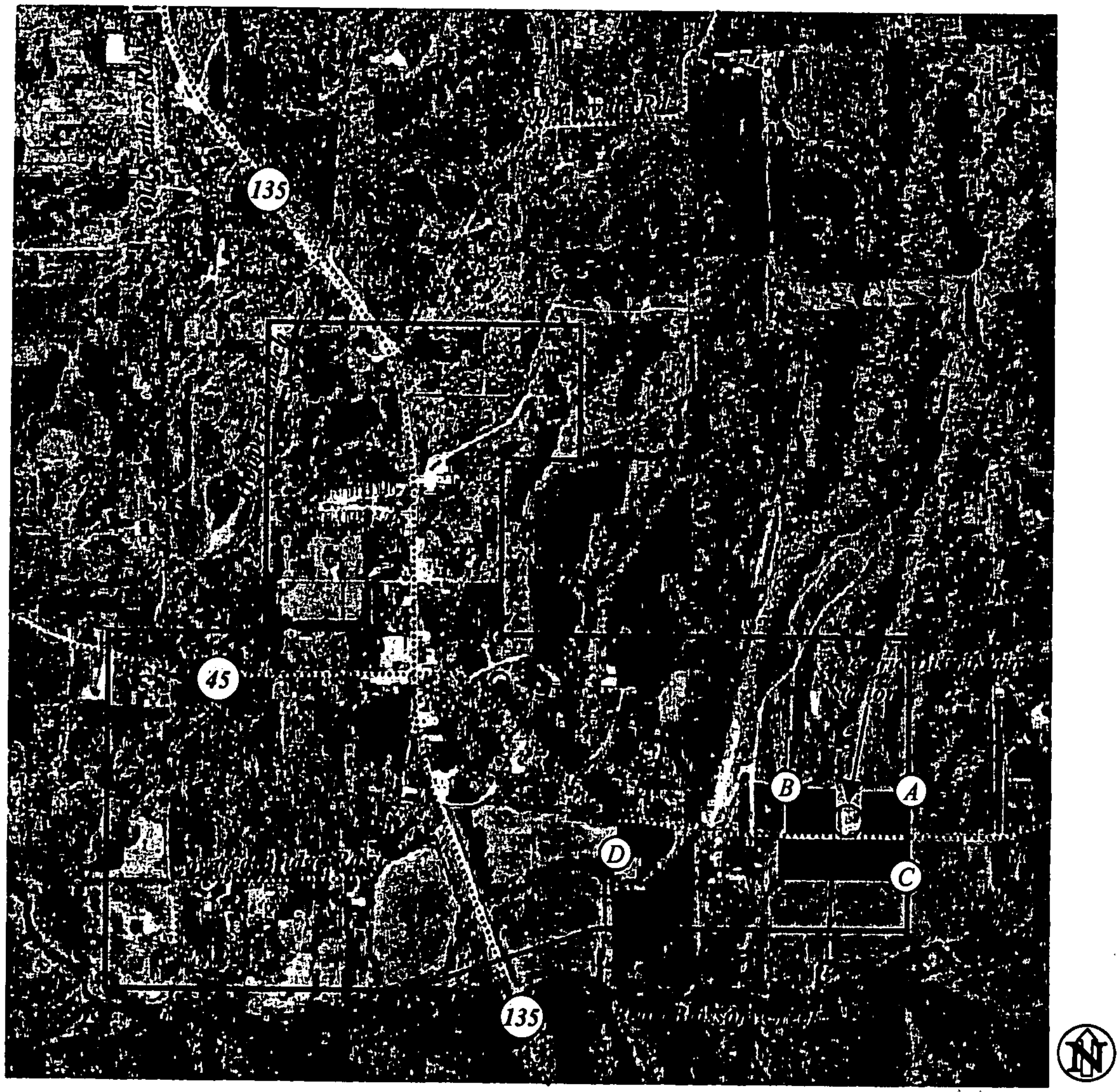
Planning Area Boundary

B Proposed Sites

Monarch

FIGURE NO. B3
Bean Blossom Wastewater Treatment Alternatives

PROPOSED CENTRALIZED TREATMENT SITES



NO SCALE

LEGEND

Stream

Roadway

Planning Area Boundary

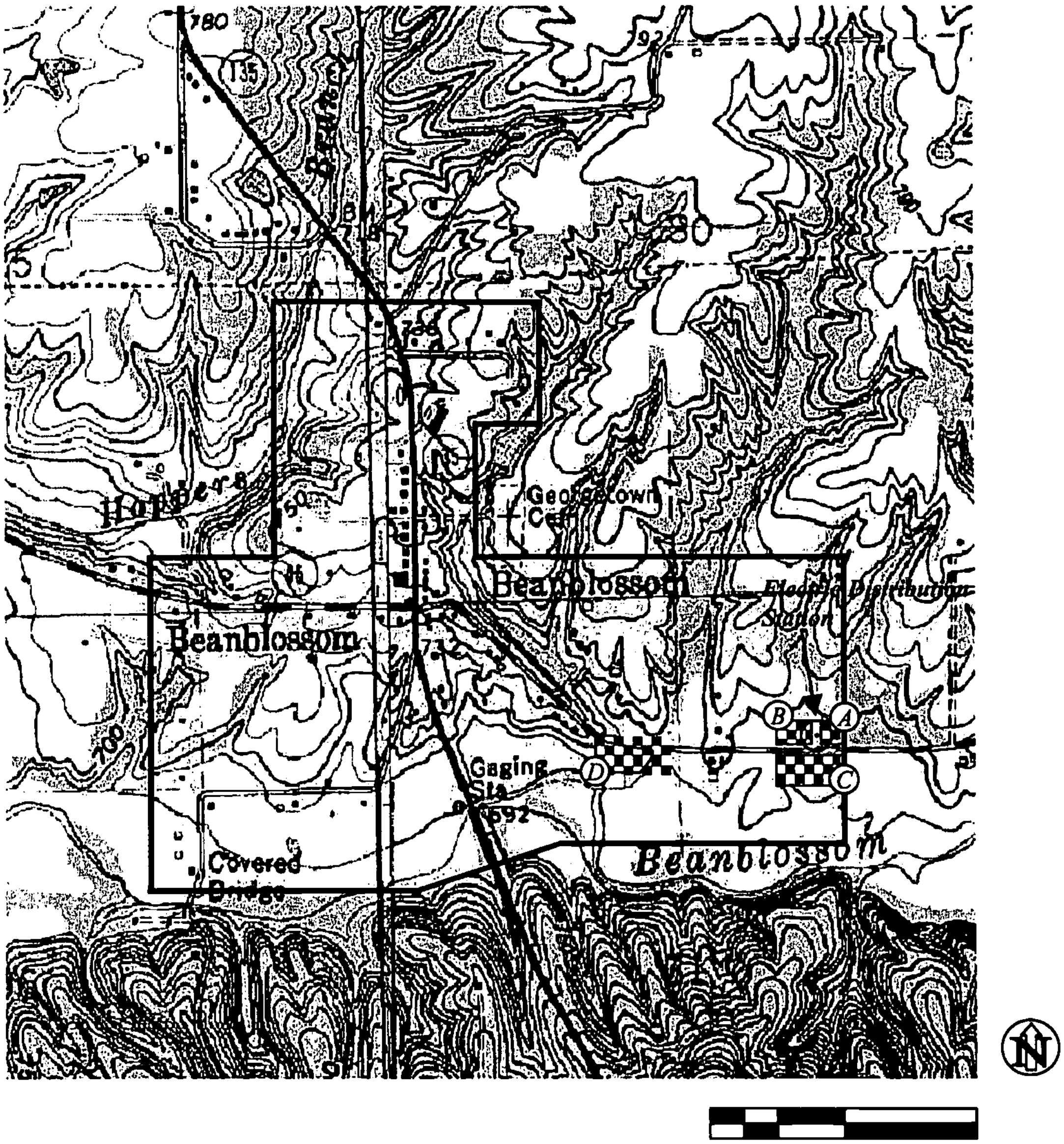
Proposed Sites

Monarch

FIGURE NO. B3

Bean Blossom Wastewater Treatment Alternatives

PROPOSED CENTRALIZED TREATMENT SITES



LEGEND

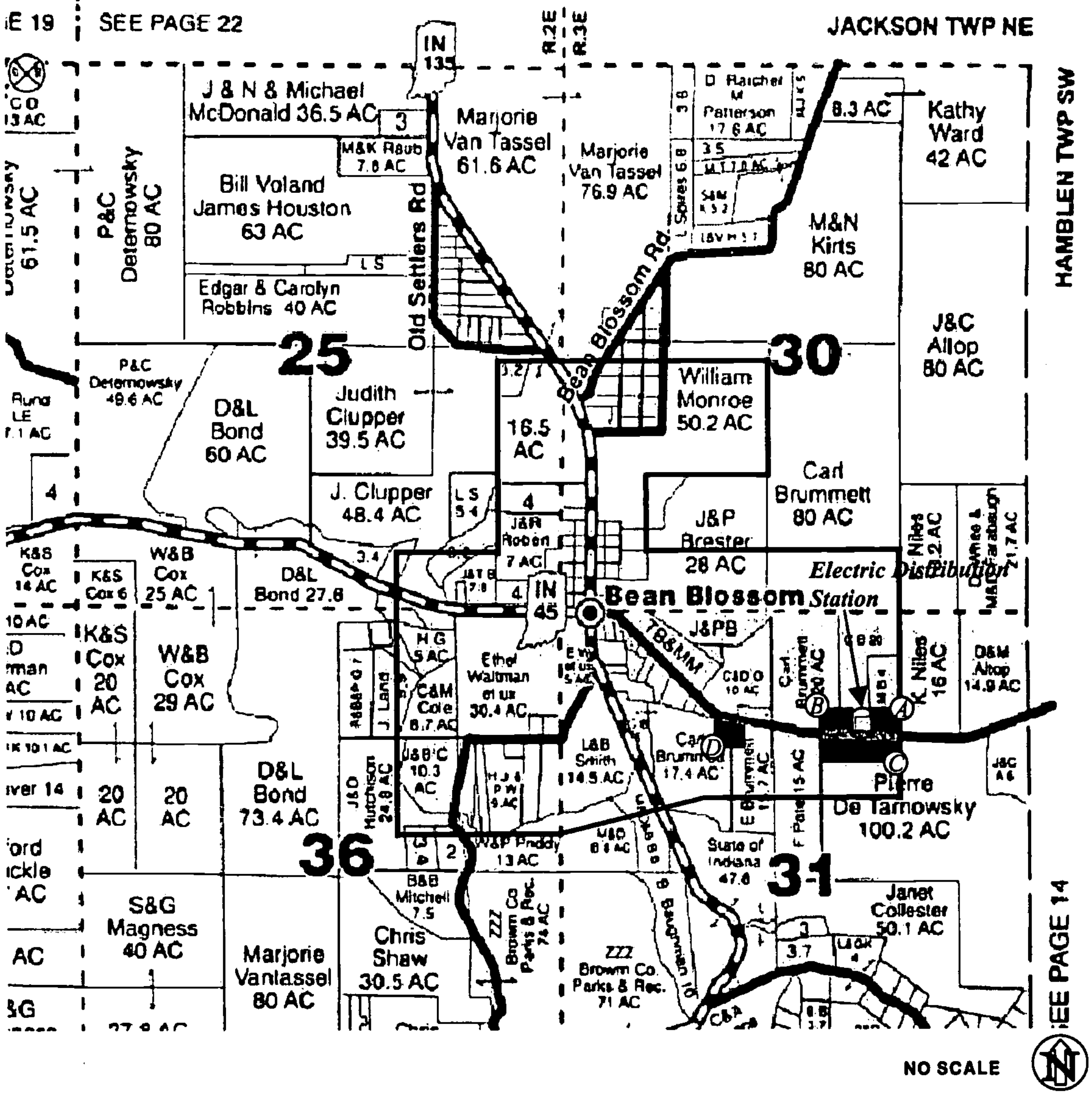
Planning Area Boundary

Proposed Sites

Monarch

FIGURE NO. B4
Bean Blossom Wastewater Treatment Alternatives

PROPOSED CENTRALIZED TREATMENT SITES



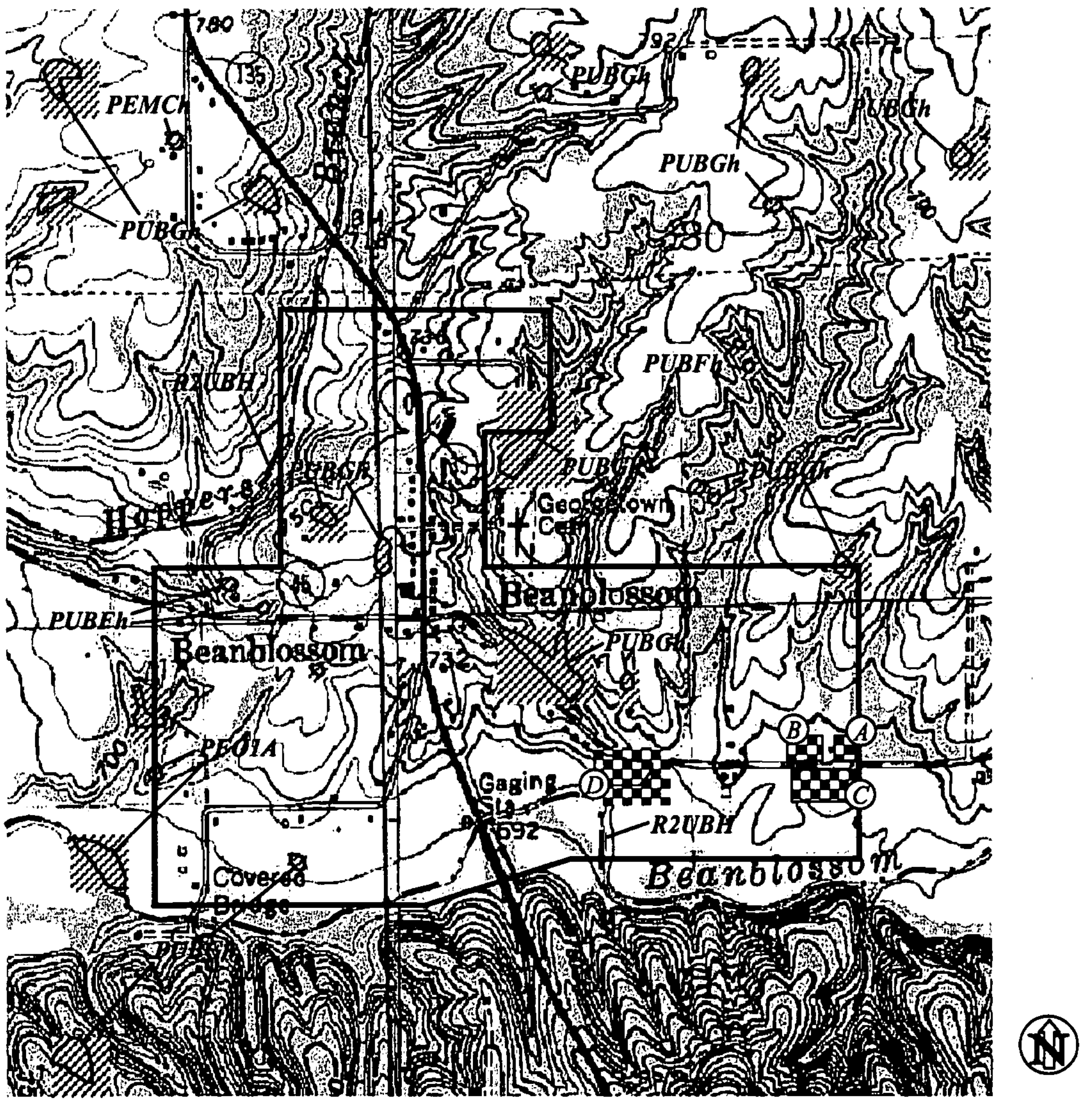
LEGEND

Planning Area Boundary

Proposed Centralized Treatment Sites

FIGURE NO. B5
Bean Blossom Wastewater Treatment Alternatives

PROPERTY OWNERSHIP



LEGEND

Planning Area Boundary

Wetland

Proposed Centralized Treatment Sites

1000' 0 1000'

SCALE

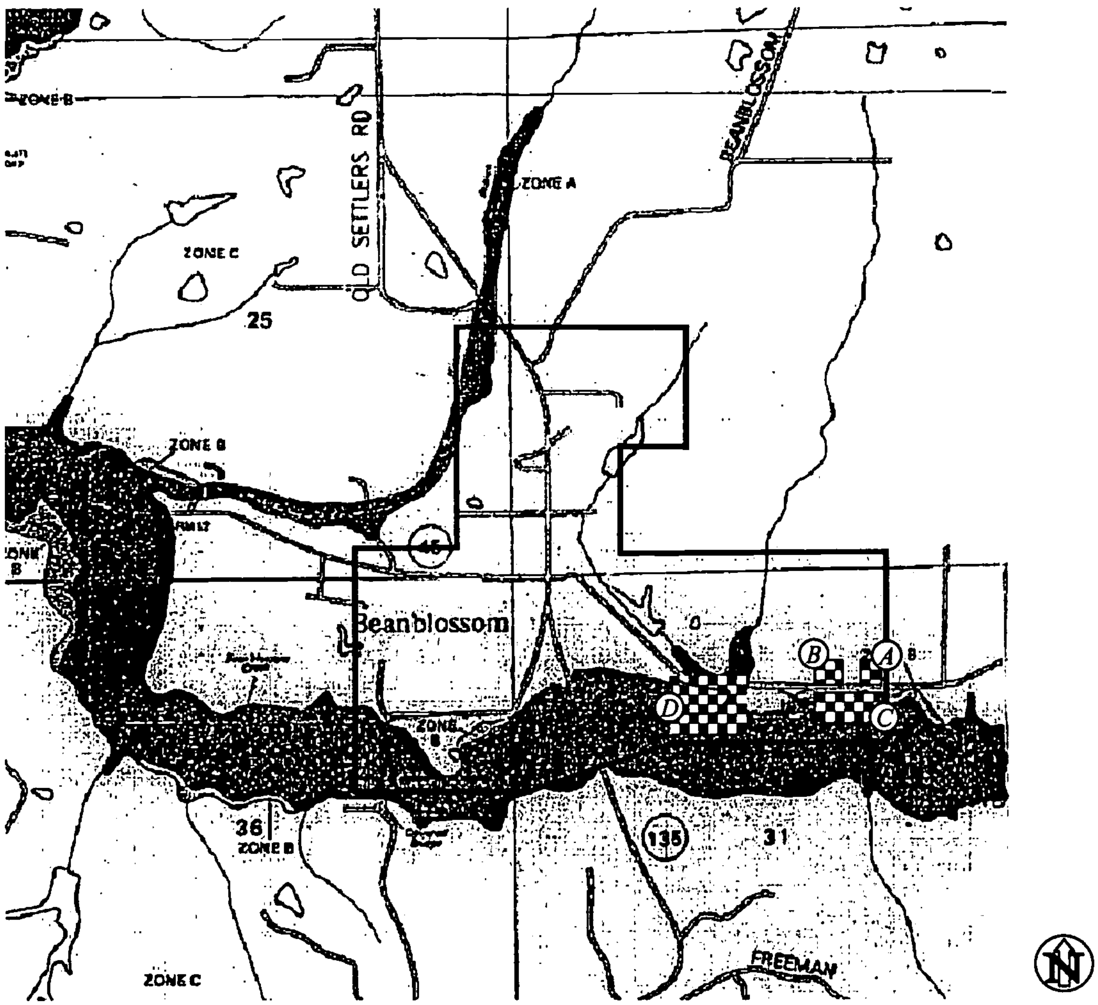
WETLAND DESCRIPTIONS

