MIFFLIN COUNTY

PUBLIC SEWER PLAN

August 21, 2008

Prepared by:

RETTEW
We answer to you.

MATERIAL MATTERS, Inc.

RESOLUTION NO. 08-35
OF THE MIFFLIN COUNTY BOARD OF COMMISSIONERS
TO ADOPT A PUBLIC SEWER PLAN FOR MIFFLIN COUNTY

WHEREAS, Commissioners of the County of Mifflin, (the "Commissioners") authorized the preparation of a Public Sewer Plan ("Plan") for the entire county of Mifflin;

WHEREAS, the purpose of the Plan is to inventory existing sewage facilities, evaluate the County's wastewater needs, encourage municipalities to update sewage planning documents and promote orderly development by encouraging coordination of public sewage facility planning throughout the County;

WHEREAS, to ensure public participation, a Steering Committee was appointed by the County Commissioners to oversee the development of the Plan;

WHEREAS, to ensure public input a digital copy of the proposed plan was posted on the County's web site, www.co.mifflin.pa.us, for citizens in Mifflin County to review;

WHEREAS, the County provided a copy of the executive summary of the proposed Plan to all of the municipalities in Mifflin County for review; and

WHEREAS, the Commissioners desire to adopt the proposed Public Sewer Plan as a planning document.

NOW THEREFORE BE IT RESOLVED by the County of Mifflin, Pennsylvania, as follows:

Section 1. The Commissioners adopt the Public Sewer Plan for Mifflin County, prepared by RETTEW Associates, Inc., in the form and content presented at a public meeting, as the County's official public sewer plan.

Section 2. The Plan as adopted by the Commissioners shall include the following chapters and all charts, tables, diagrams, appendices, figures and textual matter contained there and appended thereto:

EXECUTIVE SUMMARY
CHAPTER 1 – DEMOGRAPHIC AND ECONOMIC OVERVIEW
CHAPTER 2 – EFFLUENT QUALITY REQUIREMENTS, WASTEWATER COLLECTION AND TREATMENT FACILITIES
CHAPTER 3 – LAND USE PRACTICES
CHAPTER 4 – SEWAGE FACILITIES PLANNING AND IMPACT ON ECONOMIC DEVELOPMENT
CHAPTER 5 – ON-LOT SEWAGE DISPOSAL
CHAPTER 6 – REGULATORY REQUIREMENTS
CHAPTER 7 – PLAN RECOMMENDATION AND IMPLEMENTATION STRATEGY
GLOSSARY OF TERMS AND ABBREVIATIONS
APPENDICES

Section 3. This Resolution shall become effective and be in force immediately.

ADOPTED this twenty-first day of August, 2008, by the Commissioners of the County of Mifflin, Pennsylvania, in lawful session duly assembled.

ATTEST:

Cathy L. Romig, Chief Clerk

MIFFLIN COUNTY COMMISSIONERS

By _____
Mark A. Sunderland, Chairman

By _____
Otis E. Riden, Jr., Vice Chairman

By _____
Robert A. Reck, Secretary

Mifflin County Public Sewer Plan

Executive Summary

The Mifflin County Public Sewer Plan (MCPSP) updates the 1979 Mifflin County Comprehensive Area-Wide Water and Sewer Plan. The MCPSP also consolidates the many municipal Act 537 sewage facilities plans throughout the County into one concise document. Finally, the MCPSP strives for consistency by incorporating recommendations stemming from the County's Economic Development Strategy and high and limited growth areas described in the Mifflin County Comprehensive Plan: *Paths and Bridges to the 21st Century.*

Although the MCPSP inventories and analyzes municipal wastewater collection, conveyance and treatment facilities, the document does not include final engineering, construction or detailed financing plans. The MCPSP will focus on important planning strategies that will implement previous planning efforts engaged within the County.

Funding for this document was produced through the PA Department of Community and Economic Development's Land Use Planning and Technical Assistance Program with local funding provided by the Mifflin County Board of County Commissioners including contributions from Derry Township, Lewistown Borough and Burnham Borough.

Plan Process

The development of the Mifflin County Public Sewer Plan was broken into five parts over the course of the last three years which included:

1. Background and Plan Development Process
2. Socio-Economic and Wastewater Findings
3. Sewage Facilities Planning and Economic Development Recommendations
4. On-Lot Sewage Disposal Recommendations
5. Summary of Recommendations

FRAMING THE FUTURE

With more than 1,000 dwellings planned for Mifflin County, the sky could be the limit as to what tomorrow may hold

By NICK MALAWSKEY
Sentinel reporter
nmalawskey@lewistownsentinel.com

LEWISTOWN — The old photos and headlines on microfilm tell the story all too well.

Photos show rain-filled streets, houses moved from their foundations; headlines cry: "Area Damages $75 million;" "Viscose to close indefinitely;" "Tears of anguish and hours of strain will never be counted."

And perhaps most prophetic are these words by then Sentinel reporter Jim Canfield, filed June 26, 1972:

"Now, with the beginning of the end — and the beginning of the end is the worst of all — coming to a close in the pages into history, nobody ever will be able to assess all the damages; those tears that were shed, the hours of anguish, the days of physical and mental strain..."

It seemed the blow was so powerful that Mifflin County could not, and some say — has not recovered — but that depends on to whom you speak.

It has taken 35 years, but downtown Lewistown is beginning to bounce back. Empty store fronts are finding occupants, thanks to the work of Downtown Lewistown Inc. and others; buildings in dire need of cure are receiving attention, and larger projects to improve the living areas in the boroughs are under way.

There is change — not just in town — but also in the outlying rural areas, on the farmlands that once were the bread and butter of Mifflin County.

"We remember what Mifflin County looked like the hurricane, and we think Mifflin County can be that again — or more."

Those bold words were spoken by an area developer, one of many who has a new vision of Mifflin County. The vision is one of change and, it is hoped, of growth.

Perhaps one change with the biggest potential impact on the area is the housing boom that is slowly taking shape.

There are at least nine large subdivisions proposed, planned or being built in various municipalities. If built, they will total more than 1,100 housing units.

Mifflin County Planning Director Bill Gomes said it is the largest potential for growth he has seen in his 19 years as planning director.

If the housing developments are approved and built, the population of Mifflin County could rise by 3,300 — a more than 6 percent jump in an area that has only seen a 0.6 percent population increase since 1990, according to census data.

On one hand, some people believe that could place stresses on the local infrastructure, particularly water and sewer systems. Others say it could be an opportunity for the local economy to grow, as area residents demand additional services.

The population increase is, admittedly, a big IF — but one that is being spoken of more and more with optimism by local leaders.

"It's going to be interesting the next few years ... we're in that incubation stage now," said Jim Tunall, president of the Juniata Valley Area Chamber of Commerce, who watches the changes from his office on Monument Square.

"I do think we're going to experience some really interesting growth."

Tim Kelsey, a Penn State University professor who has been researching the cost of development in Pennsylvania, recently presented a lecture on the topic for the Mifflin County Planning Commission.

Kelsey developed a model, which, using previous census data, estimates the municipal and governmental costs associated with development, as well as school district impact.

Kelsey's estimates, coupled with a historical 4-percent vacancy rate of existing housing, a statistic provided by the county planning office, shows Mifflin County could grow by quite a bit. That's a big change, he noted for much of Pennsylvania, where most areas are seeing a stagnation, not an immigration of residents.

Growth and decline in Pennsylvania

"When you talk about growth, most people think about the Poconos and the Gettysburg areas," said Jon Johnson, with the Center for Rural Pennsylvania, an agency that serves as a resource for policy for the state's General Assembly.

"They've been quite a lot of growth ... people moving in from Jersey and New York and higher-income municipalities and, likely now, where are those people coming from," said Johnson, with the Center for Rural Pennsylvania, an agency that serves as a resource for policy for the state's General Assembly.

"They've been quite a lot of growth ... people moving in from Jersey and New York and higher-income municipalities and, likely now, where are those people coming from," said Johnson said. "There's a lot of factors to be learned from that."

In 2000, Pike County, in the northeast, was listed as one of the fastest-growing counties in the nation, with a population increase of 4.3 percent according to census information.

Juniata County followed closely with an increase of 3.8 percent according to census data. But the southern county is not seeing the same large developments as its northern neighbor, said William H. Steng, acting director of the county's planning department.

"The only (development) that's of any size is out on Cedar Spring Road, supposed to be 140 (housing units)," said Steng. "But they can't get water till 2007."

"We don't have anything of that nature yet," Steng said of the proposed developments in Mifflin County. "That's going to be quite an impact in Mifflin County."

The development cannot receive water due to a moratorium placed by the water authority. The Dunbarton plant is at capacity, which is one of the many challenges facing municipalities when growth is discussed.

Ethan Herr, assistant executive director of the Pennsylvania State Association of Township Supervisors, said his agency is seeing continued growth in different parts of the state.

"Down to you go west, there doesn't seem like there's much growth," he said. "But again there are pockets that have seen growth, but not like the southern half of the state."

A study conducted by the Brookings Institution shows that not only has population as some areas decreased, but also across rural Pennsylvania the population is growing older. The number of young adults decreased by 13 percent in the 1990s, the study found.

Why Mifflin County

Why are developers and residents looking to grow in Mifflin County?

"It could be several reasons," Herr said.

"They want some space; it could be, in some cases that they're looking for lifestyle that you don't have in a more urban setting," Herr said. "It could be ... Each case has to be looked at individually," Herr said. "And part of it could be the school system and the municipal government. They see it as a good place for families to move in and raise their families."

Regardless of the reason, Herr said if 1,100 dwelling units are planned for the area, then developers must "see something there."

"They're not going to want to buy the land ... and then sit on it for years. ... They're in the business to recoup their funds," Herr said.

"It's going to be interesting the next few years ... we're in that incubation stage now. I do think we're going to experience some really interesting growth."

Jim Tunall, president
Juniata Valley Area Chamber of Commerce

Plan Findings

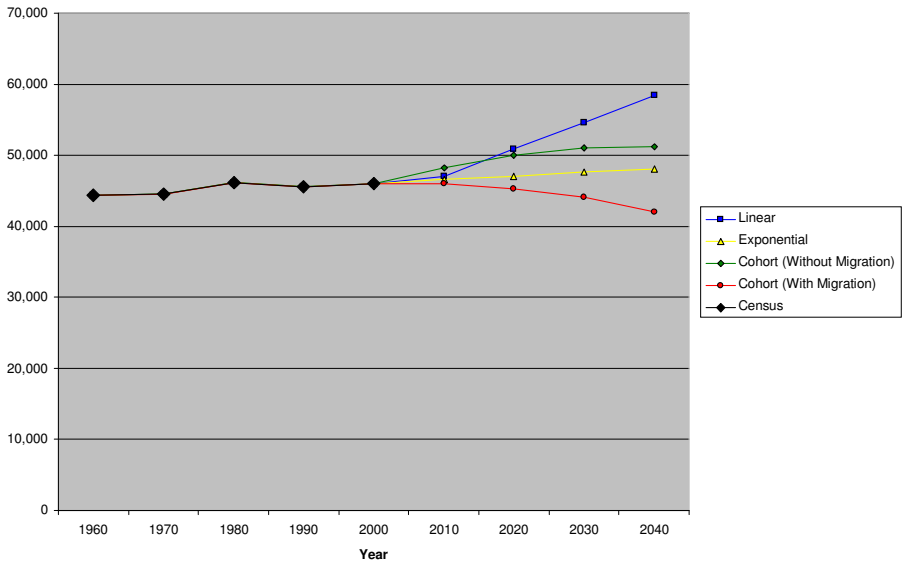
- The region's older communities have experienced a "hollowing out" of its urban core, with many homes being demolished or converted to other uses. This "hollowing out" leads to a loss of tax and rate base, coupled with diminished economic development in most of these areas.

- Concurrent with the "hollowing out" of the urban core, land development activity continues to climb in once rural communities due to improvements in transportation, sewer and water infrastructure.

- With the introduction of infrastructure into the rural municipalities in the County growth has occurred. Due to the growth the rural municipalities face additional infrastructure maintenance and liability. With more homes being built further away from urban cores affordable infrastructure improvements will become increasingly difficult for existing rate payers.

- Based on projections, over the next twenty years the County will witness and increase of over 3,800 new residents and over 1,550 dwelling units.

Mifflin County Population Projections*



*Source: U.S. Census Bureau; RETTEW Associates

- Throughout Mifflin County currently there is 58% unused capacity available at the municipal facilities. Projected wastewater flows for 2010 are 3.843 MGD, leaving approximately 28% unused capacity.

- It is estimated that over 75 million dollars will be needed to meet the Chesapeake Bay Tributary Strategy and/or wastewater treatment facility expansion or maintenance for the entire County.

- Some municipalities do not have minimum lot size provisions large enough to adequately provide for on-lot sewage disposal and should be revised.

- There are three wastewater treatment facilities that accept septage however; the majority of septage is transported outside of the county based on existing rates. The County continues to receive more on-lot systems, and more septage is being generated.

Plan Recommendations

- Update Act 537 sewage facilities plans to be consistent with the county and local planning documents.

- Adopt and implement the designated growth and rural area concept identified in the County's Comprehensive Plan to specifically focus coordinating zoning districts, density and intensity of uses, and public infrastructure improvements (sewer).

- Require sewer extensions and/or capped sewers for properties within growth areas as identified within the County Comprehensive Plan, while prohibiting extension into designated rural area zoning districts which are designated for less intense uses and types of infrastructure and services.

- Requiring secondary percs and probes for alternate on-lot sewage disposal sites and systems, and perpetual easements to reserve an area on lots to allow for a secondary back-up or alternate disposal system.

- Amend municipal subdivision and zoning ordinances to assist in controlling public sewer development and support the County Comprehensive Plan.

- Establish a County-wide Sewer Committee to review municipal planning and sewer documents to determine consistency with long range planning.

- The County should finish its Economic Strategy to better understand where opportunities exist for development within the County within the next two years.

- Consider developing a regional sewage management program in which a regional agency would be responsible for coordinating routine inspections and pumping associated with on-lot sewage disposal systems management ordinances which is currently handled by individual municipalities.

- Initiate regional cost-sharing initiatives associated with wastewater treatment plan operations.

- Educate officials, developers, land development professionals, and citizens on the PA DEP Planning Module review and approval process.

- The sewage module review process is an opportunity to utilize this Plan and its suggestions on an application by application basis.

- Explore the feasibility of developing a regional septage facility.

- Coordinate regional capital improvement plans to assist in offsetting costs associated with addressing the requirements of the Chesapeake Bay Tributary Strategy.

Acknowledgement:

This Project was financed in part by a grant from the Commonwealth of Pennsylvania, Department of Community and Economic Development. Mifflin County Board of County Commissioners and contributions from Derry Township, Lewistown Borough and Burnham Borough provided the match to the State's LUPTAP grant and additional financial assistance needed to cover this study's cost.

The Commissioners of Mifflin County

Mr. Mark A. Sunderland, Chairman
Mr. Otis Riden, Vice Chairman
Mr. Bob Reck, Secretary

Advisory Committee:

- Mr. John Lacombe
- Mr. Victor Dimoff
- Mr. Dan Kochenderfer
- Mr. Tom Garver
- Mr Robert Rosenberry, Sr.
- Mr. Mike Dippery
- Mr. James Felmlee
- Mr. Richard Yohn
- Mr. Rob Postal
- Mr. John McCullough
- Mr. Earl "Pete" Weaver
- Mr. Dan Dunmire

Mifflin County Planning and Development Department
William A. Gomes, AICP, Director
Mark Colussy, Associate Planner

Project Consultants:
RETTEW Associates, Inc.
Material Matters, Inc.

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Purpose

The Mifflin County Public Sewer Plan (MCPSP) updates the 1979 Mifflin County Comprehensive Area-Wide Water and Sewer Plan. The MCPSP also consolidates the many municipal Act 537 sewage facilities plans throughout the County into one concise document. Finally, the MCPSP strives for consistency by incorporating recommendations stemming from the County's Economic Development Strategy and high and limited growth areas described in the Mifflin County Comprehensive Plan: *Paths and Bridges to the 21st Century.*

Although the MCPSP inventories and analyzes municipal wastewater collection, conveyance and treatment facilities, the document does not include final engineering, construction or detailed financing plans. The MCPSP will focus on important planning strategies that will implement previous planning efforts engaged within the County.

Population growth is projected over the next 20 years. The majority of these people are expected to locate in designated High Growth Areas and be provided with sanitary sewer services as called for in the Mifflin County Comprehensive Plan: *Paths and Bridges to the 21st Century.* The comprehensive plan also advocates a jobs-based economy. Commercial and industrial businesses have employees and processes that also generate wastewater. In order to meet demand for wastewater collection and treatment services as the comprehensive plan is implemented, the MCPSP examines existing conditions, analyzes demographic and economic trends/changes from the previous planning documents, compares existing capacities against projected demand, compare discharge and water quality limits based on the Chesapeake Bay Tributary Strategy, and improving economic development coordination and delivery services by linking infrastructure investment with projected High Growth Areas.

According to the Mifflin County Waste Management Plan, 63 percent of the total housing units in Mifflin County (occupied and vacant) are connected to or have access to public sewer service. Therefore, nearly 37 percent of the County population utilizing on-lot sewage disposal systems (OLDS) which equates to approximately 1,565,800 gallons of septage that could be pumped out annually in the County based on County's Waste Management Plan's projections. MCPSP will evaluate the potential for combined sewage enforcement planning, OLDS education techniques and other regional efforts along with identifying a critical path analysis for implementation and capital improvements planning.

In June 2000, Pennsylvania along with Maryland, Virginia and the District of Columbia, made a commitment to help remove the Chesapeake Bay from the Federal Clean Water Act's list of impaired waters by 2010. In April of 2003, new nutrient and sediment reduction goals were developed for each major tributary and jurisdiction to meet revised water quality criteria. The Chesapeake Bay Program partners also agreed to develop revised Nutrient and Sediment Reduction Tributary Strategies within one year, by April 2004, to plan how the goals can be met by 2010. The MCPSP identifies each of the County's wastewater treatment facilities and their Chesapeake Bay goals.

I. DEMOGRAPHIC AND ECONOMIC OVERVIEW

The demographic and economic profile highlights specific conditions that have changed since the completion of both the Mifflin County Comprehensive Plan: *Paths and Bridges to the 21st Century* along with the economic development strategy. The profile highlights those areas that directly relate to the development of the MCPSP.

HISTORICAL DEMOGRAPHIC TRENDS

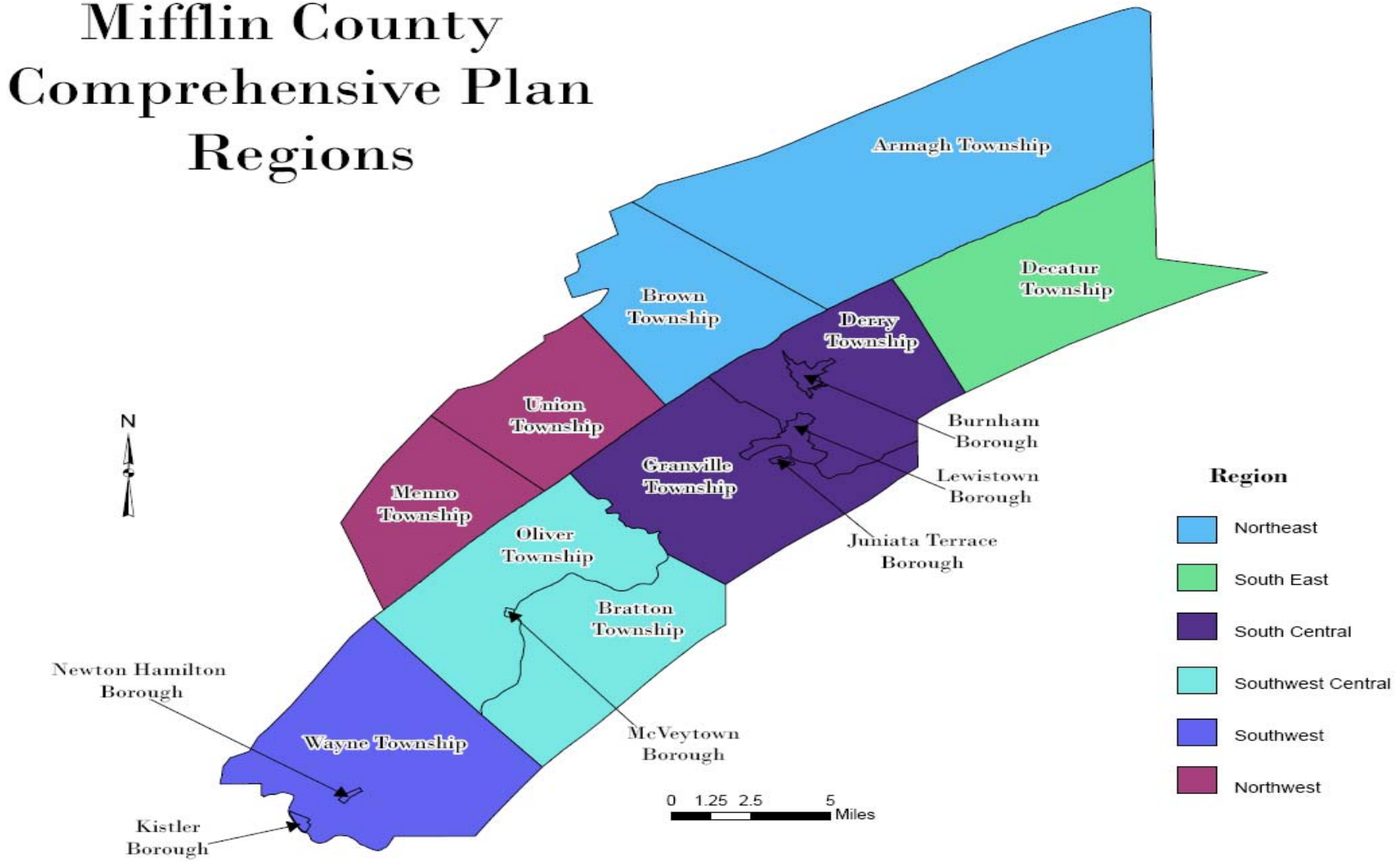
A region's infrastructure investment is directly related to a region's population. Mifflin County has seen a slight population increase over the last decade. **Examining the data in greater detail reveals the region's older communities have experienced a "hollowing out" of its urban core, leading to a loss of tax and rate base, coupled with diminished economic development in most of these areas.** The only exception to this trend is Kistler Borough which has witnessed a modest increase of thirty persons. **Concurrent with the "hollowing out" of the urban core, land development activity continues to climb in once rural communities due to improvements in transportation, sewer and water infrastructure.** Lewistown Borough, the County Seat, and adjacent municipalities in the south central region of the County still contain the highest population density however; all of these municipalities have witnessed a significant population loss over the past twenty years.

TABLE 1: DEMOGRAPHIC CHANGE, 1970-2000

Location / Region	Area (Square Mile)	Total Population				Population Density, 2000	Population Change			
							1990-2000		1970-2000	
		1970	1980	1990	2000		#	%	#	%
Pennsylvania	45,019.6	11,766,310	11,864,720	11,881,643	12,281,054	272.8	399,411	3.36	514,744	4.37
Mifflin County	431.1	45,268	46,908	*46,197*	46,486	107.8	289	0.63	1,218	2.69
Northeast	**132.2**	**6,127**	**6,713**	**6,947**	**7,840**	**59.3**	**893**	**12.85**	**1,713**	**27.96**
Armagh Township	97.8	3,385	3,710	*3,627*	3,988	40.8	361	9.95	603	17.81
Brown Township	34.4	2,742	3,003	3,320	3,852	112.0	532	16.02	1,110	40.48
Southeast	**47.4**	**2,216**	**2,513**	**2,735**	**3,021**	**63.7**	**286**	**10.46**	**805**	**36.33**
Decatur Township	47.4	2,216	2,513	2,735	3,021	63.7	286	10.46	805	36.33
South Central	**77.1**	**26,941**	***26,142***	***24,834***	***23,795***	**308.6**	**-1,039**	**-4.18**	**-3,146**	**-11.68**
Burnham Borough	1.0	2,607	*2,457*	*2,197*	*2,144*	2,144.0	-53	-2.41	-463	-17.76
Derry Township	32.0	7,877	8,108	*7,650*	*7,256*	226.8	-394	-5.15	-621	-7.88
Granville Township	41.9	4,626	5,116	*5,090*	*4,895*	116.8	-195	-3.83	269	5.81
Juniata Terrace Borough	0.1	733	*631*	*556*	*502*	5,020.0	-54	-9.71	-231	-31.51
Lewistown Borough	2.1	11,098	*9,830*	*9,341*	*8,998*	4,284.8	-343	-3.67	-2,100	-18.92
Southwest Central	**70.7**	**3,238**	**3,647**	**3,657**	**3,724**	**52.7**	**67**	**1.83**	**486**	**15.01**
Bratton Township	34.7	1,224	1,426	1,427	*1,259*	36.3	-168	-11.77	35	2.86
McVeytown Borough	0.1	486	*447*	*408*	*405*	4,050.0	-3	-0.74	-81	-16.67
Oliver Township	35.9	1,528	1,774	1,822	2,060	57.4	238	13.06	532	34.82
Southwest	**52.0**	**2,473**	**3,172**	***3,122***	***3,030***	**58.3**	**-92**	**-2.95**	**557**	**22.52**
Kistler Borough	0.1	369	*364*	*314*	344	3,440.0	30	9.55	-25	-6.78
Newton Hamilton Borough	0.2	280	317	*287*	*272*	1,360.0	-15	-5.23	-8	-2.86
Wayne Township	51.7	1,824	3,491	*2,521*	*2,414*	46.7	-107	-4.24	590	32.35
Northwest	**51.7**	**4,273**	**4,721**	**4,902**	**5,076**	**98.2**	**174**	**3.55**	**803**	**18.79**
Menno Township	24.7	1,308	1,590	1,637	1,763	71.4	126	7.70	455	34.79
Union Township	27.0	2,965	3,131	3,265	3,313	122.7	48	1.47	348	11.74

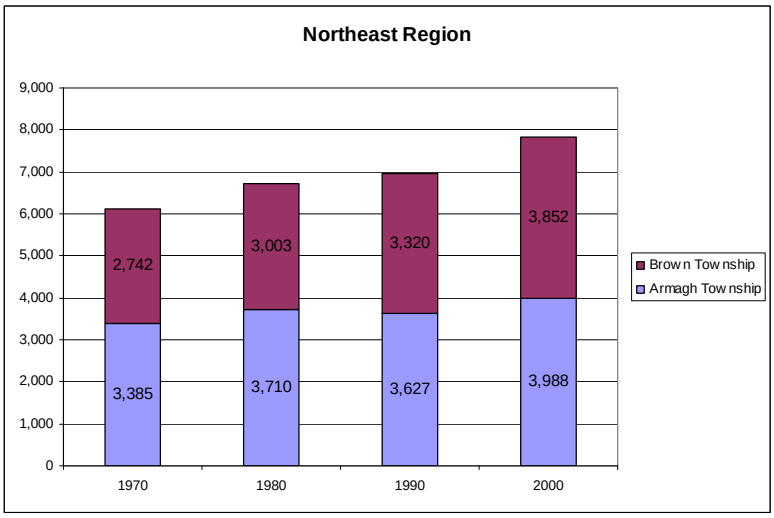
Sources: U.S. Census Bureau; Mifflin County Comprehensive Plan

For consistency purposes this plan has been analyzed utilizing the planning regions established in the December 2000 Mifflin County Comprehensive Plan. As identified in this plan, the northeast and southeast regions of the County have been fastest growing regions in both residential and non-residential development types. This is due in some part to the improvements to the US 322 corridor.