PUBGh	Palustrine, Unconsolidated Bottom, Intermittently Exposed, Diked/Impounded
PUBFh	Palustrine, Unconsolidated Bottom, Semi-Permanently Flooded, Diked/Impounded
PEMCh	Palustrine, Emergent, Seasonally Flooded, Diked/Impounded
PFO1A	Palustrine, Forested, Broad-leaved Deciduous, Temporarily Flooded
R2UBH	Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded

Monarch

FIGURE NO. B6
Bean Blossom Wastewater Treatment Alternatives

WETLAND INVENTORY



NO SCALE

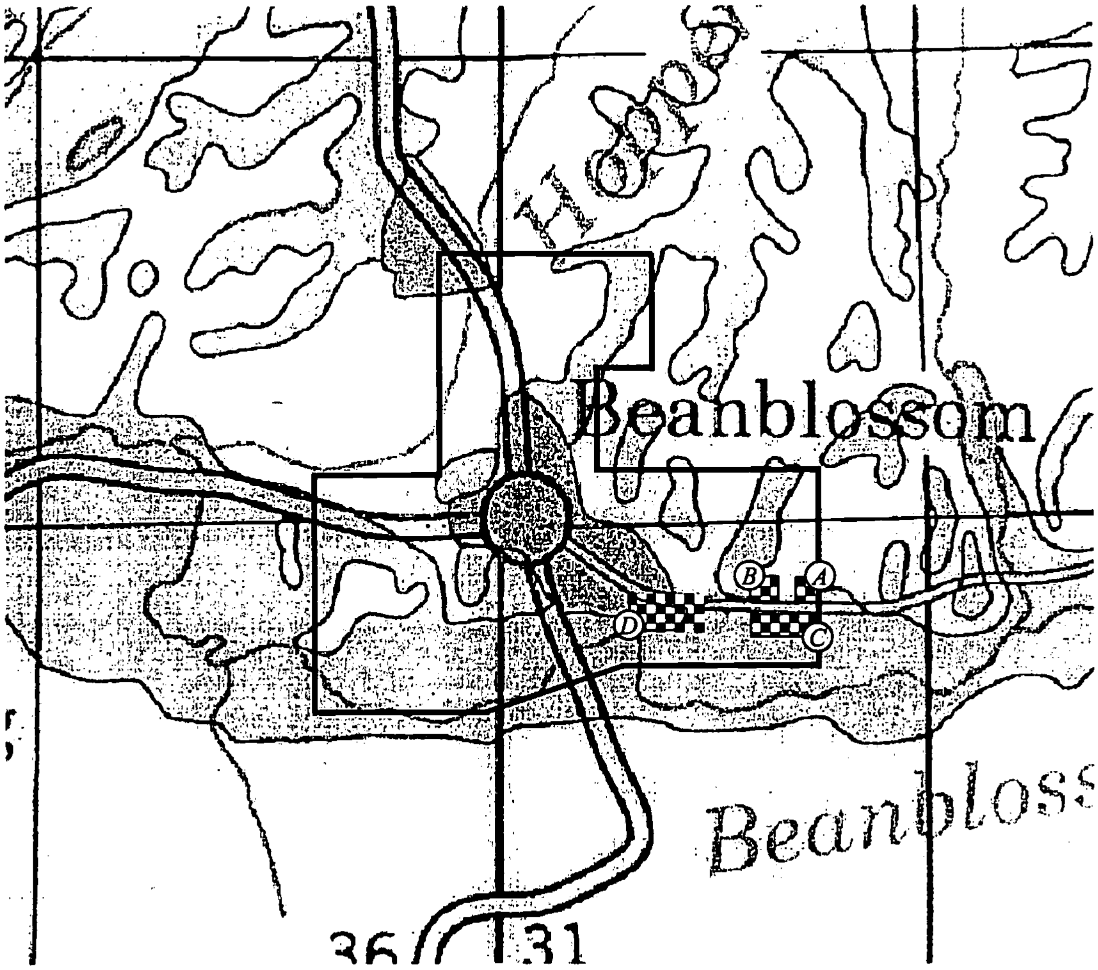
LEGEND

ZONE A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
ZONE B	Areas between limits of the 100-year flood and the 500-year flood.
ZONE C	Areas of minimal flooding (no shading).
	Planning Area Boundary
B	Proposed Centralized Treatment Sites

Monarch

FIGURE NO. B7
Bean Blossom Wastewater Treatment Alternatives

FIRM FLOOD INFORMATION



NO SCALE

LEGEND

- Urban Growth
- Prime Farmland
- Planning Area Boundary
- Proposed Centralized Treatment Sites