Mifflin County
Comprehensive Plan
Regions
Armagh Township
Brown Township
Decatur Township
Derry Township
Union Township
Granville Township
Menno Township
Oliver Township
Bratton Township
Wayne Township
Burnham Borough
Lewistown Borough
Juniata Terrace Borough
McVeytown Borough
Newton Hamilton Borough
Kistler Borough
N
0 1.25 2.5 5
Miles
Region
Northeast
South East
South Central
Southwest Central
Southwest
Northwest

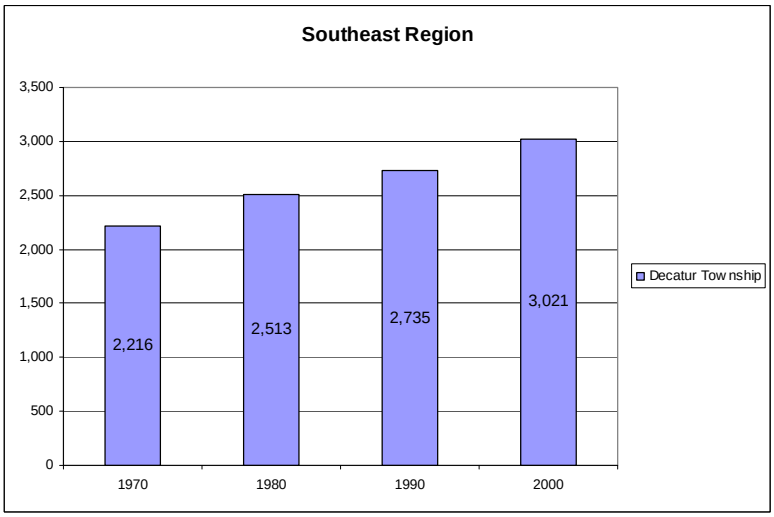
The Northeast Region is the geographic largest of the six regions within the County at 132.2 square miles has also witnessed the most growth over the last thirty years

FIGURE 1: POPULATION CHANGE IN THE NORTHEAST REGION



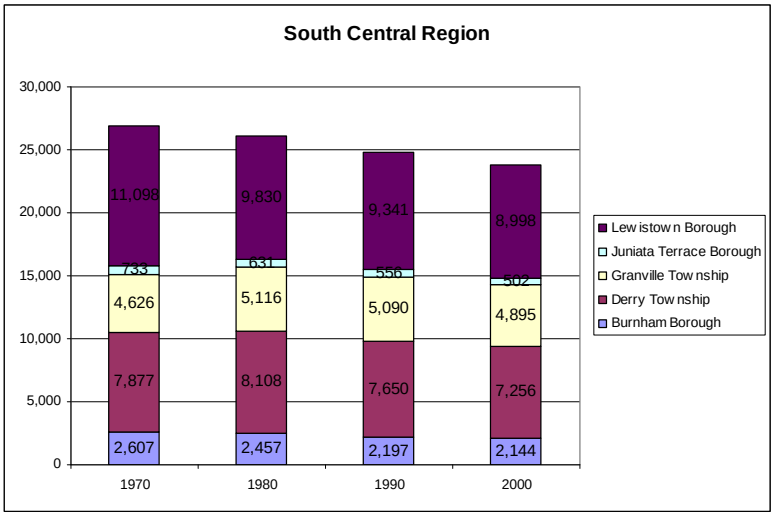
Sources: U.S. Census Bureau; Mifflin County Comprehensive Plan

FIGURE 2: POPULATION CHANGE IN THE SOUTHEAST REGION



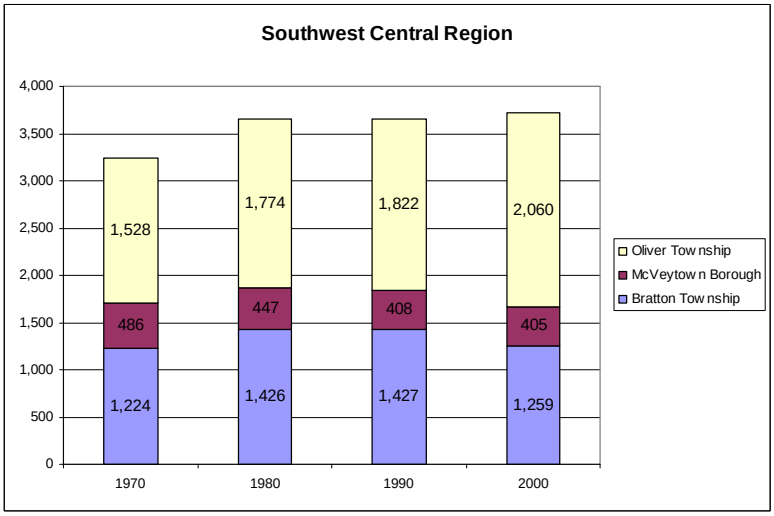
Sources: U.S. Census Bureau; Mifflin County Comprehensive Plan

FIGURE 3: POPULATION CHANGE IN THE SOUTH CENTRAL REGION



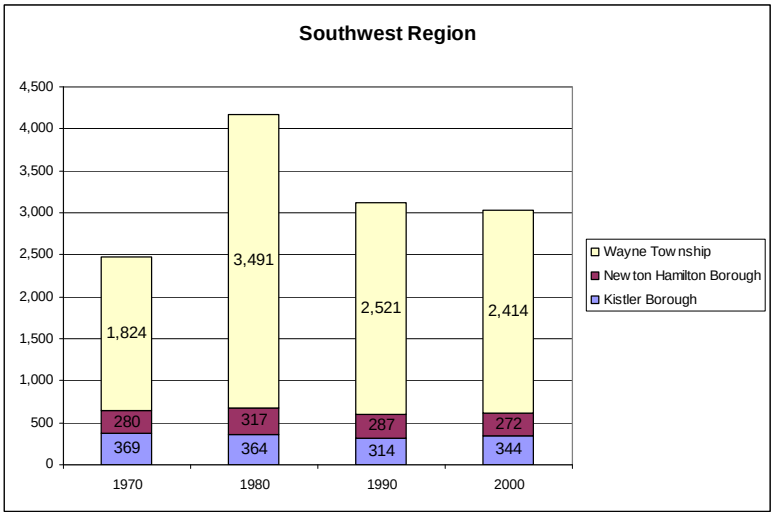
Sources: U.S. Census Bureau; Mifflin County Comprehensive Plan

FIGURE 4: POPULATION CHANGE IN THE SOUTHWEST CENTRAL REGION



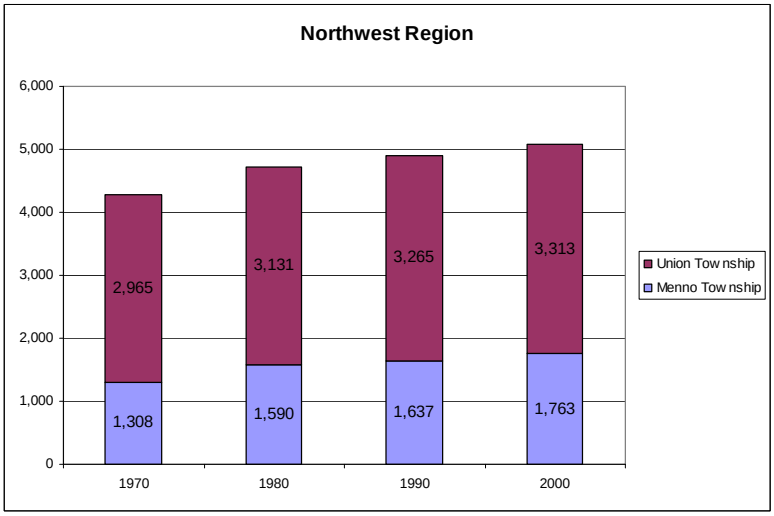
Sources: U.S. Census Bureau; Mifflin County Comprehensive Plan

FIGURE 5: POPULATION CHANGE IN THE SOUTHWEST REGION



Sources: U.S. Census Bureau; Mifflin County Comprehensive Plan

FIGURE 6: POPULATION CHANGE IN THE NORTHWEST REGION

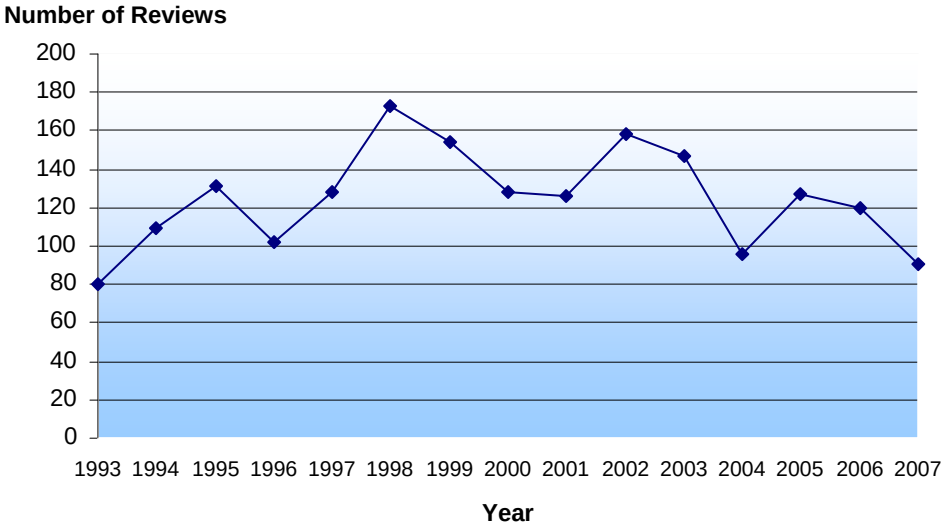


Sources: U.S. Census Bureau; Mifflin County Comprehensive Plan

Subdivision And Land Development Activity

The majority of the plans reviewed since 1993 by Mifflin County Planning Commission have been small, one to two lot subdivisions. Large and more involved subdivisions (three or more lots) and land developments comprise a quarter of the total submissions. During 2006 and early 2007, the County has received several larger plans accounting for nearly 1600 proposed dwelling units. While some of these subdivisions and land developments are still seeking approvals, this could be an emerging trend in Mifflin County that needs to be carefully watched. Individual municipal building permit information is provided below:

Figure 7: Subdivision and Land Development Plan Reviews (1993-2007)



Population Projections

Population projections for Mifflin County have been made for the period 2000 to 2040 (Table #2). The population projections were analyzed utilizing US Census and US Department of Health statistical data. Four projection types were analyzed for Mifflin County utilizing the following methodologies:

Linear Projection:
This model approximates a steady rate of increase or decline based on historic figures.

Exponential Projection:
This model, also based on historic figures, approximates a rate of increase or decline that grows over each decade.

Cohort Projection (no migration):
This model is based on the most recent census (2000), and looks at 5-year age groups. The model projects at 5-year intervals, deducting from the population based on the likelihood of death for a given age group, and adding to the population based on the birth rate for women of child-bearing age. For example, in 2000, if there were 100 women age 25-30, and if, over a 5-

year period, the survival rate was 99% and the birth rate was 25%, we would estimate that in 2005, there would be 99 women aged 30-35, and approximately 25 new births.

Cohort Projection (with migration):
This model is the same as the previous cohort model, except that it accounts for migration. To calculate migration, the model projects the population from 1990 figures, and then finds the difference between the projection and the actual 2000 census for each 5-year age group. The model then assumes a constant rate of in- or out-migration for each age group each year.

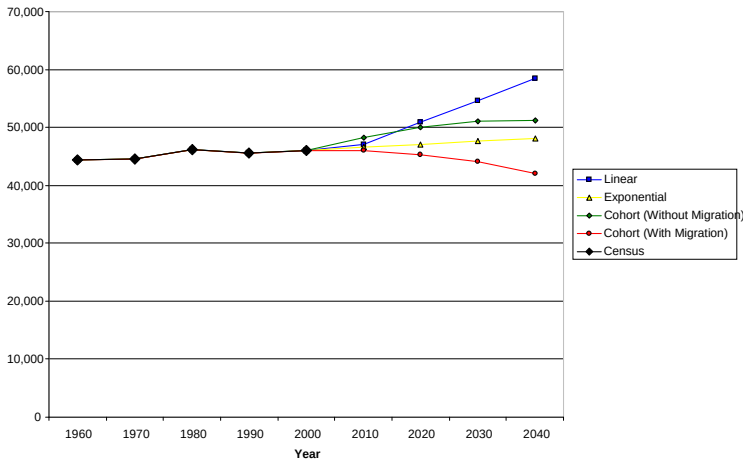
TABLE 2: MIFFLIN COUNTY POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	44,348	44,348	44,348	44,348	44,348
1970	44,535	44,535	44,535	44,535	44,535
1980	46,226	46,226	46,226	46,226	46,226
1990	45,641	45,641	45,641	45,641	45,641
2000	46,486	46,486	46,486	46,486	46,486
2010	***	**47,062**	47,086	48,297	46,033
2020	***	**50,862**	47,648	49,948	45,251
2030		**54,662**	47,593	51,007	44,109
2040		**58,462**	48,057	51,173	42,024

Source: U.S. Census Bureau; RETTEW Associates, Inc.

Based on current plan submissions, the County could potentially receive approximately 3,800 more persons which would produce a 6% jump in an area that has only seen 0.6 percent in population since 1990. Additionally, the 2006 U.S. Census Bureau estimates Mifflin County losing 429 persons since the last census in 2000. Upon analyzing these circumstances and reviewing the projections and methodologies associated with each projection, the **linear projection** has been selected as the preferred methodology for all of the County with the exception of Brown, Derry and Granville Townships where the projection is a linear base projection with an adjustment based on the 3,300 persons associated with the pending and approved plans. Based on these growth assumptions, the County's projected population by 2020 will be 50,862. The same four projections were performed for all the municipalities and are included within Appendix A.

FIGURE 8: MIFFLIN COUNTY POPULATION PROJECTIONS



Source: U.S. Census Bureau; RETTEW Associates, Inc.

Housing Trends

Housing directly influences public sewer planning. The placement of new housing and the density in which it is built dictates the type of sewage disposal needed. Hence, it is necessary to understand the existing housing stock in order to properly plan for future sewer infrastructure. **The County's "hollowing out" of population is also noticeable in the housing loss in many of the Boroughs. The loss of homes can be attributed to homes that were demolished or conversions to other uses.** The trend, identified in the County Comprehensive Plan, of the housing stock in the County outpacing the population growth continues to increase. **With more homes being built further away from urban cores affordable infrastructure improvements will become increasingly difficult. By taking the difference between the 2000 population and the selected population projection and divide that number by the average persons per household, the County will need to provide roughly 1,556 housing units between now and 2020.**

Table 3: Housing Trends, 1980-2000

Location / Region	Total Housing Units			1990-2000 Change		1980-2000 Change	
	1980	1990	2000	#	%	#	%
Mifflin County	19,641	18,557	20,745	2,188	11.79	1,104	5.62
Northeast	**3,162**	**2,605**	**3,479**	**874**	**33.55**	**317**	**10.03**
Armagh Township	1,836	1,440	1,956	516	35.83	120	6.54
Brown Township	1,326	1,165	1,523	358	30.73	197	14.86
Southeast	**1,046**	**902**	**1,237**	**335**	**37.14**	**191**	**18.26**
Decatur Township	1,046	902	1,237	335	37.14	191	18.26
South Central	**10,805**	**10,977**	**11,002**	**25**	**0.23**	**197**	**1.82**
Burnham Borough	955	1,015	*983*	-32	-3.15	28	2.93
Derry Township	3,055	2,992	3,161	169	5.65	106	3.47
Granville Township	2,069	1,889	2,110	221	11.70	41	1.98
Juniata Terrace Borough	250	253	*233*	-20	-7.91	-17	-6.80
Lewistown Borough	4,476	4,828	4,515	-313	-6.48	39	0.87
Southwest Central	**1,619**	**1,377**	**1,749**	**372**	**27.02**	**130**	**8.03**
Bratton Township	680	532	605	73	13.72	-75	-11.03
McVeytown Borough	179	190	*182*	-8	-4.21	3	1.68
Oliver Township	760	655	962	307	46.87	202	26.58
Southwest	**1,318**	**1,166**	**1,485**	**319**	**27.36**	**167**	**12.67**
Kistler Borough	149	153	*141*	-12	-7.84	-8	-5.37
Newton Hamilton Borough	114	122	*114*	-8	-6.56	0	0.00
Wayne Township	1,055	891	1,230	339	38.05	175	16.59
Northwest	**1,691**	**1,530**	**1,793**	**263**	**17.19**	**102**	**6.03**
Menno Township	516	465	551	86	18.49	35	6.78
Union Township	1,175	1,065	1,242	177	16.62	67	5.70

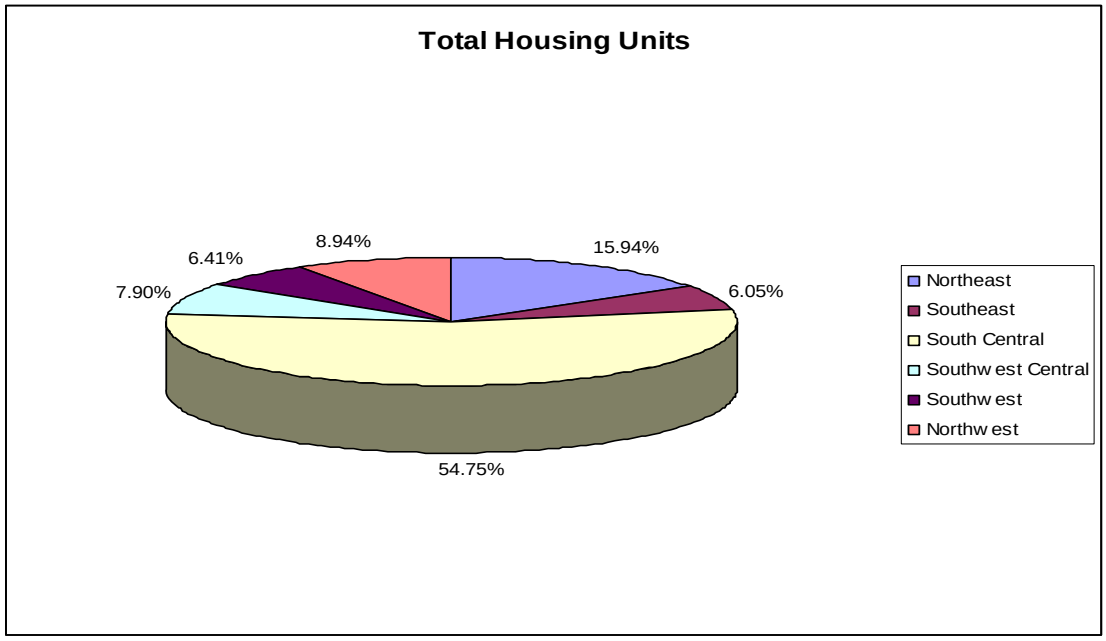
Source: U.S. Census Bureau, Mifflin County Comprehensive Plan

TABLE 4: OCCUPANCY STATUS AND TENURE, 1990 AND 2000

Location / Region	1990 Total	2000 Total	1990 Owner Occupied		2000 Owner Occupied		1990 Renter Occupied		2000 Renter Occupied		1990 Vacant		2000 Vacant		1990 Considered Vacant, For Seasonal Use		2000 Considered Vacant, For Seasonal Use	
			#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Mifflin County	19,641	18,413	12,887	65.61	13,631	69.40	4,810	24.49	4,782	7,288.22	1,944	9.90	2,332	9,522.41	1,166	5.94	1,082	14.85
Northeast	**3,162**	**2,935**	**2,078**	**65.72**	**2,399**	**75.87**	**453**	**14.33**	**536**	**815.61**	**631**	**19.96**	**544**	**3,797.19**	**528**	**16.70**	**420**	**51.50**
Armagh Township	1,836	1,532	1,094	59.59	1,261	68.68	237	12.91	271	454.80	505	27.51	424	3,284.66	446	24.29	355	78.06
Brown Township	1,326	1,403	984	74.21	1,138	85.82	216	16.29	265	357.10	126	9.50	120	736.67	82	6.18	65	18.20
Southeast	**1,046**	**1,114**	**828**	**79.16**	**983**	**93.98**	**118**	**11.28**	**131**	**165.49**	**100**	**9.56**	**123**	**1,090.32**	**66**	**6.31**	**70**	**42.30**
Decatur Township	1,046	1,114	828	79.16	983	93.98	118	11.28	131	165.49	100	9.56	123	1,090.32	66	6.31	70	42.30
South Central	**10,805**	**10,082**	**6,720**	**62.19**	**6,727**	**62.26**	**3,508**	**32.47**	**3,355**	**5,394.46**	**577**	**5.34**	**920**	**2,833.69**	**93**	**0.86**	**63**	**1.17**
Burnham Borough	955	919	682	71.41	694	72.67	241	25.24	225	315.07	32	3.35	64	253.61	4	0.42	4	1.27
Derry Township	3,055	2,946	2,279	74.60	2,358	77.18	623	20.39	588	788.21	153	5.01	215	1,054.29	33	1.08	24	3.04
Granville Township	2,069	1,971	1,471	71.10	1,589	76.80	451	21.80	382	537.29	147	7.10	139	637.67	51	2.46	25	4.65
Juniata Terrace Borough	250	223	213	85.20	175	70.00	31	12.40	48	56.34	6	2.40	10	80.65	0	0.00	0	0.00
Lewistown Borough	4,476	4,023	2,075	46.36	1,911	42.69	2,162	48.30	2,112	4,555.81	239	5.34	492	1,018.59	5	0.11	10	0.22
Southwest Central	**1,619**	**1,454**	**1,118**	**69.05**	**1,228**	**75.85**	**194**	**11.98**	**226**	**327.28**	**307**	**18.96**	**295**	**2,461.88**	**245**	**15.13**	**214**	**65.39**
Bratton Township	680	482	450	66.18	424	62.35	63	9.26	58	87.64	167	24.56	123	1,327.62	151	22.21	93	106.11
McVeytown Borough	179	168	123	68.72	121	67.60	48	26.82	47	68.40	8	4.47	14	52.21	0	0.00	2	2.92
Oliver Township	760	804	545	71.71	683	89.87	83	10.92	121	168.73	132	17.37	158	1,446.75	94	12.37	119	70.53
Southwest	**1,318**	**1,181**	**957**	**72.61**	**1,014**	**76.93**	**169**	**12.82**	**167**	**230.00**	**192**	**14.57**	**304**	**2,370.84**	**137**	**10.39**	**233**	**101.31**
Kistler Borough	149	138	97	65.10	111	74.50	35	23.49	27	41.47	17	11.41	3	12.77	1	0.67	1	2.41
Newton Hamilton Borough	114	99	77	67.54	82	71.93	26	22.81	17	25.17	11	9.65	15	65.77	2	1.75	4	15.89
Wayne Township	1,055	944	783	74.22	821	77.82	108	10.24	123	165.73	164	15.55	286	2,793.80	134	12.70	228	137.57
Northwest	**1,691**	**1,647**	**1,186**	**70.14**	**1,280**	**75.69**	**368**	**21.76**	**367**	**523.27**	**137**	**8.10**	**146**	**670.89**	**97**	**5.74**	**82**	**15.67**
Menno Township	516	484	358	69.38	362	70.16	102	19.77	122	175.84	56	10.85	67	338.94	45	8.72	46	26.16
Union Township	1,175	1,163	828	70.47	918	78.13	266	22.64	245	347.68	81	6.89	79	348.97	52	4.43	36	10.35

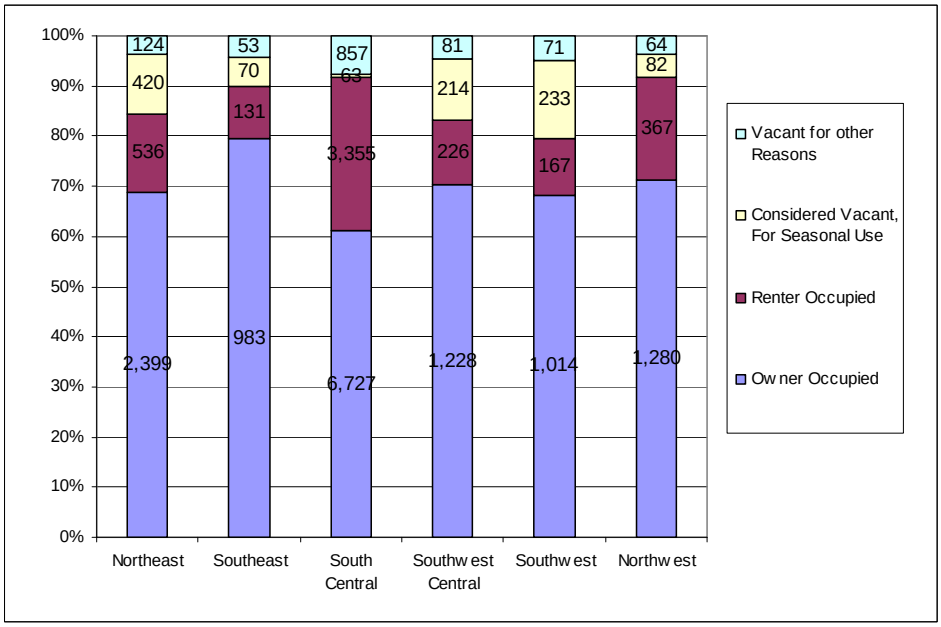
Source: U.S. Census Bureau, RETTEW Associates, Inc.

FIGURE 9: TOTAL HOUSING UNITS IN MIFFLIN COUNTY, BY REGION, 2000



Source: U.S. Census Bureau, RETTEW Associates, Inc.