Monarch

FIGURE NO. B8
Bean Blossom Wastewater Treatment Alternatives

PRIME FARMLAND

SOIL DESCRIPTIONS

AvA	Avonburg silt loam, 0 to 2 % slopes
Ba	Bartle silt loam, 0 to 3 % slopes
Be	Beanblossom channery silt loam, occasionally flooded
BgF	Berks-Trevlac-Wellston Complex, 20 to 70 % slopes
CdD2	Chetwynd loam, 12 to 20 % slopes, eroded
CnC2	Cincinnati silt loam, 6 to 12 % slopes
Hc	Haymond silt loam, frequently flooded
HkD2	Hickory silt loam, 12 to 20 % slopes
HkF	Hickory silt loam, 20 to 70 % slopes
PeB	Pekin silt loam, 6 to 12 % slopes
PeC2	Pekin silt loam, 6 to 12 % slopes, eroded
RoB2	Rossmoyne silt loam, 2 to 6 % slopes, eroded
WaD	Wellston-Berks-Trevlac Complex, 6 to 20 % slopes, eroded
Wt	Wilbur silt loam, frequently flooded

NO SCALE

LEGEND

Planning Area Boundary

Proposed Centralized Treatment Sites

Monarch

FIGURE NO. B9
Bean Blossom Wastewater Treatment Alternatives

SOIL SURVEY

APPENDIX I

CONVEYANCE TO HELMSBURG EVALUATION (MONARCH ENGINEERING APPENDIX E)

Appendix E

In their preliminary engineering report, R.W. Armstrong (Armstrong, 2000) recommended that Bean Blossom connect to the existing wastewater treatment plant (WWTP) in nearby Helmsburg, Indiana. Transporting wastewater flows from the planning area to a nearby WWTP should always be investigated as a solution to the community's wastewater collection and treatment problems. In fact, it is often more economical to collect the wastewater from multiple communities and treat it at a common site. This appendix contains an investigation into the possibility of connecting to one of the region's existing WWTPs.

E.1 Nearby Wastewater Treatment Facilities

Currently there are two existing WWTPs located within a reasonable distance from the planning area. These plants are located in the towns of Helmsburg and Nashville, Indiana. (See Figure E1.) The plant located in Helmsburg is the closest of these two plants, at a distance of approximately 2.2 miles. The town of Nashville is located approximately 5.2 miles away. Table E1 illustrates the distances and elevation differences between Bean Blossom and the two existing WWTPs.

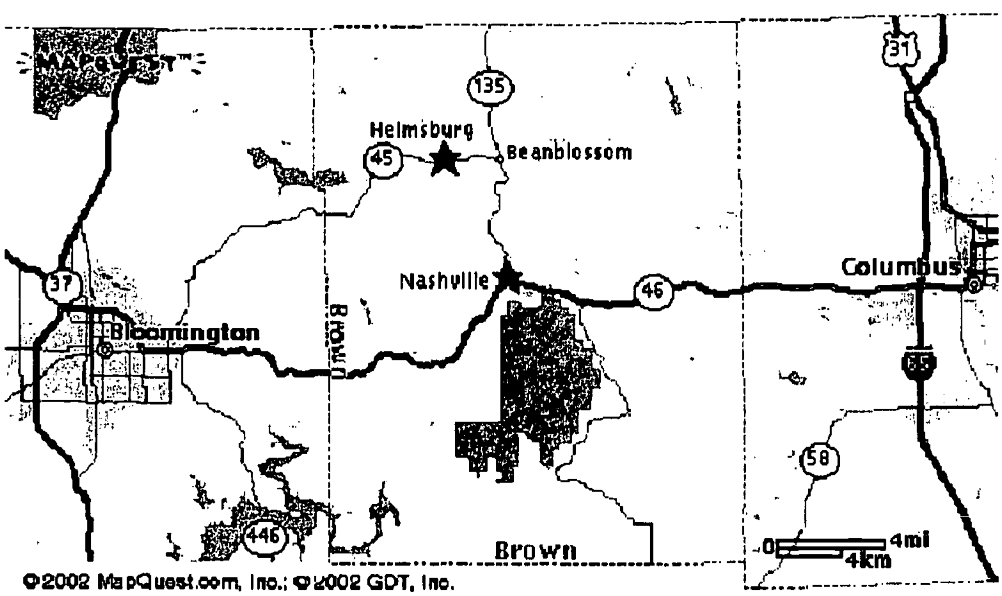


Figure E1: Existing wastewater treatment facilities near Bean Blossom, Indiana (Mapquest, 2003).

Table E1: Distances and elevation differences between Bean Blossom and nearby WWTPs.

Community	Distance from Bean Blossom (miles)	Elevation above Sea Level (feet)	Elevation Difference (feet)
Bean Blossom	N/A	732	N/A
Helmsburg	2.2	666	66
Nashville	5.2	628	104

Although Nashville is actually located at a lower elevation than Bean Blossom, elevations between the two towns rise to 960 feet before reaching Nashville. This elevation change presents significant problems (e.g difficult installation, need for numerous pumping stations) for a sewer line between the two towns. In addition, the problems could only be overcome at a significant cost to the client. For this reason, a connection to the Nashville WWTP is not a feasible solution to Bean Blossom's problems. This leaves the Helmsburg WWTP as the only existing plant to which Bean Blossom could transport its wastewater.

E.2 Helmsburg Wastewater Treatment Facility

This section takes a closer look at the existing plant in Helmsburg, Indiana. It is a 25,000 gallon per day (gpd) extended aeration package WWTP that is owned and operated by the Helmsburg Regional Sewer District (RSD). The community also has a pressure collection system that transports wastewater from each customer directly to the WWTP. Funded by the Indiana Department of Commerce and the Brown County government, the collection and treatment system were constructed in 1995.

E.2.1 Collection System

The collection system uses grinder pumps at each service connection to reduce solids content in the wastewater before transporting it through a small diameter sewer to the WWTP. The sewer itself is a low-pressure force main constructed from Polyvinyl Chloride (PVC) SDR 21 pipe. The SDR designation is a dimension ratio that relates to pipe wall thickness.

After being transported through the collection system, the wastewater reaches the WWTP. Unfortunately, the collection system was designed to handle only the projected flows from within the planning area boundaries of the Helmsburg RSD, which does not include the Bean Blossom area. This means that any additional wastewater to be serviced by the Helmsburg WWTP would need to be piped directly to the plant.

E.2.2 Treatment Plant

The Helmsburg wastewater treatment plant is located on the south side of town, about ¼-mile south of State Road 45. (See Figure E2.) Like the collection system, the wastewater treatment plant was not designed with the community of Bean Blossom in mind. It was designed to handle only the projected flows from within the planning area boundaries of the Helmsburg Regional Sewer District. Thus, the plant was designed according to the criteria given in Table E2.

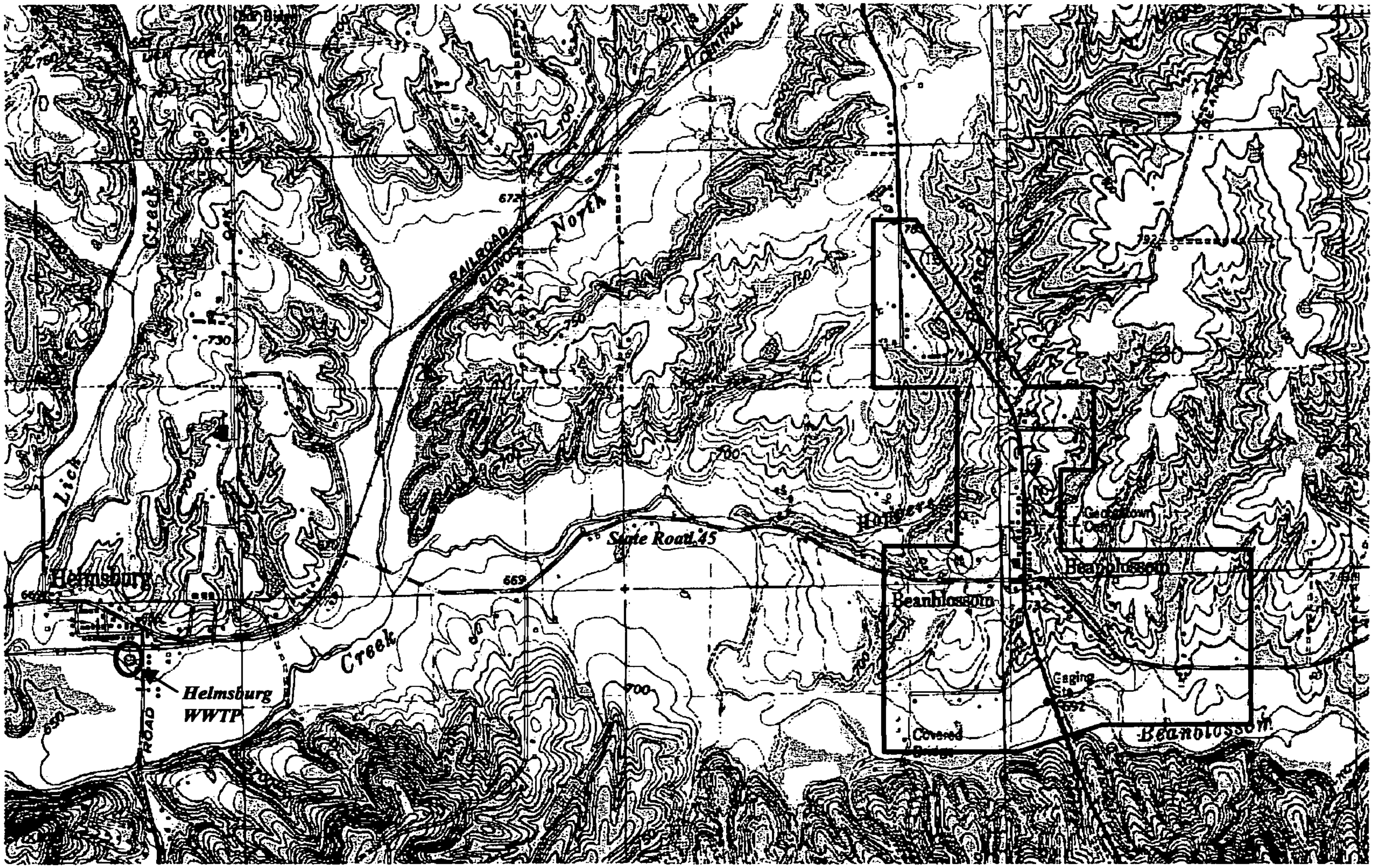
E.2.3 Wastewater Treatment Plant Unit Operations

Helmsburg's WWTP is a conventional extended aeration package plant consisting of:

- Flow equalization
- Diffused aeration
- Clarification
- Filtration
- Chlorination and dechlorination

Table E2: Helmsburg WWTP design criteria.

Design Year	2015	
Design Population	200	
Design Flow	Domestic	24,500 gpd
	Commercial/Industrial	500 gpd
	Infiltration/Inflow	0 gpd (Pressure System)
Design Waste Strength	BOD	200 milligrams per liter (mg/l)
	TSS	200 mg/l
	NH_3 as N	25 mg/l
Maximum Plant Hydraulic Capacity	86,400 gpd	



LEGEND

Planning Area Boundary

1000' 0 1000'

SCALE

FIGURE NO. E2

Bean Blossom Wastewater Treatment Alternatives

LOCATION OF HELMSBURG WWTP

Once the wastewater reaches the WWTP, it passes through a coarse bar screen. The bar screen provides removal of coarse solids (e.g. pieces of wood, plastic material, and rags) that may have made their way into the collection system. After passing through the bar screen, the wastewater flows into a flow equalization basin. The basin equalizes flow to provide a relatively constant flowrate to the rest of the treatment processes. The reduced daily variation in flowrate and in the concentration of organic loading (e.g. BOD_5) enhances the degree of treatment. A flow meter controls the amount of wastewater leaving the equalization basin and entering aeration tank, which is the next phase of treatment.