FIGURE 10: TENURE AND OCCUPANCY STATUS BY PERCENT BY REGION, 2000



Source: U.S. Census Bureau, RETTEW Associates, Inc.
*The "Vacant for Other Reasons" category is not the same as the "Vacant" category in Table #. The category, "Vacant for Other Reasons" represents the total number of vacant properties, as shown in Table # minus the number of vacant properties considered to be for seasonal use.

Economic Profile

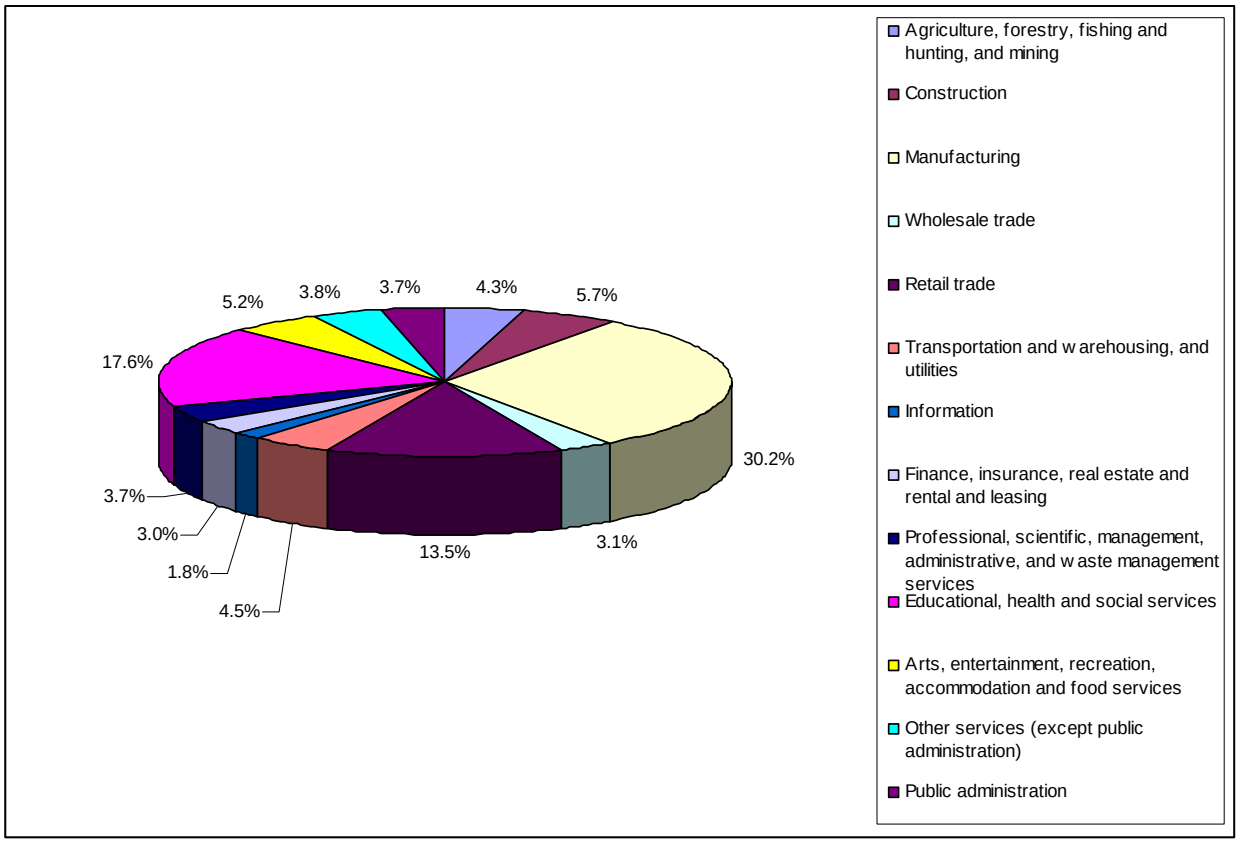
The largest sector of economic activity in the County is manufacturing which accounts for just over 30% of all employment. While manufacturing industries are commonly perceived as the main components of local economy, other sectors are typically just as important and often provided regionally. Other sectors that are often provided regionally include: educational services, other non-manufacturing services, tourism and healthcare. These sectors are fairly balanced within Mifflin County. The Sectors that provide local dollars and do not bring in much regional uses are retail which is 13.5% of all employment in the County. The information within this plan is just a small portion of what should be studied. **The median household income is 32,175. The County should work towards the completion of an economic development strategy so as to focus its economic energies and spending.**

Table 5: Employment by Industry, 2000

Location / Region	Total	Agriculture, forestry, fishing and hunting, and mining		Construction		Manufacturing		Wholesale trade		Retail trade		Transportation and warehousing, and utilities		Information		Finance, insurance, real estate and rental and leasing		Professional, scientific, management, administrative, and waste management services		Educational, health and social services		Arts, entertainment, recreation, accommodation and food services		Other services (except public administration)		Public administration	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Pennsylvania	5,653,500	73,459	1.3	339,363	6.0	906,398	16.0	201,084	3.6	684,179	12.1	304,335	5.4	148,841	2.6	372,148	6.6	478,937	8.5	1,237,090	21.9	397,871	7.0	274,028	4.8	235,767	4.2
Mifflin County	20,466	888	4.3	1,162	5.7	6,178	30.2	632	3.1	2,760	13.5	923	4.5	362	1.8	624	3.0	749	3.7	3,601	17.6	1,067	5.2	771	3.8	749	3.7
Northeast	**3,629**	**197**	**5.4**	**106**	**2.9**	**1,129**	**31.1**	**120**	**3.3**	**406**	**11.2**	**157**	**4.3**	**38**	**1.0**	**102**	**2.8**	**160**	**4.4**	**670**	**18.5**	**205**	**5.6**	**154**	**4.2**	**185**	**5.1**
Armagh Township	1,798	101	5.6	45	2.5	696	38.7	83	4.6	181	10.1	87	4.8	29	1.6	36	2.0	59	3.3	228	12.7	90	5.0	61	3.4	102	5.7
Brown Township	1,831	96	5.2	61	3.3	433	23.6	37	2.0	225	12.3	70	3.8	9	0.5	66	3.6	101	5.5	442	24.1	115	6.3	93	5.1	83	4.5
Southeast	**1,473**	**45**	**3.1**	**107**	**7.3**	**568**	**38.6**	**34**	**2.3**	**178**	**12.1**	**90**	**6.1**	**9**	**0.6**	**33**	**2.2**	**35**	**2.4**	**230**	**15.6**	**66**	**4.5**	**37**	**2.5**	**41**	**2.8**
Decatur Township	1,473	45	3.1	107	7.3	568	38.6	34	2.3	178	12.1	90	6.1	9	0.6	33	2.2	35	2.4	230	15.6	66	4.5	37	2.5	41	2.8
South Central	**10,492**	**167**	**1.6**	**623**	**5.9**	**3,135**	**29.9**	**321**	**3.1**	**1,574**	**15.0**	**366**	**3.5**	**251**	**2.4**	**359**	**3.4**	**388**	**3.7**	**1,931**	**18.4**	**617**	**5.9**	**370**	**3.5**	**390**	**3.7**
Burnham Borough	1,075	8	0.7	60	5.6	320	29.8	25	2.3	129	12.0	66	6.1	45	4.2	75	7.0	18	1.7	207	19.3	62	5.8	49	4.6	11	1.0
Derry Township	3,356	17	0.5	241	7.2	1,027	30.6	58	1.7	509	15.2	109	3.2	88	2.6	111	3.3	148	4.4	679	20.2	118	3.5	87	2.6	164	4.9
Granville Township	2,309	128	5.5	125	5.4	652	28.2	123	5.3	314	13.6	69	3.0	53	2.3	76	3.3	71	3.1	455	19.7	102	4.4	87	3.8	54	2.3
Juniata Terrace Borough	220	2	0.9	10	4.5	79	35.9	6	2.7	33	15.0	10	4.5	2	0.9	9	4.1	9	4.1	41	18.6	2	0.9	7	3.2	10	4.5
Lewistown Borough	3,532	12	0.3	187	5.3	1,057	29.9	109	3.1	589	16.7	112	3.2	63	1.8	88	2.5	142	4.0	549	15.5	333	9.4	140	4.0	151	4.3
Southwest Central	**1,732**	**134**	**7.7**	**80**	**4.6**	**451**	**26.0**	**70**	**4.0**	**246**	**14.2**	**132**	**7.6**	**19**	**1.1**	**47**	**2.7**	**63**	**3.6**	**310**	**17.9**	**75**	**4.3**	**67**	**3.9**	**38**	**2.2**
Bratton Township	596	46	7.7	47	7.9	157	26.3	33	5.5	57	9.6	41	6.9	4	0.7	14	2.3	23	3.9	104	17.4	22	3.7	29	4.9	19	3.2
McVeytown Borough	179	2	1.1	2	1.1	53	29.6	10	5.6	26	14.5	14	7.8	3	1.7	3	1.7	0	0.0	48	26.8	13	7.3	2	1.1	3	1.7
Oliver Township	957	86	9.0	31	3.2	241	25.2	27	2.8	163	17.0	77	8.0	12	1.3	30	3.1	40	4.2	158	16.5	40	4.2	36	3.8	16	1.7
Southwest	**1,275**	**45**	**3.5**	**113**	**8.9**	**433**	**34.0**	**15**	**1.2**	**125**	**9.8**	**55**	**4.3**	**24**	**1.9**	**31**	**2.4**	**46**	**3.6**	**219**	**17.2**	**46**	**3.6**	**62**	**4.9**	**61**	**4.8**
Kistler Borough	136	2	1.5	25	18.4	35	25.7	6	4.4	18	13.2	5	3.7	3	2.2	0	0.0	3	2.2	19	14.0	4	2.9	9	6.6	7	5.1
Newton Hamilton Borough	111	0	0.0	9	8.1	51	45.9	2	1.8	11	9.9	2	1.8	3	2.7	0	0.0	0	0.0	17	15.3	6	5.4	3	2.7	7	6.3
Wayne Township	1,028	43	4.2	79	7.7	347	33.8	7	0.7	96	9.3	48	4.7	18	1.8	31	3.0	43	4.2	183	17.8	36	3.5	50	4.9	47	4.6
Northwest	**1,865**	**300**	**16.1**	**133**	**7.1**	**462**	**24.8**	**72**	**3.9**	**231**	**12.4**	**123**	**6.6**	**21**	**1.1**	**52**	**2.8**	**57**	**3.1**	**241**	**12.9**	**58**	**3.1**	**81**	**4.3**	**34**	**1.8**
Menno Township	647	134	20.7	48	7.4	137	21.2	27	4.2	78	12.1	43	6.6	2	0.3	9	1.4	20	3.1	68	10.5	22	3.4	51	7.9	8	1.2
Union Township	1,218	166	13.6	85	7.0	325	26.7	45	3.7	153	12.6	80	6.6	19	1.6	43	3.5	37	3.0	173	14.2	36	3.0	30	2.5	26	2.1

Source: U.S. Census Bureau

FIGURE 11: EMPLOYMENT BY INDUSTRY FOR THE EMPLOYED POPULATION OF MIFFLIN COUNTY, 16 YEARS OF AGE AND OVER, 2000



Source: U.S. Census Bureau

While CNH America is closing manufacturing will still dominate the industrial landscape. The major employers and associated industry sector are listed below:

MAJOR EMPLOYERS	INDUSTRY SECTOR
Lewistown Hospital	Health Care and Social Assistance
Mifflin County School District	Educational Services
Standard Steel LLC	Manufacturing
Trinity Packaging Corporation	Manufacturing
Overhead Door Corp	Manufacturing
Phillips Ultrasound Inc	Manufacturing
Wal-Mart Associates Inc	Retail Trade
Valley View Haven	Health Care and Social Assistance
Tuscarora Intermediate Unit II	Educational Services

Source: Pennsylvania Department of Labor and Industry, 2nd Quarter 2006

EMPLOYMENT AND INCOME

According to the Miffilin County's Industrial Development Corporation, Mifflin County's labor force is about 21,000 persons fluctuating from month to month. Of which, 1,000 or 4.6% are unemployed. Specific employment by industry broken down by employer units and persons per employment is provided in Table 6. The average annual wage by major occupational group is also provided in Table 7. On average, the annual wage based on occupational grouping within Mifflin County is slightly below that of the State.