The wastewater then passes into the aeration tank where extended aeration activated sludge treatment takes place. Here, a fluidized, mixed growth of microorganisms under aerobic conditions uses the organic materials in the wastewater as food, thus removing them by microbial respiration and synthesis. The extended aeration process is ideal for small installations, such as the Helmsburg WWTP. The process minimizes waste activated sludge production by providing a large endogenous decay of the sludge mass. This results in no net sludge production and therefore requires only the periodic wasting of some of the sludge (due to lysed cell fragments that are very slowly degraded). The smaller amounts of waste activated sludge greatly reduce the sludge disposal costs for the plant.

After activated sludge treatment, the wastewater undergoes solid-liquid separation in the final clarifier. The separated solids, which consist nearly exclusively of sludge, settle to the bottom to be either recycled back into the aeration tank or wasted into a sludge holding tank for eventual disposal. The separated water passes over a weir and into a dual-media filter that performs additional solid-liquid separation. This process removes as many fine suspended solids as possible before the wastewater passes into disinfection and dechlorination. As the final step in the wastewater treatment process, disinfection uses chlorine to destroy any pathogenic organisms in the water. This reduces the chance that people downstream of the plant could become sick from activities involving water contact.

However, high levels of chlorine can cause negative effects on wildlife in the natural environment. To reduce these effects, the water is dechlorinated before being discharged.

The path that the wastewater takes once it reaches the plant is illustrated in Figure E3. The combination of unit operations provides sufficient wastewater treatment of Helmsburg's wastewater to meet their permit requirements (discussed later).

E.2.4 Wastewater Treatment Plant Design Data

To be able to provide sufficient wastewater treatment, each of the unit operations was designed according to the characteristics of Helmsburg's wastewater. Table E3 contains a design summary of each of the unit operations at the Helmsburg WWTP (Armstrong, 2000). Knowledge of these design criteria allows further investigation into the feasibility of transporting Bean Blossom's wastewater to the plant.

E.3 Helmsburg Wastewater Treatment Plant Effluent Regulations

Bean Blossom Creek is the receiving stream for effluent from the Helmsburg WWTP. To protect recreational users and wildlife in the stream, the Indiana Department of Environmental Management (IDEM) has placed regulations on the plant's effluent. Through National Pollution Discharge Elimination System (NPDES) permitting, IDEM regulates effluent quality from all WWTP's in the state of Indiana.

E.3.1 Effluent Quality Requirements

The Helmsburg WWTP effluent quality is regulated by NPDES permit number IN 0058416. The permit requires the monitoring and reporting of several effluent parameters. Table E4 contains the specific limitations on effluent from the Helmsburg WWTP (Armstrong, 2000). These regulations must be met at all times.

E.3.2 Noncompliance

The plant has had some prior problems meeting its effluent requirements. In a letter dated December 28, 1999, IDEM issued a warning of noncompliance to the Helmsburg RSD.

Helmsburg Wastewater Treatment Plant Process Diagram

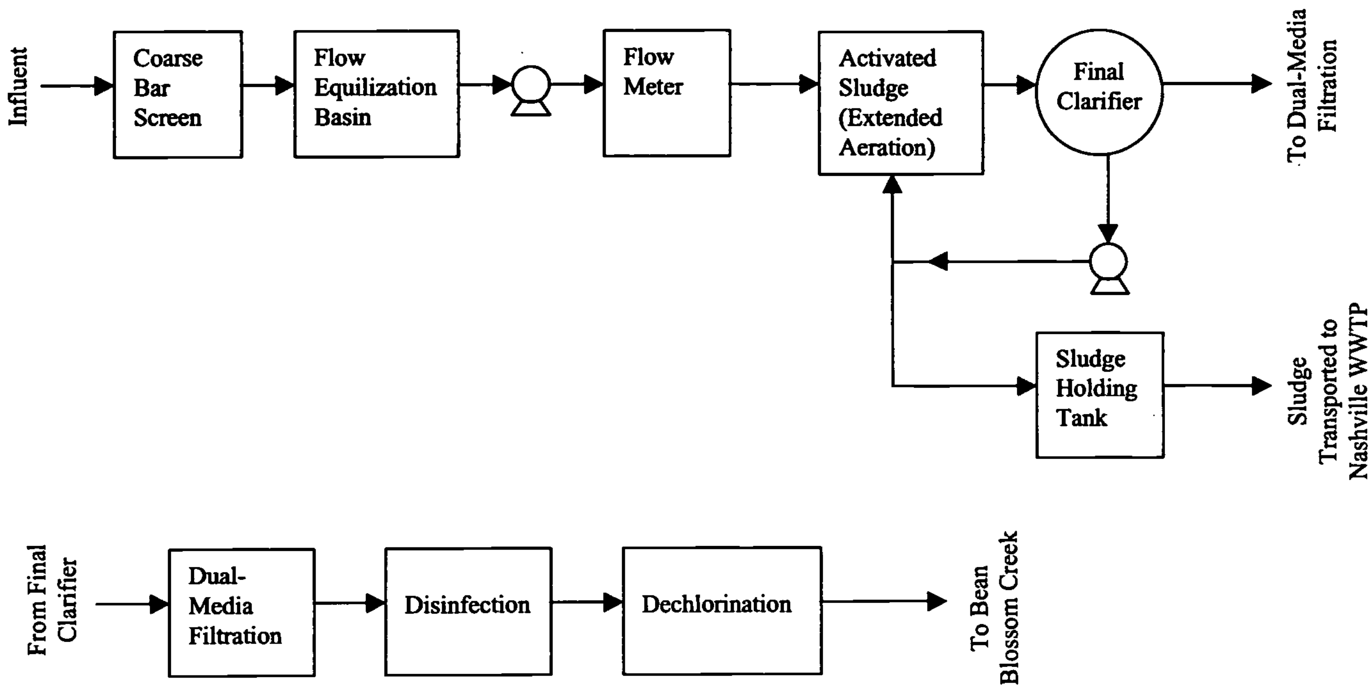


Figure E3: Helmsburg Wastewater Treatment Plant Schematic

Table E3: Helmsburg wastwater treatment plant unit operation design summary.

Coarse Bar Screen	
Number of Units	1
Capacity	100,000 gpd
Bar Spacing	1 inch
Slope	45°
Cleaning Method	Manual
Screening Disposal	Dumpster
Flow Equalization Basin	
Capacity	7,500 gal
Flow Diversion	In-line
Flow Return Method	2 submersible pumps rated at 30 gpm at 15 feet TDH
Aeration Equipment	1 HP blower rated at 20 cfm at 5 psi
Sludge Removal Method	Drain Piping
Flow Meter	
Type	1 inch Parshall Flume with Ultra Sonic Meter
Aeration Tank	
Process Type	Extended Aeration Activated Sludge
Capacity	31,250 gal
Detention Time	30 hours
Organic Loading	9.78 lb BOD_5/1,000 cf
Aeration Type	Coarse Bubble
Aeration Equipment	2 - 5 HP blower rated at 150 cfm at 5 psi
Air Required	77.4 cfm
Return Sludge Rate	0% to 150%
Return Sludge Pumps	2 - 2.5 inch airlifts with 26 gpm capacity
Return Sludge Discharge Location	Aeration Tank
Final Clarifier	
Type	Dual Hopper Clarifier
Capacity	
Clear Water Zone	5,320 gal
Sludge Zone	1,545 gal
Detention Time	5.1 hours
Surface Settling Rate	262 gpd/sf
Sludge Removal	2 - 2.5 inch airlifts with 26 gpm capacity
Weir Overflow Rate	3125 gpd/lf
Sludge Holding Tank	
Capcity	2,500 gal
Detention Time	19 day
Organic Loading	61.18 lbs VSS/1,000 cf
Aeration Rate	10.2 cfm
Final Solids Content	3%

Table E3 (continued)

Dual-Media Filtration			
Number of Units	2		
Size	8.68 sf		
Filter Media			
	Type	Sand	Anthracite
	Depth	8"	12"
	Grain Size	1.20 mm	1.08 mm
Filtration Rate	1 gpm/sf		
Backwash Rate	10.25 gpm/sf		
Backwash Pumps	2 - 1 HP pumps rated at 89 gpm at 17 feet TDH		
Clearwell Capacity	1,303 gal		
Post Aeration			
Type	Coarse Bubble		
Capacity	120 gal		
Aeration Rate	10 cfm		
Disinfection			
Type	Chlorine Tablets		
Capacity	521 gal		
Contact Time	30 min.		
Dosage	8 mg/l		
Dechlorination			
Type	Sodium Bisulfate tablets		
Dosage	1.46 mg/l per 1 mg/l of chlorine residual		
Location	Effluent end of disinfection tank		

Table E4: Helmsburg WWTP NPDES permit effluent limitations.

Parameter	Monthly Average	Weekly Average	Daily Minimum	Daily Maximum	Units
$CBOD_5$					
Summer	15	22.5			mg/l
Winter	25	40			mg/l
TSS					
Summer	18	27			mg/l
Winter	30	45			mg/l
NH_3-N					
Summer	1.3	1.9			mg/l
Winter	1.9	2.9			mg/l
pH			6.0	9.0	
Dissolved Oxygen					
Summer			6.0		mg/l
Winter			5.0		mg/l
Residual Chlorine					
Effluent	0.01			0.02	mg/l

The letter stated that, at various times between August 1997 and October 1999, the Helmsburg WWTP had failed to meet the effluent limitations on:

- residual chlorine
- total suspended solids (TSS)
- ammonia as nitrogen (NH_3-N)
- carbonaceous biochemical oxygen demand ($CBOD_5$)

In response to the noncompliance warning, the Helmsburg RSD took steps to correct each of the problems. By October 2000, the problems had been corrected at the plant and IDEM had revoked the warning of noncompliance (Armstrong, 2000).

E.4 Helmsburg WWTP Current Condition

In addition to its noncompliance issues, the plant has been having some problems with deterioration due to release of hydrogen sulfide gas. Much of the metal on the exterior of the plant has rusted and in need of replacement. We are not sure of the actual cause of the problem but believe that anaerobic conditions in the sewers are to blame. The anaerobic conditions may be caused by low flow in the system, which is designed for 25,000 gpd; the community's wastewater treatment system was treating only about

12,000 gpd, or only about 50% of its capacity. Because of the deterioration, the plant is in much worse condition than an eight-year old plant should be.

E.5 Addition of Bean Blossom Planning Area Wastewater Flows

This section provides an investigation into the feasibility of connecting the Bean Blossom area to the Helmsburg WWTP. As stated earlier, any additional wastewater to be treated would have to be transported directly to the plant. This would require the construction of 2- to 3-mile long sewer system to convey the water from Bean Blossom to Helmsburg. Knowledge of the plant's design criteria allows a more detailed investigation into the feasibility of transporting the wastewater to Helmsburg. We have compared the current situation to the situation presented by adding Bean Blossom's wastewater flow to the plant.

The Bean Blossom planning area has a population of approximately 500 people and, as stated in Appendix C, the wastewater flow from the area is expected to be 36,000 gpd. As stated in Table E2, the design population of the Helmsburg WWTP is only 200 people and its design flow is only 25,000 gpd. Obviously, transporting the Bean Blossom area's wastewater flow to Helmsburg would exceed the design capacity of the plant.

To quantify the effects that introducing the additional wastewater flow would have on the effectiveness of the plant, preliminary design calculations were performed. As mentioned earlier, the plant has an extended aeration-type activated sludge treatment. This is the most important part of the treatment process because it provides the removal of the organic materials in the water. The operation can be very sensitive to changes in wastewater quantity and quality. Thus, the additional wastewater from Bean Blossom could have detrimental effects on the performance of not only the extended aeration process, but of the plant as well.

Typical operating characteristics of extended aeration activated sludge treatment are given in Table E5 (Reynolds, 1996). Comparison of the plant's design detention time (30 hours, Table E3) and organic loading (9.78 lb BOD_5/1000 cf·day, Table E3) shows that

Table E5: Typical parameters for extended aeration activated sludge treatment (Reynolds, 1996).