TABLE 6: MIFFLIN COUNTY EMPLOYMENT BY INDUSTRY SECTOR, APRIL 2007

Industry Sector	Employer Units	Employment
Agriculture, Forestry, Fishing and Hunting	10	40
Utilities	4	39
Construction	97	569
Manufacturing	85	4,239
Wholesale Trade	55	616
Retail Trade	191	2,245
Transportation and Warehousing	48	616
Information	13	199
Finance and Insurance	55	446
Real Estate and Rental and Leasing	18	84
Professional and Technical Services	35	145
Management of Companies and Enterprises	N/A	N/A
Admin/Support, Waste Mgmt/Remediation Srvs	25	366
Educational Services	10	98
Health Care and Social Assistance	135	2,762
Arts, Entertainment, and Recreation	10	81
Accommodation and Food Services	77	1,074
Other Services, except Public Administration	101	419
Unclassified	N/A	N/A
Federal Government	17	106
State Government	15	180
Local Government	41	1,595

TABLE 7: MIFFLIN COUNTY AND THE STATE OF PENNSYLVANIA COMPARISON OF AVERAGE ANNUAL WAGE BY MAJOR OCCUPATIONAL GROUP, MAY 2006

Major Occupational Group	Mifflin County	PA
Total, All Occupations	$29,431	$36,322
Management Occupations	$68,122	$82,890
Business and Financial Operations Occupations	$40,269	$56,270
Computer and Mathematical Occupations	$63,964	$62,780
Architecture and Engineering Occupations	$46,346	$60,410
Life, Physical, and Social Science Occupations	$52,544	$55,350
Community and Social Services Occupations	$25,795	$33,740
Legal Occupations	N/A	$70,420
Education, Training, and Library Occupations	N/A	$46,170
Arts, Design, Entertainment, Sports, and Media Occupations	$40,312	$37,700
Healthcare Practitioners and Technical Occupations	$45,843	$55,240
Healthcare Support Occupations	$21,814	$23,590
Protective Service Occupations	$28,856	$34,690
Food Preparation and Serving Related Occupations	$15,736	$17,250
Building and Grounds Cleaning and Maintenance Occupations	$22,116	$22,010
Personal Care and Service Occupations	$20,860	$20,580
Sales and Related Occupations	$24,222	$31,400
Office and Administrative Support Occupations	$24,291	$28,500
Farming, Fishing, and Forestry Occupations	$19,466	$23,630
Construction and Extraction Occupations	$39,651	$38,830
Installation, Maintenance, and Repair Occupations	$30,682	$36,630
Production Occupations	$27,884	$30,820
Transportation and Material Moving Occupations	$25,399	$28,740
Military Specific Occupations	N/A	N/A

Demographic and Economic Overview Summary

- The region's older communities have experienced a "hollowing out" of its urban core, with many homes being demolished or converted to other uses. This "hollowing out" leads to a loss of tax and rate base, coupled with diminished economic development in most of these areas.
- Concurrent with the "hollowing out" of the urban core, land development activity continues to climb in once rural communities due to improvements in transportation, sewer, and water infrastructure. In many instances, some of the rate payers for sewer infrastructure that were once found in the County's boroughs have migrated to the rural municipalities. With the introduction of infrastructure into the rural municipalities in the County growth has occurred. Due to the growth the rural municipalities face additional maintenance and liability. With more homes being built further away from urban cores affordable infrastructure improvements will become increasingly difficult for existing rate payers.
- Based on projections, over the next twenty years the County will witness an increase of over 3,800 new residents and over 1,550 homes.
- The County needs to complete its Economic Development Strategy so as to focus its economic development efforts and spending.
- The median household income is 32,175.

II. Effluent Quality Requirements, Wastewater Collection and Treatment Facilities

Chesapeake Bay Overview

When most of the Mifflin County sewerage facilities were first placed into service, the status of each plant's available capacity was evaluated annually. The evaluation criterion was based on the average daily flow and annual average Biochemical Oxygen Demands (BODs) records. Since then, Chapter 94 regulations have been revised and now quantify the plant loadings based on more stringent criteria. The hydraulic loading status is now determined by the maximum monthly average flow sustained for three consecutive months. The current organic loading condition is now the maximum monthly average BOD_5. These revised loading criteria place increased emphasis on controlling wet-weather flow and high strength discharges to the various systems.

The Pennsylvania Department of Environmental Protection (DEP) Chesapeake Bay Strategy was developed to improve water quality and ultimately remove the Chesapeake Bay from the federal list of impaired watersheds by the year 2010. In order to achieve these goals, the amount of nutrients (mainly nitrogen and phosphorus) entering the Bay tributaries must be reduced. Excess nutrients are seen as the primary pollutants burdening the Bay. Excessive nutrients produce algae blooms in the water which in turn cause oxygen depletion and other adverse conditions that upset water quality. Excessive algae growth can also block the sun light that is crucial to support aquatic life.

The DEP Chesapeake Bay Strategy established point source Total Nitrogen (TN) and Total Phosphorus (TP) limits for wastewater treatment facility effluent concentrations. PADEP first introduced their strategy to implement stringent nutrient limits in December 2004. **The Chesapeake Bay Tributary Strategy will focus on all treatment plants within the watershed over time. At this time, the Department of Environmental Protection is focusing on the significant plants, those with a permitted capacity of 0.4 MGD or greater. The PADEP has established Total Nitrogen (TN) and Total Phosphorus (TP) loading limits based on wastewater treatment facility's achieving an average 6.0 mg/L TN and 0.83 mg/L TP effluent concentration at design flows. Established as annual mass (loading) limitations, the new limits will be part of each plant's National Pollution Discharge Elimination System (NPDES) permit and will be imposed within the treatment plants next NPDES permit renewal or by the year 2007, which ever is later. It is the DEP's goal that by October 2010, that the significant wastewater treatment facility's will have the necessary process modifications, plant upgrades, and/or nutrient trade agreements in place and in compliance with the required discharge limits.**

The purpose of this section is to present existing conditions of wastewater treatment facilities in Mifflin County and cost estimates with respect to implementation of nutrient removal technologies that will achieve effective levels of nitrogen and phosphorus removal as anticipated for municipal wastewater treatment plants discharging into the Chesapeake Bay watershed.

Summary of Individual Wastewater Treatment Systems

The following summary of wastewater treatment systems analysis is presented following the planning regions established in the December 2000 Mifflin County Comprehensive Plan. This section of the plan was developed from municipal Act 537 Sewage Facilities Plans, 2005 Chapter 94 Reports, from municipal employee interviews, and on-site inspections conducted in the summer of 2006 and follow-up phone calls in 2007.

Northeast Region

Armagh Township DRAFT Act 537 Plan, June 1997

The Armagh Township Municipal Authority collects and transfers sewage from the Milroy and Mount Pleasant areas of the township for treatment and disposal at the Brown Township Municipal Authority Wastewater Treatment Plant. This treatment system was constructed in 1980 and currently serves 776 residential customers and 38 businesses in Armagh Township.

Sanitary sewer services are provided to a very small portion of the township, and therefore, the majority of the residents utilize on-lot disposal systems for treatment and disposal of domestic wastewater. The types of on-lot systems vary and include in-ground systems, elevated sand mound systems, alternate and experimental systems, holding tanks and privies, and illegal wildcat systems. Of the over 800 on-lot systems in existence, 179 were constructed after 1972 in areas that are marginal or unsuitable for on-lot disposal system technology. In total, approximately 88 percent of the township's on-lot systems are failing or malfunctioning.

Two alternatives for implementation were identified in the plan, which are (1) expansion and infill of its current sewer service area with treatment and disposal provided by the Brown Township Municipal Authority's Treatment Plant; and (2) implementation of a Sewage Management Program, which would inspect all on-lot systems annually and would require homeowners to provide documentation of septic tank and holding tank pumpings.

The second alternative was selected and implemented in the latter part of 1999 and calls for dividing the township into 10 zones that will be implemented at a rate of one zone per year. Once a zone is implemented the septic has to be pumped every five years and be inspected every three years. (Mifflin County Comprehensive Plan)

Armagh Township

The Armagh Township public wastewater collection and conveyance systems are owned and operated by the Armagh Township Authority. Since the 1997 Plan to the end of 2007, the Township has increased its customer base from 776 to 935 residential users and 38 to 61 business users. All wastewater from Armagh Township discharges into the Brown Township Municipal Authority system. The Armagh Township Authority owns no major equipment.

Sewage Collection Systems

The Armagh Township sewer collection system consists of 17.6 miles of separate sanitary sewers, the original PVC-pipe system was built in the year 1980. The Armagh Township collection system flows entirely by gravity and has no pump stations. The Armagh Township Authority reports no major problems.

Armagh Township has a Spring I/I inspection and remediation program consisting of problem area isolation and repair of the isolated leaks.

The Township continues to implement of a sewage management program which has assisted in addressing malfunctions with individual properties as they occur.

Industrial Contributions

The Armagh Township Authority system includes Phillips Electronics North America Corporation, which is technically a Categorical Industrial User (CIU) under 40CFR433. An industrial Impact determination report concluded that the Phillips discharge has no adverse impact on the system or wastewater treatment facility. However, Phillips has recently approached the Brown Township Municipal Authority and the Armagh Township Authority concerning discharge of preteated industrial wastewater. Phillips has recently completed pilot testing of a treatment system, and they could possibly begin discharging to the collection system in 2008 pending a suitable pretreatment agreement.

Recent Extensions

During 2007, no extension was made to the Armagh Township Authority system, and none are currently planned for the upcoming year.

Brown Township Sewage Facilities Planning (Mifflin County Comprehensive Plan)

The Mifflin County Comprehensive Plan notes that the Brown Township Municipal Authority owns a wastewater collection and treatment system that serves the Reedsville, Lumber City, Church Hill, and Taylor Park areas of the township, as well as providing treatment for sewage from neighboring Armagh Township. Through a lease-back agreement, the system includes a treatment plant with a 600,000 gallon per day capacity. The system uses approximately 50 to 60 percent of its capacity depending on the time of year. There are 1,009 residential customers, 37 commercial customers, and 5 institutional customers in Brown Township. In Armagh Township, the system serves 935 residential customers and 61 commercial customers.

Brown Township is currently completing an update to its Act 537 sewage facilities plan.

Brown Township

Brown Township operates an extended aeration activated sludge wastewater treatment facility located in Reedsville. In 2007, the plant continues to be owned and operated by the Brown Township Municipal Authority and has a permitted capacity of 600,000 gallons per day. The plant has two full time licensed operators. The operators manage the treatment processes; carry out routine preventative maintenance at the plant and corrective maintenance of the wastewater collection system. The satellite pump stations are inspected biweekly. Repairs are made as needed, with such work being performed by local contractors or township maintenance crews as appropriate.

The Brown Township Supervisors own a sludge hauling and flushing truck, a sewer-cleaning machine, a sewer video inspection rig and a backhoe. All other major maintenance equipment are rented or contracted for as the need arises.

The Brown Township wastewater treatment facility discharges to Kishacoquillas Creek under NPDES permit No. PA0028088 which expires October 1, 2009.

Municipal Service Areas

The Brown Township public wastewater treatment facility, conveyance system and collection system serves users in Brown and Armagh Townships.

The general layout of the Brown Township sewage system includes the Church Hill-Gardenview section as it connects with Reedsville-Lumber City collection network. The Armagh Township system extends from Gardenview to serve the communities of Milroy and Mount Pleasant near the Laurel Creek Reservoir.

Sewage Collection Systems

Wastewater is presently collected in Brown Township by 16.3 miles of sanitary sewer lines of various 8, 10, and 18-inch diameters. **The original collection system was built in 1976. Annual inspections indicate the collection system in the township is in relatively good condition. The gravity sewer system has five known sags, which are cleaned two times per year. Infiltration is a problem to a small degree and no other major collection system problems presently exist.** The sewer system contains no combined sewer regulators, overflows, or bypasses.

Brown Township conducts annual I/I inspection and remediation each spring when water tables are high. The township performs nighttime flow inspections to locate problem areas. The suspected problem lines are plugged and televised. Any identifiable leaks are then repaired either by pressure grouting or standard excavation and replacement, depending upon the severity of the defect.

The Brown Township sewer use ordinances restrict the discharge of extraneous flow into the sewer system, such as stormwater inflow that might originate from roof gutter downspouts and basements drains.

Satellite Pumping Stations

The Brown Township Authority collection system has four pump stations. The established pump rates were confirmed in 2007 by measurements using draw-down tests and metering pump run times at the three large-capacity pump stations.

Using a flow peaking factor of 4, all four pump stations are projected to be hydraulically adequate operating at 46% of capacity or less.

Recent routine maintenance and repair activities included the Route 322 pump station (rebuilt 2 pumps), the Queen Street pump station pump (rebuilt 2 pumps) and the Glick-Marker pump station pump (rebuilt 1 pump).

The Queen Street Pump Station is a grinder station that serves multiple residences, so it has a further capacity limitation based on solids loading to the grinder pumps. **Based on manufacturer data, the Queen Street Pump Station is effectively at its solids loading capacity. However, there are no plans for any future connections to the Queen Street Pump Station.**

Industrial Contributions

The sewer use ordinances for the Brown Township Municipal Authority require submission of detailed operating information from industries that would be required to pre-treat their discharge. No significant industrial waste is presently being discharged to the wastewater treatment facilities.

Recent Extensions

During 2007, no extension was made to Brown Township Authority system. An extension to the Brown Township system is currently in planning and conceptual design stages for Edgewood Country Estates Phases 4-8, portions of which could be constructed as soon as 2008, with collection facilities for the balance planned for construction no sooner than 2009. A second Brown Township extension associated with the Quillas Creek development is currently in planning and conceptual design stages, portions of which could be constructed as soon as 2008.

Description of Existing Treatment Process

The present sewage treatment plant operates on the extended aeration activated sludge process. Existing unit processes include preliminary screening, aerobic biological treatment, secondary clarification and chlorine disinfection. Waste activated sludge is stabilized by aerobic digestion.

No offensive odors were experienced on the day of the plant tour. Treatment of organic and hydraulic loading appears to be adequate and the condition of the plant and machinery is excellent.

The treated effluent from the plant is discharged into Kishacoquillas Creek which drains into the Kishacoquillas watershed.

Plant Capacity

Brown Township initiated construction of the Brown Township Sewage Treatment Plant in April of 1975. It was completed and certified for operation in June, 1976. The original design capacity of the secondary treatment plant was 300,000 gallons per day. Based on the 2007 Chapter 94 **Reports, the permitted capacity is 600,000 gallons per day with an estimated average daily flow of 374,000 gallons per day leaving a reserve capacity of 226,000 gallons per day. Approximately 2,100 customers of the Authority are now being served by this facility that acts as a regional plant serving not only Brown Township but the adjacent municipality of Armagh Township.**

Brown Township's routine monitoring of their loadings is in compliance with the requirements of their NPDES Permit. Organic loadings are based on the standard influent sampling and laboratory analyses conducted at the Union Township wastewater treatment facility Laboratory in accordance with the NPDES Permit.