Detention Time	18-36 hours
Organic Loading	10-25 lb BOD_5/1000 cf
Mixed Liquor Suspended Solids (MLSS)	3000-6000 mg/l

they coincide well with the commonly accepted values. In addition, plant operating records between June 1999 and June 2000 shows an operating Mixed Liquor Suspended Solids (MLSS) count of 3557 mg/l (Armstrong, 2000). This number also coincides well with the published MLSS values for an extended aeration process.

Using the plant's design parameters and design equations for activated sludge treatment allows the determination of the effects that the additional wastewater flows would have on the Helmsburg WWTP. Table E6 contains the calculations performed to determine the effect of the additional wastewater flow on the aeration tank detention time, effluent quality, organic loading, weir loading rate, and operating MLSS concentrations. The calculations reveal that the addition of the Bean Blossom wastewater flows forces the value of each parameter outside of the normal range for extended aeration treatment. These changes would hurt the effectiveness of the treatment process and would make the NPDES regulation difficult to meet under the current plant setup.

The other option at the plant is to change the extended aeration process to a conventional completely mixed process. This would require the wasting of additional sludge, but would be able to make use of the plant's aeration tank. Table E7 contains the calculations performed to determine the possibility of converting the aeration tank to a completely mixed reactor. Note that the aeration tank does not have the capacity to operate even as a completely mixed reactor because the minimum tank volume required to do so is about 33,100 gallons while the tank's actual volume is only 31,250 gallons.

The results of each set of calculations are condensed and compared to the published and design values in Table E8. The findings show that in order to overcome the problems facing the Helmsburg WWTP after the addition of the Bean Blossom planning area wastewater

Table E6: Calculations showing the effect of the additional wastewater flow on the Helmsburg WWTP.

Extended Aeration Activated Sludge Treatment

Typical Values (Reynolds, 1996):
Detention Time, θ = 18 to 36 hours
Mixed Liquor Suspended Solids Concentration (MLSS) = 3000 to 6000 mg/l
Organic Loading = 10 to 25 lb BOD_5/1000 ft^3

Helmsburg Design Values (Armstrong, 2000):
Detention Time, θ = 30 hours
Operating MLSS = 3557 mg/l (Plant Operating Reports, 6/99 – 6/00)
Organic Loading = 9.78 lb BOD_5/1000 ft^3
Design Flow, Q_{des} = 25,000 gpd
Aeration Tank Volume, V_{des} = 31,250 gallons
BOD_5 Removal Efficiency, e = 95% (Plant Operating Reports, 6/99 – 6/00)
BOD_5 Influent Concentration, S_i = 220 mg/l

Bean Blossom Design Values:
Design Flow, Q_{BB} = 35,495 gpd

Detention Time
For a completely mixed reactor, $\theta = V/Q$ (Reynolds, 1996)
θ_{des} = 30 hours
With the addition of Bean Blossom wastewater,
$\theta = V_{des}(Q_{des} + Q_{BB})$
= (31,250 gal)(25,000 gpd + 35,495 gpd)
= 0.517 days
θ = 12.4 hours

This detention time is too short for an effective extended aeration process.

Plant Effluent Quality Using New Detention Time
Detention Time, θ = 12.4 hours
Aeration Tank Volume = 31,250 gpd
Average Daily Flowrate, Q = 60,495 gpd

Detention time in a completely mixed reactor is defined as:
$\theta = (S_i - S_t)/KXS_t$
Where,
S_i = influent BOD_5 concentration
S_t = effluent BOD_5 concentration
K = reaction rate constant
X = cell mass concentration in the aeration tank during the biochemical reaction

In the absence of bench-scale or pilot-scale studies, a K value in the range of 0.10 to 0.40 l/(gm MLSS)(hr) should be used (Reynolds, 1996).

Analyzing the lower limit of K values,
12.4 hours = (220 mg/l – S_t)/(0.10×10^{-3} l/(mg MLSS)(hr))(3557 mg/l MLSS)S_t
Rearranging and simplifying,
(220 mg/l – S_t)/(0.3557 hr^{-1})S_t = 12.4 hr
220 mg/l – S_t = 4.4107S_t

$49.8789\ mg/l - 0.2267S_t = S_t$
$1.2267S_t = 49.8789\ mg/l$
$S_t = 40.7\ mg/l$

Analyzing the upper limit of K values,
$12.4\ hours = (220\ mg/l - S_t)/(0.40x10^{-3}\ l/(mg\ MLSS)(hr))(3557\ mg/l\ MLSS)S_t$
Rearranging and simplifying,
$(220\ mg/l - S_t)/(1.4228\ hr^{-1})S_t = 12.4\ hr$
$220\ mg/l - S_t = 17.6427S_t$
$12.47\ mg/l - 0.0567S_t = S_t$
$1.0567S_t = 12.47\ mg/l$
$S_t = 11.8\ mg/l$

The plant will be unable to meet its permitting requirements for BOD_5 concentration with the lower detention time.

Organic Loading
Subtrate (BOD_5) loaded per day,
$S_{tank} = (Q_{des} + Q_{BB})S_i$
$S_{tank} = (25{,}000\ gpd + 35{,}495\ gpd)(8.34\ lb/gal)(220\ mg/l\ BOD_5)(1\ l/10^6\ mg)$
$= 111.0\ lb\ BOD_5/day$

$V_{des} = 31{,}250\ gal = 4{,}178\ ft^3$

Organic Loading $= S_{tank}/V_{des}$
$= (111.0\ lb\ BOD_5/day)/(4.178\ (1000\ ft^3))$
$= 26.6\ lb\ BOD_5/(1000\ ft^3)(day)$

The organic loading is too high for the extended aeration process.

Weir Loading Rate
The additional wastewater flow will also have an effect on the weir loading rate of the final clarifier.

Design Weir Loading Rate = 3,125 gpd
Detention Time, $\theta_{cl} = 5.1$ hours
Daily Flow Rate, $Q_{cl} = 25{,}000$ gpd
Clarifier Volume, $V_{cl} = 5320$ gal

$\theta_{cl} = V_{cl}/Q_{cl}$
$V_{cl} = \theta_{cl}Q_{cl}$
$V = (5.1\ hours)(25{,}000\ gal/day)(1\ day/24\ hours)$
$V = 5312.5\ gal = 5320\ gal$

Q_{cl}/L_w = Weir Loading Rate
Where,
L_w = Length of weir
$L_w = Q_{cl}$/(Wier Loading Rate)
$L_w = (25{,}000\ gpd)/(3{,}125\ gpd/ft)$
$L_w = 8\ ft$

New Weir Overflow Rate will be:
(Weir Overflow Rate)$_{new} = Q_{new}L_w$
(Weir Overflow Rate)$_{new} = (60{,}495\ gpd)(8\ ft)$

$(\text{Weir Overflow Rate})_{new} = 7{,}560$ gpd/ft

Because of the long aeration times required by the extended aeration process, large amounts of cell fragments are usually present in the final effluent. This means that the performance of the final clarifier is imperative to the performance of the plant. The increased weir loading rate would increase the amount of suspended solids (SS) in the final effluent, stressing the plant's filtration system, thus lowering the quality of the effluent and making it more difficult for the plant to meet its NPDES permit requirements.

Aeration Tank MLSS Concentration

Substrate (BOD_5) removed per day, $S_r = (Q_{des} + Q_{BB})(S_i)e$

$S_r = (25{,}000 \text{ gpd} + 35{,}495 \text{ gpd})(8.34 \text{ lb/gal})(220 \text{ mg/l } BOD_5)(1 \text{ l}/10^6 \text{ mg})(0.95)$
$= 105.45 \text{ lb } BOD_5\text{/day}$

The total mass of MLSS in the aeration tank, $X = Y_bS_r/k_ef$ (Reynolds, 1996)

Where,
Y_b = Biodegradable yield coefficient (0.65 for extended aeration, Reynolds, 1996)
S_r = Substrate removed per day
k_e = endogenous decay coefficient (0.06 for extended aeration, Reynolds, 1996)
f = fraction of degradable solids (0.80 for extended aeration, Reynolds, 1996)

$X = (0.65)(105.45)/(0.06)(0.80)$
$= 1428.0$ lb MLVSS

Typically, MLVSS is 60% of MLSS (Reynolds, 1996)
$MLSS = (MLVSS/V_{des})(0.60)$
$= (1428.0 \text{ lb MLVSS}/4178 \text{ ft}^3)(1.0 \text{ lb MLSS}/0.60 \text{ lb MLVSS})(1 \text{ ft}^3/62.4 \text{ lb})(10^6 \text{ mg}/1 \text{ l})$
$= 9129.0$ (mg MLSS)/l

The MLSS concentration is too high for extended aeration, however this can be controlled through recycle ratio and sludge wasting.

To bring the MLSS concentration back down to the operating MLSS of 3557 mg/l in the aeration tank, we must remove additional solids.

We want an operating MLSS of around 3600 mg/l so the mass of the MLSS in the tank must be:
Operating MLSS = 3600 mg/l = $X_{operating}/V_{des}$
$(3600 \text{ mg/l})(1 \text{ l}/10^6 \text{ mg})(4178 \text{ ft}^3)(62.4 \text{ lb}/1 \text{ ft}^3) = 938.5$ lb MLSS

Since MLVSS is typically 60% of MLSS,
MLVSS = (0.60 lb MLVSS/1.0 lb MLSS)(938.5 lb MLSS)
MLVSS = 563.1 lb MLVSS

To have this mass of MLVSS in the reactor,
(1428.0 lb MLVSS – 563.1 lb MLVSS) = 864.9 lb MLVSS must be removed per day to maintain an extended aeration process.

This results in a recycle rate of of about 40%.

Checking this amount against the capacity of the sludge holding tank, V_{sludge},

$V_{sludge} = 2{,}500$ gal
$V_{produced} = 864.9 \text{ lb}(1 \text{ ft}^3/62.4 \text{ lb}) = 14 \text{ ft}^3(7.481 \text{ gal/ft}^3) = 105$ gal/day

shows that the sludge tank has capacity for the waste activated sludge, but will fill about every 23 days (2,500 gal/105 gpd).

In any case, the removal of this amount of sludge defeats the entire purpose of the extended aeration process, which is to drastically reduce the amount of waste activated sludge.

The other feasible option is to convert the aeration tank to a conventional completely mixed reactor rather than an extended aeration reactor. The end result will be an increase in the amount of wasted sludge; similar to the quantity needed to be wasted to maintain the extended aeration process.

Table E7: Calculations illustrating the feasibility of converting the aeration tank to a conventional completely mixed reactor.

Conventional Completely Mixed Activated Sludge Treatment

Aeration Tank Volume = 31,250 gpd
Average Daily Flowrate, Q = 60,495 gpd

Detention time in a completely mixed reactor is defined as:
$\theta = (S_i - S_t)/KXS_t$
Where,
S_i = influent BOD_5 concentration
S_t = effluent BOD_5 concentration
K = reaction rate constant
X = cell mass concentration in the aeration tank during the biochemical reaction

The plant must meet its NPDES permit requirements, thus S_t = 10 mg/l
S_i = 220 mg/l
Typical cell mass concentrations (X) range from 2500 – 4000 mg (MLSS)/l for conventional completely mixed reactors (Reynolds, 1996).
In the absence of bench-scale or pilot-scale studies, a K value in the range of 0.10 to 0.40 l/(gm MLSS)(hr) should be used (Reynolds, 1996).

The detention time was found over a range of X and K values:
$\theta = (S_i - S_t)/KXS_t$

S_i	S_t	K, l/(mg MLSS)(hr^{-1})	X, mg/l MLSS	θ, hr
220	10	0.10×10^{-3}	2500	84.0
			3000	70.0
			3500	59.0
			4000	52.5
220	10	0.20×10^{-3}	2500	42.0
			3000	35.0
			3500	29.5
			4000	26.3
220	10	0.30×10^{-3}	2500	28.0
			3000	23.3
			3500	19.7
			4000	17.5
220	10	0.40×10^{-3}	2500	21.0
			3000	17.5
			3500	14.8
			4000	13.1

The required aeration tank volume is given by $V = \theta Q$ (Reynolds, 1996)
The smallest tank is required by the reactor with the lowest detention time.
$\therefore V_{min}$ = (13.1 hr)(1 day/24 hr)(60,495 gal/day)
V_{min} = 33,090 gal

The actual volume of the tank, V_{actual} = 31,250 gal

The tank is too small to accommodate the addition of the Bean Blossom wastewater, even under a conventional completely mixed activated sludge treatment process.

Table E8: Helmsburg WWTP operating parameters.

Parameter	Published Value	Design Value	Value after addition of Bean Blossom wastewater flows
Detention Time, θ	18-36 hours	30 hours	12.4 hours
Effluent Quality (BOD_5)	10 mg/l[a]	10 mg/l	40.7 mg/l – 11.8 mg/l
Organic Loading	10-25 lb BOD_5/ 1000 cf·day	9.78 lb BOD_5/ 1000 cf·day	26.6 lb BOD_5/ 1000 cf·day
Weir Loading Rate	--	3,125 gpd	7,560 gpd
MLSS Concentration in Reactor	3000-6000 mg/l	3557 mg/l	9129 mg/l
Waste Activated Sludge	--	--	105 gpd[b]
Aeration Tank Volume, V	--	31,250 gal	33,100 gal[c]

[a] National Pollutant Discharge Elimination System (NPDES) permit regulation.
[b] Represents the additional amount of sludge per day that must be wasted to maintain an extended aeration treatment process.
[c] Represents the aeration tank volume required if the activated sludge process were switch to a conventional completely-mixed process.

wastewater flow, the volume of the aeration tank would need to be made larger and additional plant improvements would need to be made (e.g. larger equalization basin).

E.6 Sewer Sizing

As mentioned in section E.2.1, wastewater to be treated at the Helmsburg WWTP would have to be transported directly to the headworks of the plant. To adequately estimate the cost of this solution, the size of the pressure sewer transporting wastewater from Bean Blossom to Helmsburg must be determined. The peak flowrate to be used for design for the Bean Blossom and Woodland Lake areas is 141,980 gpd (Appendix C). Table E9 contains the calculations performed to determine the sewer size. Note that the minimum sewer size required to transport the peak wastewater flow from Bean Blossom to Helmsburg is a four-inch pipe.

E.7 Cost Estimates

This section provides a cost estimate for treating Bean Blossom's wastewater at the Helmsburg WWTP. This includes the cost of installing the four-inch sewer from Bean Blossom to Helmsburg and making the necessary expansions and improvements at the plant itself.

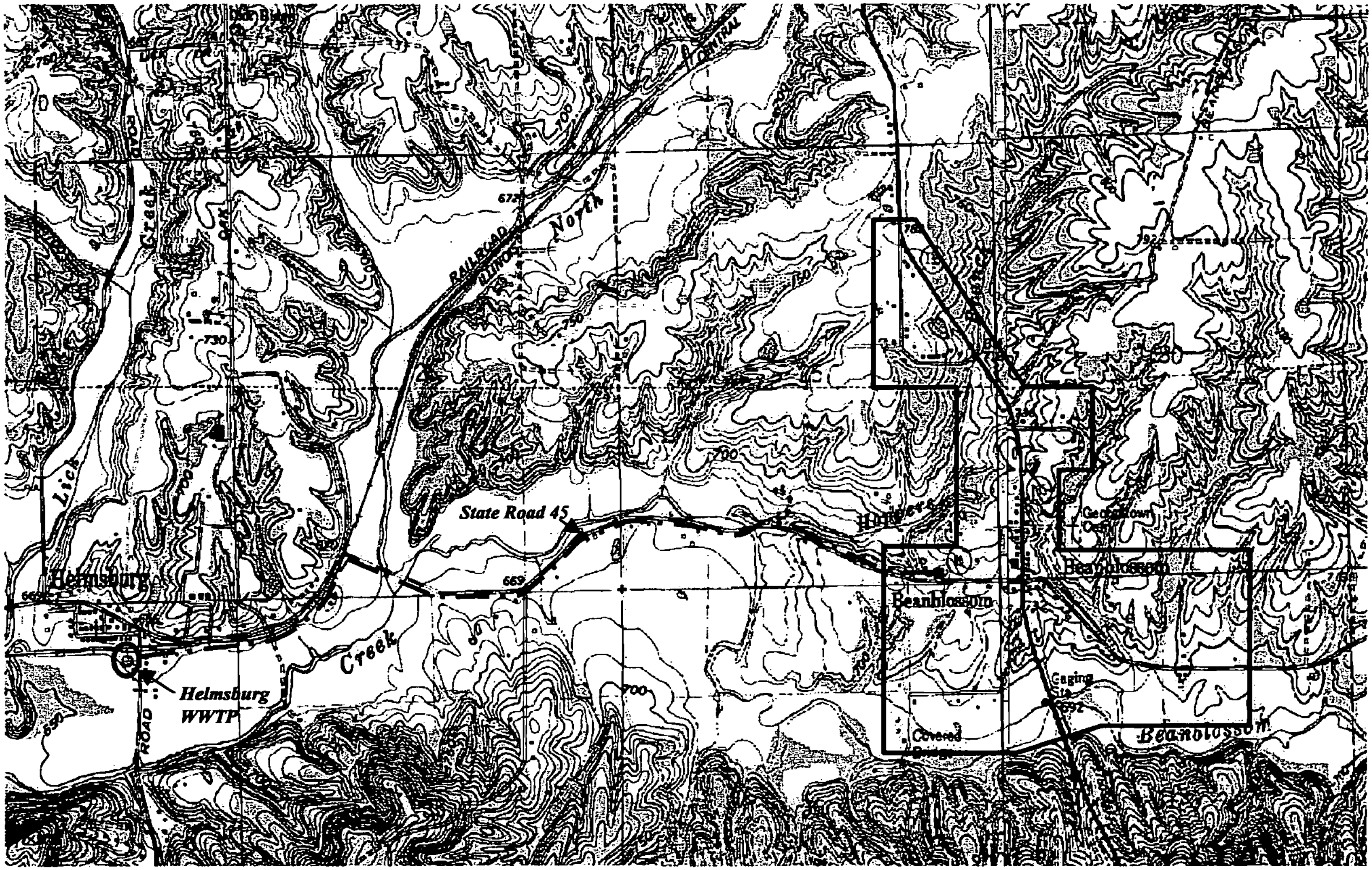
Table E9: Sewer sizing calculations for a force main from Bean Blossom to Helmsburg.

Q_{peak} = (141,980 gpd)(1 ft^3/7.481 gal)(1 day/86,400 sec) = 0.220 ft^3/sec The governing equation is Manning's Equation, $Q = (1.49/n)(A)(R_h)^{2/3}(S)^{1/2}$ Where: n = Pipe roughness coefficient, 0.13 (Ten States Standards) A = Pipe cross-sectional area R_h = Pipe hydraulic radius S = Pipe Slope, (0.4 feet)/(100 feet) (Ten States Standards) $A = \pi d^2/4$ Where: d = diameter of pipe R_h = A/P Where: A = area P = wetted perimeter = πd $\therefore 0.220\ ft^3/sec = (1.49/0.013)(\pi(d^2/4))(d/4)^{2/3}(0.4)^{1/2}$ Solving for d, d = 0.295 ft = 3.54 in. *This is the minimum pipe diameter needed to adequately transport the peak wastewater flow from Bean Blossom to the Helmsburg WWTP. We will use a 4-inch small diameter force main to transport the wastewater to Helmsburg.*

Figure E4 illustrates the path that the sewer would take in transporting the community's wastewater to Helmsburg. The total length of this line is an estimated 14,000 linear feet (Armstrong, 2000). The calculations performed to determine the total cost of this solution are given in Table E10. The unit cost for each item was obtained from the R.S. Means Manual (Means, 1999). The total cost for this solution is around $1,500,000. Please note that this cost not include the cost of a collection system for Bean Blossom area.

E.8 Conclusions

Even though it is often economical to collect wastewater from multiple communities and treat it at a common site, the characteristics of this project make it an exception. The size and condition of the Helmsburg WWTP and the tremendous cost of the sewer installation rules out a connection to the Helmsburg WWTP as a feasible solution to the community's wastewater collection and treatment problems.



LEGEND

Planning Area Boundary

4" Force Main

Pumping Station

1000' 0 1000'

SCALE

FIGURE NO. E4

Bean Blossom Wastewater Treatment Alternatives

SEWER LINE TO HELMSBURG WWTP

Table E10: Cost estimate calculations for sewer main from Bean Blossom to Helmsburg.

	Sewer Main from Bean Blossom to Helmsburg				
Small Diameter Force Main	**Quantity**	**Unit**	**Unit Price**	**R# (Means Manual)**	**Total**
4" PVC	14,000	LF	$5.22	www.usplastic.com	$73,080.00
Mainline Cleanouts	21	EA	$42.35	15155-170-5040	$889.35
Cleanout Plug	21	EA	$20.35	15155-170-5120	$427.35
Manholes	2	EA	$2,195.50	02630-200-1000	$4,391.00
Frame and Cover	2	EA	$316.50	02630-200-1600	$633.00
Lift Station	1	EA	$48,100.00	11310-700-0020	$48,100.00
3' - 4' trench, 1/2 CY tractor loader/backhoe	140,000	CY	$3.27	02315-900-0060	$457,800.00
Compacting backfill, 6" lifts, vibrating roller	92,400	CY	$1.92	02315-100-2200	$177,408.00
Sand, dead or bank	45,402	CY	$8.06	02060-150-0500	$365,940.12
Compacting bedding trench	45,402	CY	$2.75	02315-130-0500	$124,855.50
Helmsburg Plant Expansion	1	EA	$150,000.00	Armstrong, 2000	$150,000.00
Total					**$1,403,524.32**

APPENDIX J

IDEM NPDES PERMIT

IDEM
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live

Frank O'Bannon
Governor

Lori F. Kaplan
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100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.state.in.us/idem

August 19, 2003

Mr. Gary D. Ladd, P.E.
Ladd Engineering, Inc.
1127 Brookside Drive
Lebanon, Indiana 46052

Re: Preliminary Effluent Limitations for the Town of Bean Blossom's proposed Wastewater Treatment Plant (WWTP)
Brown County

Dear Mr. Ladd:

This letter is in response to your request for preliminary effluent limitations for a proposed discharge from a minor municipal wastewater treatment plant with an average design flow of up to 0.08 MGD which would discharge to Bean Blossom Creek ($Q_{7,10}$ low-flow of 0.0 cfs).

The following effluent limits are appropriate for the aforementioned biomechanical WWTP with an average design flow of *up to* 0.08 MGD having a continuous discharge to Bean Blossom Creek:

	Summer		Winter		
Parameter	Monthly Average	Weekly Average	Monthly Average	Weekly Average	Units
$CBOD_5$	15	23	25	40	mg/l
TSS	18	27	30	45	mg/l
NH_3-N	1.5	2.3	3.0	4.5	mg/l

Parameter	Daily Minimum	Daily Maximum	Monthly Average	Units
pH	6.0	9.0	-----	s.u.
Dissolved Oxygen				
Summer	6.0	-----	-----	mg/l
Winter	5.0	-----	-----	mg/l
E. coli	-----	235	125	count/100ml

Flow must be measured. The mass limits for $CBOD_5$, NH_3-N, and TSS are calculated by multiplying the design flow (in MGD) by the concentration value and by 8.345. Summer effluent limits apply from May 1 through November 30 of each year. Winter effluent limits apply December 1 through April 30 of each year.

If chlorination is utilized as the method of disinfection, the chlorine residual shall be maintained at a concentration not less than 0.5 mg/l as measured at the effluent end of the chlorine contact. The daily maximum chlorine residual value shall be reported. However, in order to protect aquatic life, the effluent must then be dechlorinated to the lowest detectable level. The effluent limitations for *E. coli* are 125 count/100 ml as a monthly average calculated as a geometric mean and 235 count/100 ml as a daily maximum.

As mentioned above, the water quality-based limits set forth in this letter are based on the Indiana water quality standards in effect at this time and may not be the final limits once an NPDES permit is issued. If the water quality standards are modified by the Water Pollution Control Board and new water quality standards become effective prior to the date an NPDES permit for this facility is actually issued, then IDEM is required by law to issue the NPDES permit with limits based on the new standards.