The Brown Township Wastewater treatment facility was designed for an average organic loading of 1,200 pounds of BOD_5 per day. The annual average influent BOD_5 loading during 2007 was calculated to be 569 pounds per day (ppd). The largest monthly average BOD_5 loading was

measured at 710 ppd, and in 2004, the largest monthly average BOD_5 loading was 1,061 ppd. The 2003 organic loading reported is approximately 90% of wastewater treatment facility's permitted capacity.

Statistically, the 1,061 ppd value should not be considered the true BOD_5 value for assessment. The Chapter 94 report identified the five-year-average annual BOD_5 as 618 ppd. Over the past five years, the average difference between the maximum-monthly-average BOD_5 and the annual average BOD_5 was 443 ppd. In order to account for "maximum monthly" loadings, this 443 ppd difference is added to the five-year-average BOD_5 to calculate the effective current wastewater treatment facility maximum monthly loading of 1,061 ppd. This effective current organic loading is 69% of permitted wastewater treatment facility capacity.

Average Flow

The existing treatment facility has a permitted capacity to treat 0.60 million gallons per day (mgd) of sewage. The reported 2007 annual average flow was 0.350 mgd representing an effective current hydraulic loading of 65% with respect to the permitted wastewater treatment facility capacity.

Brown Township's routine monitoring of their hydraulic loading is in compliance with the requirements of their NPDES Permit. Flow is measured at the outflow from the chlorine contact tank and is continuously recorded. The ultrasonic flow meter is calibrated by a factory technician semi-annually. Dated meter calibration stickers are affixed to the meter by the technician as proof of calibration.

The Brown Township wastewater treatment facility hydraulic loading for 2007 was 40.40 inches which is 94% of the thirty-year Pennsylvania mean. Of note, a major flood cause by tropical depression Ivan inundated the wastewater treatment facility site in 2004.

The five year average flow is calculated to be 0.374 mgd. This data indicates that the collection and conveyance system is in good condition and successfully excludes stormwater. This status is apparently a direct reflection of ongoing system assessment and repair activities conducted by the wastewater treatment facility operations personnel.

An additional flow meter measures flow from Armagh Township's Honey Creek Interceptor. The Honey Creek interceptor conveys approximately 83% of the total sewage flow originating from Armagh Township. The comparison of Armagh Township flows to Brown Township flows, based on measurements from the Honey Creek Interceptor and wastewater treatment facility meters indicates Armagh Township produces 48 to 52% of total dry weather flow and 55 to 60% of total wet weather flow. **This higher percentage of wet weather flow from Armagh Township indicates that a larger quantity of infiltration / inflow is entering via the Armagh Township system.**

Hauled Liquid Waste

The Brown Township wastewater treatment facility does not accept hauled liquid waste (Table 8).

Chesapeake Bay Nutrient Removal

In April 2006, Total Nitrogen and Total Phosphorus were added to the Brown Township wastewater treatment facility NPDES effluent monitoring requirements as an interim requirement**. The next permit renewal and associated nutrient loading limits will occur in October 2009.** As the nutrient monitoring requirement is relatively new, a limited amount of monitoring data exists regarding the present variations in effluent concentrations. The plant has reported average effluent concentrations of 12.0 mg/L nitrogen and 2.0 mg/L phosphorus.

As stated previously, the PADEP Chesapeake Bay Strategy will establish the new TN and TP loading limits based on wastewater treatment facility's achieving an average 6.0 mg/L TN and 0.83 mg/L TP effluent concentration at projected flows for the year 2010. The Strategy focuses on treatment plants with a permitted capacity of 0.4 mgd or greater. The Brown Township wastewater treatment facility has a design capacity of 0.6 mgd and a projected 2010 flow of 0.411 mgd.

The existing Brown Township wastewater treatment facility effluent nutrient loads are 13,662 lbs. TN and 2,277 lbs. TP at the 2005 average annual flow of 0.374 MGD. The anticipated annual nutrient loading limits (based on the Plant Design Flow) are 10,959 lbs. TN and 1,516 lbs. TP. **In order to meet the Chesapeake Bay Tributary Strategy, the plant must reduce its existing nitrogen loading 20% and phosphorus loading 34% by December 2009.**

Compliance Strategy

The Brown Township wastewater treatment facility is planning to implement treatment process modifications to achieve biological total Nitrogen and Phosphorus reductions with a back-up chemical addition system for Phosphorus precipitation. Biological Phosphorus removal and denitrification will require modifications to the aeration system, construction of tank baffles, installation of submersible mixers and an internal recycle system. Additional Phosphorus removal will require a chemical storage tank, a spill containment structure and a chemical feed system.

Planned Upgrades

As of October 2007, all current and planned upgrades to the Brown Township wastewater treatment facility are being designed for an average daily flow of 900,000 gallons per day (0.9 MGD). This represents an anticipated expansion of 50% to accommodate future growth.

In 2007, Brown Township applied and received $175,000.00 in Growing Greener funding to construct a new closed-loop denitrifying digester and high efficiency headworks bar screen. The construction of a new aerobic digester will allow conversion of the existing aerated sludge holding tank to a biological reactor vessel in order to achieve the theoretical detention times required for Biological Nutrient Removal (BNR). The Brown Township Authority anticipates an upgrade of wastewater treatment facility including implementation of BNR technology and re-rating of plant capacity in the year 2008.

Recommended Improvements

The proposed process modifications for implementation of biological nutrient removal will most likely require all of the available volume within the existing reactor basins. A portion of the existing basins satisfies the requirement for redundant secondary clarification. The utilization of the entire tank will forfeit this capability and require the construction of an additional secondary clarifier. The new clarifier would be comparable in size to the existing unit and sufficient land appears to be available immediately adjacent to the existing unit.

Estimated Costs

The anticipated cost for the up-grade of the process to achieve complete biological nutrient removal to the anticipated required effluent levels is approximately **$3,444,000** and includes the construction of an additional secondary clarifier.

The cost of back-up chemical addition and effluent filtration facilities to achieve phosphorus removal includes the chemical storage, chemical pumps and effluent filters with an estimated cost of **$900,000**.

Southeast Region

Decatur Township Official Sewage Facilities Plan 1994 Revision

The majority of the township's sewage disposal needs are reliant upon on-lot septic systems. Currently, there are no public or privately owned treatment facilities in the township. In accordance with the 1994 Act 537 Plan, the township supervisors have implemented an OLDS management program, which has been in operation since 1997. This program requires mandatory inspection and pumping of septic tanks every three years for all on-lot sewage disposal system in the township to mitigate the impacts of current and future system malfunctions.

The plan recommends that a public sewerage service be installed to service the more densely populated areas of the township when funding is available to make service affordable. The largest areas that could support such a system are the communities of Alfarata, Shindle, and Soradoville. The smaller densely populated areas could support small package treatment systems or community on-lot disposal systems.

Decatur Township

The Township does not contain any public sewer infrastructure.

South Central Region

Burnham Borough Act 537 Sewage Facilities Plan Revision, February 1987

The Burnham Wastewater Treatment Plant currently serves all of Burnham Borough (including about 30,000 gpd of domestic wastewater discharged to the Burnham collection system from the Standard Steel Company plant) and several properties in Derry Township (including the Greater Lewistown Plaza shopping center, Quality Inn and several properties on Eighth Avenue).

The original collection system in Burnham was constructed in the early 1900s and discharged wastewater and stormwater directly to Hungary Run and Kishacoquillas Creek. In 1959, intercepting sewers, combined sewer diversion chambers, and a wastewater treatment plant was constructed. In 1987, an Act 537 Plan was prepared, primarily to evaluate alternatives for expanding and upgrading treatment plant capacity. The expanded/upgraded wastewater treatment plant was placed into service at the end of 1989. As part of this project, sewers were constructed to serve three previously non-sewered areas of the borough. In 1998, the wastewater treatment plant was re-rated and as a result, no new construction was required for the wastewater treatment plant.

Since 1994, as funds become available, the Burnham Borough Authority has been implementing sewer system improvements to reduce extraneous flows to the wastewater treatment plant and reduce combined sewer overflows to Hungary Run and Kishacoquillas Creek. These improvements have been facilitated through the assistance of the Community Development Block Grant Program, which is administered by the Mifflin County Planning and Development Department. These grants have enabled the Authority to continue its sewer system improvements program.

The Borough is currently working on a regional Act 537 sewage facilities plan with Derry Township and Lewistown Borough.

Burnham Borough

Burnham Borough operates a two-stage trickling filter wastewater treatment facility located within Borough. Based on the 2007 Chapter 94 Report, the plant is owned by the Burnham Municipal Authority and has a permitted capacity 0f 640,000 gallons per day. The plant has two full time licensed operator and one operator in training. The operators manage the treatment plant and collection system. The Borough's sewage treatment system was originally constructed in 1959 and last upgraded in 1988/89 and presently provides secondary wastewater treatment for approximately 990 customers.

Municipal Service Areas

The Burnham Sewer System provides service to the entire community, including the Standard Steel Company and a portion of Derry Township.

Collection System

The Sewer System was originally financed and constructed by the Authority in 1959 (actually, the combined wastewater/stormwater collection system existed prior to 1959 and discharged directly to Hungry Run. The 1959 project included the original trunk/interceptor sewers, combined sewer overflow chambers, and the WWTP). Burnham Borough sewers were all originally combined (meaning they handle both storm water and sanitary sewage); however, there have been numerous sanitary/storm sewer separation projects and the majority of the

sewer system is no longer combined. Wastewater is collected in the borough via 53,900 linear feet of combined sewer lines of 24, 18, 10, and 8 inch diameters. **The exception is a portion of Walnut Street where most of the sewer lines have been separated.**

The oldest portions of the Burnham collection system are over 50 years old and various problems such as broken piping, roots in piping, and problems with manholes exist. Since 1995, the Authority has undertaken several storm/sanitary sewer separation projects and has eliminated all but one of the combined sewer outfalls in the collection system. The most recent collection system project involved construction of new storm sewers to separate combined sewers in Beech Street at 7th, 8th, and 9th Avenues, Freedom Avenue at Oak Street, and S. Walnut Street to Locust Street. During 2007, 480 feet of 12-inch sanitary sewer upstream of the WWTP were lined. Construction of these projects was financed using CDBG funding provided by the Mifflin County Planning & Development Department. These projects should significantly reduce the inflow of surface water and infiltration of ground water into the sanitary sewer, and discharge of combined sewage to Hungry Run and the Kishacoquillas Creek.

The Pennsylvania Department of Environmental Protection (DEP) issued Burnham's current National Pollutant Discharge Elimination System (NPDES) permit on November 9, 2004. NPDES permits are renewed every 5 years. Burnham's current permit expires on November 1, 2009. Burnham's NPDES Permit includes several new monitoring and reporting requirements relative to Burnham's Combined Sewer Overflows (CSOs). The Combined Sewer Overflow Regulatory Requirements were outlined in a letter to the Authority. The permit requires that Burnham submit forms to DEP to report CSOs from the collection system diversion chambers and CSO-related bypasses at the treatment plant.

The wastewater treatment facility staff is responsible for monitoring the sewer system diversion chambers and CSOs in accordance with the NPDES Permit. Burnham must submit CSO Reports to DEP with the monthly Discharge Monitoring Reports (DMRs) for the wastewater treatment facility, and a CSO Status Report must be submitted annually with the Chapter 94 Report. The CSO diversion chambers are the responsibility of the wastewater treatment facility personnel. The remainder of Burnham's wastewater collection system is the responsibility of the Borough Street Department.

Satellite Pumping Stations

The Burnham Borough sanitary conveyance system contains three grinder pump stations. Each station has a rated peak flow capacity of 21,600 gallons per day (gpd).

Industrial Contributions

The Standard Steel Works is the only significant industrial user connected to the Borough's sewer system. According to information supplied by the Borough and Standard Steel, no process wastes generated as a result of manufacturing activities are discharged into the Borough's sanitary sewer system. Only sanitary flows from shower and restroom facilities are allowed to be discharged into the system. The Standard Steel Works' monthly flows were monitored for 2007. The metered average daily flow from Standard Steel 2007 was approximately 40,400 gpd (0.0404 mgd), or approximately 11% of the wastewater treatment facility's total flow during the same period.

Recent Extensions

There have been no recent extensions to the Burnham Borough sanitary sewer system and no extensions are planned at this time.

Description of Existing Treatment Process

Burnham Borough operates a two-stage trickling filter wastewater treatment facility. The plant discharges treated effluent into the Kishacoquillas Creek which drains into the Juniata River watershed.

Existing unit processes at the plant include grit removal, maceration, primary clarification, 1st stage trickling filter, intermediate clarification, 2nd stage trickling filter, secondary clarification and disinfection with chlorine.

Primary clarification is accomplished by a clarigester where primary solids are anaerobically digested in a tank below the clarification unit. Waste biomass from the treatment process is also pumped back to the primary clarigester. The anaerobically digested solids are dewatered on sand drying beds or hauled to another treatment facility for further processing.

The grit system will only be operated when higher flows are anticipated due to a pending rain storm. This requires the staff to be more aware of forecasted weather conditions and turn the equipment on at the proper time. Additionally, the equipment must be kept in a condition so it can be turned on with out any appreciable delay. When the grit collection equipment is operated, the material should be visually inspected to determine the grit content. The grit that is removed from the system should be dried on the sand drying beds, and then bagged for disposal by Waste Management. Fecal and other treatable material should be recycled back into the flow stream via a newly installed drain system and allowed to flow to the influent comminutor. This management strategy will reduce fecal matter in the grit, but will increase wear on the downstream units.