In addition, you may need to complete an antidegradation demonstration before IDEM can issue the NPDES permit for this facility. (At this time this only applies to facilities in the Great Lakes basins, but future rule making could result in statewide applicability). This demonstration could alter (and possibly make more stringent) the limits that are finally established in the NPDES permit.

The NPDES permit will not be issued until the construction permit is finalized. Before construction begins, a construction permit will be required. If you have any questions regarding design requirements of the construction permit, please contact Mr. Don Worley at 317/232-5579.

If you have any questions regarding the NPDES permit requirements, please feel free to contact Mr. Gale Ferris at 317/232-8739.

Sincerely,

Catherine Hess

Catherine Hess, Chief
Municipal NPDES Permits Section
Office of Water Quality

cc: Brown County Health Department

LADD ENGINEERING, INC.

July 2, 2003

Catherine Hess, Chief
Municipal Permits Section
Office of Water Management
Indiana Department of Environmental Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

Re: Bean Blossom
Wasteload Allocation (WLA) Study

Dear Ms. Hess:

I am working on the preparation of a preliminary engineering report for the unincorporated community of Bean Blossom, Indiana. Therefore, please accept this letter as a request for establishing NPDES permit limits for a wastewater treatment plant discharging into Bean Blossom Creek, approximately 2,000 feet east of State Road 135 (refer to enclosed map). The estimated flow from the treatment plant is in the range of 30,000 to 50,000 gallons per day.

Should you have any questions regarding this request, feel free to contact me.

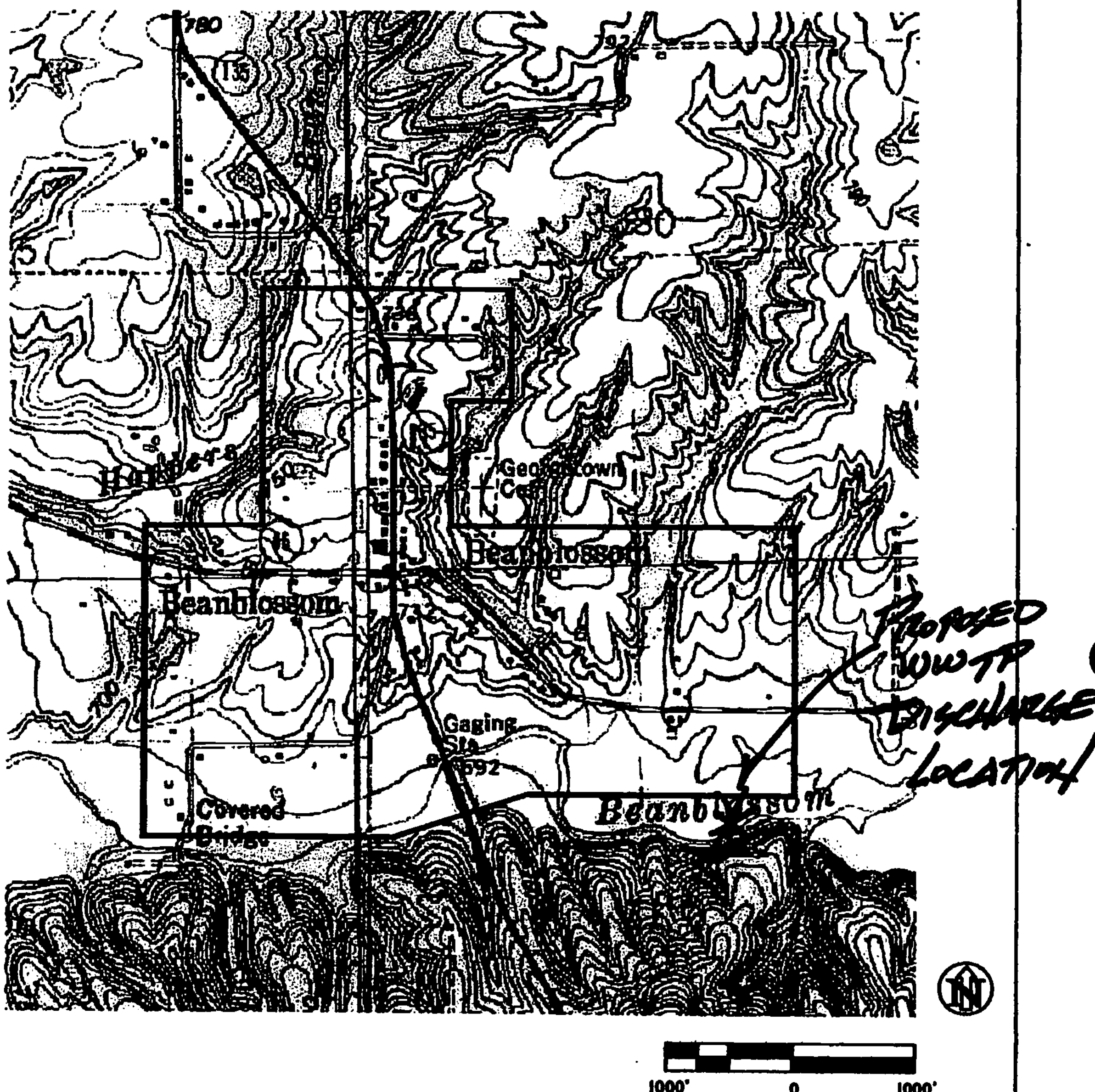
Sincerely,

Gary D. Ladd

Gary D. Ladd, P.E.
Ladd Engineering, Inc.

Xc: File

1127 Brookside Drive, Lebanon, IN 46052, (765) 482-9219, Fax (765) 482-9224



LEGEND

Planning Area Boundary

Monarch

FIGURE NO. B2

Bean Blossom Wastewater Treatment Alternatives

PLANNING AREA

APPENDIX K

PROPOSED PROJECT
TREATMENT PLANT AND COLLECTION SYSTEM DESIGN SUMMARY

I. Design Data:

1. Current Population: 160
2. Design Year and Population: 2023/183
3. Design Population Equivalent P.E.: 309
4. Design Flow: 22,895 gpd Avg.
    A. Domestic: 10,085 gpd
    B. Industrial/Commercial: 11,590 gpd
    C. Infiltration/Inflow: 1,220 gpd
5. Average Design Peak Flow: 91,580 gpd
6. Maximum Plant Flow Capacity: 60,000 gpd
7. Design Waste Strength:
    A. CBOD: 250 mg/l
    B. TSS: 250 mg/l
    C. NH_3-N: 30 mg/l
    D. P: N/A
    E. Other:N/A
8. NPDES Permit Limitation on Effluent Quality:

	Summer	Winter
A. CBOD:	15 mg/l	25 mg/l
B. TSS:	18 mg/l	30 mg/l
C. NH_3-N:	1.5 mg/l	3.0 mg/l
D. P:	N/A	N/A
E. E-coli:	125 count/100 ml month avg. & 235-weekly avg.	
G. Chlorine Residual:	$\geq$ 0.5 mg/l	

H. pH:	6 to 9 s.u.	
I. D.O.:	6.0 mg/l	5.0 mg/l

9. Receiving Stream:

   A. Name: Beanblossom Creek

   B. Tributary to: Lake Lemon to White River

   C. Stream Uses: Recreational, Partial Body Contact

   D. 7-day, 1-in-10 year low flow: 0.0 cfs

II. TREATMENT UNITS

Plant Site Lift Station N/A

1. Location: *
2. Type of pump: *
3. Number of pumps: *
4. Constant or variable speed: *
5. Capacity of pumps: *
6. RPM and TDH: *
7. Volume of the wet well: *
8. Detention time in the wet well: *
9. A gate valve and a check valve in the discharge line: *
10. A gate valve on suction line: *
11. Ventilation: *
12. Standby power: *
13. Alarm: *
14. Breakwater tank: *
15. Bypass or overflow: *

Flow Equalization

1. Number and size of units: 1 – 30% of plant capacity = 30% x 30,000 gpd = 9,000 – (8' x 17' x 12' deep)
2. Method of flow diversion to unit: Overflow from aeration basin
3. Air and mixing provided: None – pre mixed in aeration basin
4. Method and control of flow return: submersible pump

5. Description of unit operation: Flow comes into selector basin then transferred to aeration basin, then overflows (if necessary) at max. water level in aeration basin through a notch cut in wall

6. Lagoon sealing: N/A

7. Method of sludge removal: Submersible pump and Plant Drain Lift Station

Flow Meters

1. Type: Ultrasonic

2. Location: Effluent

3. Indicating, recording and totalizing: yes

Screens **N/A – Since grinder pump collection system**

1. Type: *

2. Number and capacity: *

3. Bar spacing and slope: *

4. Method of cleaning:

5. Disposal of screenings:

Activated Sludge

1. Type of activated sludge process: Extended Aeration

2. Number and size of units: 1 – (17' x 24' x 12' deep)

3. Detention time (hrs): 25

4. Organic loading (lb BOD/1000 cf): 12.8

5. Type of aeration equipment: Stainless Steel Coarse Bubble

6. Type and size of blowers: 2 – 10 horsepower

7. Air required (itemize, cfm): 154 cfm aeration; 70 cfm aerobic digester; 5cfm selector tank; 13 cfm clarifier & solids-wasting airlift pump

8. Provisions of speed adjustment: Belt and sheeve

9. Air provided: 245 cfm – 1 blower

10. Ventilation in the blower room: Mounted on slab outside with roof covering adjacent to Control/Maintenance Building

11. Number and capacity of return sludge pump: 1 - Airlift

12. Method of return sludge rate control: Timer in control panel

13. Return sludge rate as % of design flow: 0 to150%

14. Provisions for return rate metering: Sludge metering box

15. Location of return sludge discharge: Aeration Tank

16. Facilities to isolate units: N/A

17. Facilities for flow split control: N/A

Secondary Clarifier

1. Type of clarifiers: Rectangular

2. Number and size of units: 1- (8' x 12' x 12' deep)

3. Surface settling rate (gpd/sf):

   a. at the design flow: 315 gpd/sf

   b. at the influent pumping rate: 1,000 gpd/sf maximum

   c. at the equalized flow rate: 450 gpd/sf

4. Detention time (hrs): 7

5. Type of sludge removal mechanism: Airlift

6. Weir overflow rate: 1,430 gal/ft

7. Disposal of scum: Aeration tank

8. Facilities for unit isolation: N/A

9. Facilities for flow split control: N/A

Post-aeration

1. Type of aeration: Fine bubble diffusers
2. Number of units: 1
3. Size of units: 2' x 4' x 5' deep
4. Aeration provided: 10 cfm
5. Expected effluent DO: 6 mg/l minimum

Nitrification System

1. Type of nitrification system: Aeration
2. Ammonia loading: 7.6 pounds/day
3. Additional oxygen demand: 35 pounds/day
4. Air supply system: Positive Displacement Blowers
5. Hydraulic detention time: 25 hours
6. Mean cell residence time (days): 22

UV Disinfection

1. Type: Low pressure, low intensity lamps
2. Location: Between final clarifier and prior to post aeration
3. Size of channel: Est. 2' x 4' x 4' deep
4. Contact time: 5 minutes
5. Dosage: 65% minimum transmission
6. Bypass: N/A
7. Safety equipment: None
8. Cleaning equipment: Cleaning Rack for storage and cleaning

Aerobic Digesters

1. Number and size of units: 1 – (11' x 17' x 12.5')
2. Detention time: 63 days
3. Organic loading: 278 gal/day
4. Air supply: Positive Displacement Blower
5. Decanting method: Telescopic Valve to Plant Drain Lift Station

Sludge Disposal

1. Ultimate disposal method of sludge: Sludge loading station for liquid transport
2. Expected solids content of sludge (by the principal method of disposal): 2%
3. Location of disposal site: Belmont WWTP, Indianapolis, IN
4. Ownership of the disposal site: City of Indianapolis
5. Availability of sludge transport equipment: Contract hauling

III. SEWER COLLECTION SYSTEM

Lift Stations - 2 duplex lift stations

1. Location: One at Bill Monroe Music Park & one at Staley's Mobile Home Park
2. Type of pump: Submersible Grinder
3. Number of pumps: 2 at each station
4. Constant or variable speed: Constant
5. Capacity of pumps: Bill Monroe – 30 gpm; Staley's – 30 gpm
6. RPM and TDH: Bill Monroe – 3500 RPM, TDH = 39'; Staley's – 3500 RPM, TDH = 44'
7. Volume of the wet well: 300 Gal.

8. Detention time in the wet well: 30 min.

9. A gate valve and a check valve in the discharge line: Yes

10. A gate valve on suction line: N/A

11. Ventilation: Vent

12. Standby power: No

13. Alarm: Yes, audio & visual

14. Breakwater tanks: N/A

15. Bypass or overflow: No

16. Type of force main: HDPE

17. Diameter and length of force main: Part of community pressure sewer network

Sewer

1. Type of sewer material: HDPE

2. Diameter and length of sewer (indicate length for each size): 4,500'-6"; 1,000'-4"; 6,500'-3"; 2,000'-2-1/2"; 5,350'-2"; and 8,300'-1-1/2"

3. Stream, highway, and railroad crossing: 1 stream & 2 highway

4. Separation of combined sewer or new sewer: New

5. Number of manholes: N/A

6. Water main protection: 10' horizontal & 18" vertical for crossings

Individual Grinder Pumps

1. Location: At each customer's property

2. Number of pumps: 78

3. Capacity of pumps: 11 gpm

4. RPM and TDH: 1750 RPM – Max TDH = 110'

5. Volume of the wet well: 60 Gal.
6. A gate valve and a check valve in the discharge line: Yes
7. Ventilation: Vent pipe
8. Alarm: Yes, audio & visual

IV. MISCELLANEOUS

A. Laboratory equipment: Yes, to be determined.

B. Safety equipment: Gloves, flashlights, cones, etc

C. Plant site fence: Yes – 7' high w/barbed wire

D. Handrail for the tanks: Yes, where required

E. Units, unit operation, and plant bypasses: N/A

F. Flood elevation (10, 25, or 100 year flood): To be determined for plant site

G. Consistency with EPA Reliability Technical Bulletin: Yes

H. Provisions to maintain the same degree of treatment during construction: Yes – existing septic's

I. Standby power: Generator at plant

J. Site inspection: Yes

K. Statement in the specifications as to the protection against any adverse environmental effect (e.g., dust, noise, soil erosion) during construction:

L. Hoists for removing heavy equipment: Yes

M. Adequate sampling facilities: Yes

N. Hydraulic Gradient: To be determined during design

O. Septage receiving facilities – N/A

   1. Screening: *

   2. Location of discharge: *

repared By:
iary Ladd

PRELIMINARY PRESSURE SEWER SIZING AND BRANCH ANALYSIS

Bean Blossom Wastewater

BEAN BLOSSOM & OLD SETTLER'S AREAS

September 18, 2003

his spreadsheet was calculated using pipe diameters for: SDR11HDPE

Friction loss calculations were based on a Constant for inside roughness o 130

Zone Number	Pumps to Zone	Number of Cores in Zone	Accum Cores in Zone	Gal/Day per Core	Max Flow per Core	Max Sim Ops	Max Flow (GPM)	Pipe Size (Inches)	Max Velocity (FPS)	Length of Main this Zone	Friction Loss Factor (ft/100ft)	Friction Loss this Zone	Accumulated Friction Loss (Feet)	Max Main Elevation	Minimum Pump Elevation	Static Head (Feet)	Total Dynamic Head (ft)
1.00	3.00	3	3	200.00	11.00	2	22.00	1.50	3.72	800.00	4.60	36.76	103.09	777.00	769.00	8.00	111.09
2.00	3.00	3	3	200.00	11.00	2	22.00	2.00	2.38	600.00	1.55	9.30	75.62	771.00	755.00	16.00	91.62
3.00	4.00	5	11	200.00	11.00	4	44.00	3.00	2.19	1,050.00	0.85	8.89	66.33	771.00	764.00	7.00	73.33
4.00	5.00	6	17	200.00	11.00	4	44.00	3.00	2.19	850.00	0.85	7.20	57.43	766.00	724.00	42.00	99.43
5.00	7.00	1	18	200.00	11.00	4	44.00	3.00	2.19	1,100.00	0.85	9.32	50.23	736.00	714.00	22.00	72.23
6.00	7.00	5	5	200.00	11.00	3	33.00	2.50	2.44	900.00	1.30	11.67	52.58	768.00	738.00	30.00	82.58
7.00	9.00	1	24	200.00	11.00	5	85.00	4.00	2.56	850.00	0.84	7.18	40.91	755.00	745.00	10.00	50.91
onroe	7.00		GPD: 6700.00			GPM:	30.00	Type: Duplex		Desc:							
9.00	11.00	3	27	200.00	11.00	5	115.00	5.00	2.27	600.00	0.53	3.16	33.73	750.00	745.00	5.00	38.73
s MH	9.00		GPD: 6600.00			GPM:	30.00	Type: Duplex		Desc:							
10.00	11.00	2	2	200.00	11.00	2	22.00	2.00	2.38	700.00	1.55	10.85	41.42	748.00	745.00	3.00	44.42
11.00	13.00	4	33	200.00	11.00	6	126.00	5.00	2.48	800.00	0.62	5.00	30.57	746.00	724.00	22.00	52.57
13.00	15.00	1	38	200.00	11.00	6	126.00	5.00	2.48	300.00	0.62	1.87	25.57	731.00	724.00	7.00	32.57
14.00	15.00	12	12	200.00	11.00	4	44.00	3.00	2.19	3,500.00	0.85	29.65	53.35	731.00	674.00	57.00	110.35
15.00	20.00	1	58	200.00	11.00	7	137.00	5.00	2.70	150.00	0.73	1.09	23.70	731.00	724.00	7.00	30.70
16.00	15.00	7	7	200.00	11.00	3	33.00	2.50	2.44	800.00	1.30	10.37	34.07	731.00	695.00	36.00	70.07
17.00	19.00	2	2	200.00	11.00	2	22.00	2.00	2.38	250.00	1.55	3.87	36.20	746.00	734.00	12.00	48.20
18.00	19.00	2	2	200.00	11.00	2	22.00	2.00	2.38	150.00	1.55	2.32	34.65	746.00	720.00	26.00	60.65
19.00	20.00	4	8	200.00	11.00	3	33.00	2.50	2.44	750.00	1.30	9.72	32.33	746.00	734.00	12.00	44.33
20.00	22.00	1	67	200.00	11.00	7	137.00	5.00	2.70	100.00	0.73	0.73	22.61	731.00	724.00	7.00	29.61
21.00	22.00	2	2	200.00	11.00	2	22.00	2.00	2.38	1,100.00	1.55	17.05	38.92	731.00	704.00	27.00	65.92
22.00	23.00	11	80	200.00	11.00	7	137.00	5.00	2.70	3,000.00	0.73	21.88	21.88	726.00	692.00	34.00	55.88
23.00	22.00	11	4	200.00	11.00	3	33.00	2.50	2.44	600.00	1.30	7.78	33.35	726.00	692.00	7.00	40.35

* - OLD SETTLER'S ROAD AREA

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One.

PRELIMINARY PRESSURE SEWE[illegible]IPE SIZING AND BRANCH ANALYSIS
Woodland Lake

repared By:
ary Ladd

September 18, 2003

his spreadsheet was calculated using pipe diameters for: SDR11HDPE

Friction loss calculations were based on a Constant for inside roughness o 130

Zone Number	Pumps to Zone	Number of Cores in Zone	Accum Cores in Zone	Gal/Day per Core	Max Flow per Core	Max Sim Ops	Max Flow (GPM)	Pipe Size (Inches)	Max Velocity (FPS)	Length of Main this Zone	Friction Loss Factor (ft/100ft)	Friction Loss this Zone	Accumulated Friction Loss (Feet)	Max Main Elevation	Minimum Pump Elevation	Static Head (Feet)	Total Dynamic Head (ft)
1.00	3.00	2	2	200.00	11.00	2	22.00	2.00	2.38	480.00	1.55	7.44	60.54	806.00	795.00	11.00	71.54
2.00	3.00	2	2	200.00	11.00	2	22.00	2.00	2.38	150.00	1.55	2.32	55.43	796.00	789.00	7.00	62.43
3.00	4.00	13	17	200.00	11.00	4	44.00	3.00	2.19	850.00	0.85	7.20	53.10	796.00	781.00	15.00	68.10
4.00	5.00	7	24	200.00	11.00	5	55.00	3.00	2.74	1,000.00	1.28	12.81	45.90	796.00	781.00	15.00	60.90
5.00	6.00	10	34	200.00	11.00	6	66.00	3.00	3.29	1,550.00	1.79	27.82	33.10	798.00	778.00	20.00	53.10
6.00	11.00	4	64	200.00	11.00	7	77.00	4.00	2.32	750.00	0.70	5.28	5.28	786.00	784.00	2.00	7.28
7.00	9.00	3	3	200.00	11.00	2	22.00	2.00	2.38	350.00	1.55	5.42	33.04	810.00	784.00	26.00	59.04
8.00	9.00	2	2	200.00	11.00	2	22.00	2.00	2.38	350.00	1.55	5.42	33.04	818.00	784.00	34.00	67.04
9.00	10.00	6	11	200.00	11.00	4	44.00	3.00	2.19	1,050.00	0.85	8.89	27.62	810.00	784.00	26.00	53.62
10.00	6.00	15	26	200.00	11.00	5	55.00	3.00	2.74	1,050.00	1.28	13.45	18.72	801.00	784.00	17.00	35.72

[illegible]e: This analysis is valid only with the use of progressive cavity type grin[illegible] pumps as manufactured by Environment One.

✓

TO: All Regional Sewer, Water and Waste Districts

FROM: Regional District Coordinator
Indiana Department of Environmental Management
Office of Water Quality

IDEM
OFFICE OF
WATER QUALITY

2010 MAY 13 A 10:46

DATE: April 30, 2010

SUBJECT: Regional Water, Sewer and Waste District Questionnaire

In an effort to update our records to better serve the citizens of Indiana, the Department of Environmental Management requests you provide us with the information requested on this form. Please call 1-800-451-6027 if you have any questions. Return all completed forms by **May 24, 2010** to the address listed below or fax to (317) 232-8406.

Regional District Coordinator
100 North Senate Avenue
MC 65-40 LN IGCN Rm 1255
Indianapolis, IN 46204-2251

Legal Name of District BEANBLOSSOM REGIONAL SEWER DISTRICT

District Mailing Address PO BOX 1881 NASHVILLE IN 47448

Phone # 812-988-8305 Fax # ____

E-mail SSXMCIBT@AOL.COM Web address ____

Date of Formation JULY 21 2006

NPDES # (if applicable)____ PWSID# (if applicable)____

County(ies) served by the district BROWN

Communities Served by the district BEANBLOSSOM

Does your District cross state lines? Yes___ No ✓ If yes, which State?____

(OVER)

THIS DISTRICT'S PROJECT IS CURRENTLY IN THE PRE-CONSTRUCTION PHASE

Type of collection system: Gravity________ Low Pressure________ Vacuum________

Treatment (type of plant)____________________ Capacity____________________

Treated Elsewhere? If so, where?____________________

Board Members: Total Number 3 Elected and/or Appointed? APPOINTED

If elected, next election will be:____________________

If appointed, by whom? BROWN COUNTY COMMISSIONER

____

Current Board Members with start and end date of term:

STEVE STALEY	START 3 YEAR TERM 11-06 RE-APPOINTED 11-09
MIKE LEGGINS	START 2 YEAR TERM 11-06 RE-APPOINTED 11-08
DEBBIE LARSH	START 1 YEAR TERM 11-06 RE-APPOINTED 11-07, 11-08 AND 11-09

# of Customers Served: Residential 68 Commercial 15 Industrial________

Do you have a septic maintenance program? ______Yes ✓ No

Do you purchase water? NOT YET If yes, who supplies the water and what is their

PWSID#?____________________

Number of wells?____________________

What financing is/was ~~used~~ for construction of the district's facilities?

ANTICIPATED: USDA-RD GRANT AND LOAN AND OCRA GRANT

CONTACT PERSON, E-MAIL & PHONE # STEVE STALEY

SSXMCIBT@AOL.COM 812-988-8305

Thank you for your time and consideration