Plant Capacity

The Burnham wastewater treatment facility permitted annual average hydraulic loading capacity is 0.64 million gallons per day (mgd). The plants monthly maximum hydraulic capacity is 0.90 mgd, and the monthly maximum organic loading capacity is 800 pounds of BOD_5 per day.

Based on the 2007 Chapter 94 Reports, the permitted capacity of 640,000 gallons per day with an estimated average daily flow of 372,000 gallons per day implies a reserve capacity of 268,000 gallons per day. Current wet weather flows to the plant are in excess of three million gallons after a heavy rain storm.

Based on the 2007 Chapter 94 Report, 990 customers are being served by the Burnham wastewater treatment facility.

Burnham Borough routinely monitors their loadings is in compliance with the requirements of their NPDES Permit. Organic loadings are based on the standard influent and effluent sampling. All samples are sent out for laboratory analyses. The wastewater treatment facility was designed for an average organic loading of 800 pounds of BOD_5 per day. The annual average influent BOD_5 loading during 2007 was calculated to be 382 pounds per day (ppd). The organic loading reported is approximately 48% of wastewater treatment facility's permitted capacity.

The wastewater treatment facility provided a satisfactory level of treatment during the 2007 year. The concentrations of Carbonaceous Biochemical Oxygen Demand (CBOD) and Total Suspended Solids (TSS) in the wastewater treatment facility effluent averaged 11 mg/L and 12 mg/L, respectively. All average monthly values were at or below the NPDES Permit monthly limits of 25 mg/L for CBOD and 30 mg/L for TSS. The maximum week average values for CBOD and TSS

were 18 mg/L and 21 mg/L; these values are well below the NPDES Permit maximum week limits of 40 mg/L and 45 mg/L for these parameters. However, the maximum CBOD Maximum Week value was 42 mg/L which is above the NPDES permit limit. The operations staff performed in-house laboratory analyses required for reporting purposes in accordance with the facility's NPDES Permit, as well as those analyses required for operational control. The results of the analyses performed for reporting purposes were submitted to the appropriate state and federal agencies as required by the permit.

Wastewater treatment facility sludge is pumped from the intermediate and final clarifiers to the primary clarifier, and is then settled in the unheated, unmixed digester located beneath the primary clarifier. Because there is no way to monitor the sludge to determine whether the digester provides adequate digestion, to qualify as a Process to Significantly Reduce Pathogens (PSRP), additional treatment is necessary before the dewatered sludge can be disposed of. The extra treatment includes 3 months of air drying with at least 2 of the 3 months being at an average temperature above freezing. Due to limited size of the drying beds, this requirement for 3 months is sometimes difficult to achieve. During the plant tour, plant staff explained how the 10 beds could be divided into 20 half-size beds, which would allow for more frequent transferring of sludge from the digester and onto the beds. The increased application frequency will help operations cope with the required 3-month drying period.

The overall condition of the existing plant and machinery is good. The influent grit removal was off-line at the time of the plant tour. The First-Stage Trickling Filter sometimes experiences rotation problems that were reported by the operator. At times, the arms stop rotating during low flow periods, probably due to wear. This is a concern because failure to maintain rotation of the distribution arms will adversely impact the treatment efficiency of the wastewater treatment facility. As a temporary remedy of the problem, the staff increased the recirculation flow rate through the trickling filters to keep the distribution arms moving during low flow periods. The bearings were replaced in the Frist Stage Tricklying Filter in 2006 and the arm is now rotating properly. Postponing the repairs may result in more substantial costs at a later time, if non-sacrificial wear items are worn to a point where they no longer protect more expensive components.

Average Flow

Because the Burnham WWTF is a CSO facility, when it rains a lot, peak flows to the plant equal or exceed the maximum pumping capacity of the plant. However, the Chapter 94 Reports show that all monthly and annual hydraulic and organic loadings to the WWTF are below the plant's permitted capacity. In addition, the WWTF meets all of the discharge requirements of its NPDES Permit, with rare exceptions that are reported to the DEP/EPA as required. The secondary treatment units, which were constructed during the late eighties expansion/upgrade, are only designed to handle 0.90 mgd. **If the last collection system CSO is eliminated, the plant would no longer be considered a CSO facility and there would be compliance problems. Nonetheless, the pending Act 537 Plan will identify and evaluate alternatives to increase the amount of flow that receives secondary treatment.**

Hauled Liquid Waste

The Burnham Borough wastewater treatment facility does not accept hauled liquid waste.

Chesapeake Bay Nutrient Removal

Within the next 2 years, the Burnham wastewater treatment facility will need to be substantially upgraded to comply with Pennsylvania's Chesapeake Bay Nutrient Reduction Strategy. The

PADEP Chesapeake Bay Strategy will establish the new TN and TP loading limits based on wastewater treatment facility's achieving an average 6.0 mg/L TN and 0.83 mg/L TP effluent concentration at annual average design flow. The Strategy focuses on treatment plants with a permitted capacity of 0.4 mgd or greater. The Burnham Borough wastewater treatment facility has a design capacity of 0.64 mgd.

The Burnham wastewater treatment facility initiated bi-weekly analysis of nutrient concentrations in April 2006. Nutrient loadings vary by season and insufficient data exists to precisely estimate the annual average effluent concentrations. The anticipated annual nutrient loading limits (based on the Plant Design Flow) are 11,689 lbs. TN and 1,559 lbs. TP. Since the plant was initially designed for reduction of BOD_5, it's assumed that very little if any nutrient reduction presently occurs. **The plant must reduce its existing nitrogen loading and phosphorus loading by December 2012 or 2013.**

Compliance Strategy

The Burnham Borough wastewater treatment facility presently utilizes trickling filter technology as the biological treatment portion of the process. This is an aerobic process that does not easily lend itself to nutrient reduction. Trickling filters can achieve nitrification with a synthetic media packed to a depth of 23-feet or greater. The existing trickling filters only have a media depth in the range of six to seven feet. An upgrade of the existing trickling filters would only address the nitrification of ammonia. Phosphorus removal and denitrification would still need to be accomplished.

Phosphorus removal can be accomplished by chemical addition and precipitation in the primary clarifier or intermediate clarifier. The second stage trickling filter would need to be replaced by a biological process that can achieve nitrification and denitrification. If the first stage trickling filter remains in the treatment scheme, an additional carbon source (methanol) may also be required to support the process. The addition of methanol would require the construction of a chemical storage tank and spill containment structure.

Planned Upgrades

The Burnham Authority is discussing options with their engineering consultant regarding compliance with the Pennsylvania Chesapeake Bay Nutrient Reduction Strategy. Burnham has originally authorized Gannett Fleming to prepare an Act 537 sewage facilities planning study, in conjunction with Lewistown regional Act 537 planning activities. Among other things, the regional planning studies will determine the feasibility of conveying Burnham's wastewater to the Lewistown wastewater treatment facility in the future. Work on the Act 537 Plan Update continued during 2007. In 2007, Gannett Fleming sent a letter to Lewistown Borough requesting information relative to the availability and costs of obtaining wastewater conveyance and treatment capacity and sludge disposal in Lewistown's wastewater facilities. Pending the outcome of the Act 537 planning study, it is recommended that work activities at Burnham's wastewater treatment facility be limited to the necessary maintenance and repairs.

CET engineering Services is currently preparing a proposal to evaluate alternatives to determine the most cost-effective means of achieving compliance with the Chesapeake Bay Tributary Strategy. The Borough expects a completed 537 Plan in 2008.

Recommended Improvements

The Burnham wastewater treatment facility has three options for compliance with Pennsylvania's Chesapeake Bay Nutrient Reduction Strategy.

- Up-grade the wastewater treatment facility to achieve required nutrient reductions, or
- Construct a new activated sludge facility at the Burnham WWTP, or
- Purchase nutrient loading credits (if available) from DEP, or
- Convert the wastewater treatment facility into a flow equalization facility and gradually pump raw influent into the Borough of Lewistown system.

Estimated Costs

The previous consultant for the Burnham Authority (Gannett Fleming) has issued an estimate of the replacement costs for the wastewater treatment facility and pumping stations to the Borough on October *25,* 2005. The Opinion of Probable Replacement Costs estimated the total replacement cost, including an allowance of 10% for removal of debris, at **$6,000,000**. The replacement cost estimate was provided to assist the Borough in complying with the Authority requirements of Article 8.01 of the Agreement of Lease.

The cost of converting the existing tankage to flow equalization facilities is difficult without a structural evaluation of the existing units. CET is preparing a level of effort estimate for the supplemental wastewater treatment facility evaluation associated with the impact of the fixture TN and TP limits as part of the 537 plan update.

Derry Township Act 537 Official Sewage Facilities Plan 1997 Update; June 1997 and Act 537 Plan Revision/Update, Burnham Sewage Transport; October 2004

The sanitary sewer system serving Derry Township is owned by the Derry Township Sanitary Sewer Authority (DTSSA) and leased to the township. The system is, in turn, operated by the authority by annual resolution of the township. The DTSSA is responsible for the operation and maintenance of the collection system.

Sanitary sewer service is provided to 2,228 residential customers and 20 non-residential customers in and around the Village of Yeagertown and the portion of Derry Township adjacent to Lewistown Borough. Most of the wastewater collected in Derry Township is transported to the Lewistown Borough Sewage Treatment Plant under an existing treatment agreement between Lewistown Borough and the DTSSA.

The remaining portion of the township is served by on-lot disposal systems, which range from conventional on-lot systems to direct stream discharge. A significant number of the on-lot systems are not adequately maintained, resulting in malfunctions. The township supervisors have implemented an OLDS Management Program that will require regular inspection, maintenance, and pumping of all on-lot sewage disposal systems in the township to mitigate the impacts of current and future system malfunctions.

The Burnahm Sewage Treatment Plan Update investigates the conveyance capacities and condition of existing Derry Township Sanitary Sewer Authority (DTSSA) sewage facilities for the possible future transport of Burnham Borough sewage flow to the Lewistown Wastewater Treatment Plant. Conveyance Capacities and Condition of the following DTSSA facilities are examined:

- Main Interceptor – South
- Main Pumping Station
- Force Main
- Kishacoquillas Creek Relief Interceptor

It is recommended that the upgrades to the DTSSA Main Pumping Station be performed in the next three years to alleviate the periodic Main Interceptor – South and Main Pumping Station Wet Well surcharging that takes place during storm events. Should Burnham Borough decide to enter into a conveyance agreement with DTSSA this proposed upgrade may need to be completed by an earlier date.

The existing DTSSA conveyance system has a current available future capacity of 0.64 MGD which could be used by Burnham Borough contingent upon upgrades to the DTSSA Main Pumping Station. Interceptor upgrades are only necessary if Burnham Borough requires more than 0.64 MGD of peak flow.

Up to 1.0 MGD of peak capacity flow could be obtained with the installation of a 3,200 foot long parallel interceptor along the Main Interceptor – South located in Derry Township Park. This addition would eliminate 11 of the capacity limiting pipe segments.

Implementation of the above described alternatives will be undertaken once the required inter-municipal agreements are adopted by Burnham Borough, Derry Township, Lewistown Borough, and their corresponding sewer authorities.

Derry Township is in the process of developing a regional 537 Plan with Burnham and Lewistown Boroughs.

Derry Township

A portion of Derry Township is provided public sewer infrastructure through Burnham and Lewistown Borough's wastewater treatment facilities.

Municipal Service Area

In 2006, the sanitary sewer system serving Derry Township, Mifflin County, is owned by the Derry Township Sanitary Sewer Authority, and leased to the Township. The system is, in turn, operated by the Authority by annual Resolution of the Township. Sanitary sewer service is provided to 2,279 residential customers and 78 non-residential customers in and around the Village of Yeagertown and the area of Derry Township adjacent to Burnham and Lewistown Boroughs. All wastewater collected in Derry Township is transported to the Lewistown Borough Wastewater Treatment Plant under an existing agreement between Lewistown Borough and the Derry Township Sanitary Sewer Authority (DTSSA).

Collection System

The Derry Township Sanitary Sewer Authority existing collection system contains the following: approximately 199,748 L.F. of 8" and 10" collection mains; 6,571 L.F. of low pressure collection mains with 41 E-One Grinder Pumps; 27,773 L.F. of 12", 15", 16", 18", 21", and 24" Interceptor sewer mains; and approximately 955 manholes.

The Burnham Sewer District is comprised of a gravity sewage collection system discharging to the Burnham Borough Wastewater System at various locations in accordance with an existing agreement with Burnham Borough. Approximately 600 L.F. of 8" pipe is located along 8th Avenue. Sanitary sewer service is provided to 11 residential customers. The sewage collection system in this district is owned and operated by the Derry Township Sanitary Sewer Authority, and serves users in Derry Township.

Pumping Stations

Derry Township's sanitary conveyance system contains two pump stations. The first is the Derry Township Main Pump Station located along Bridge Street near its intersection with Electric Avenue. This pump station serves all areas in the Township's sewer system with the exception of the South Hills Area, Lewistown Heights, and Glenwood Area of the Township. There is no known growth proposed in the pump station service area at this time. The pump is a series of three pumps with a capacity - 400 gpm. The second pump station is the Upper Glenwood Pump Station located along U.S. Route 522 northeast of its intersection with Orchard Avenue. The pump station serves the Upper Glenwood area of the Township. This area serves 60 EDU's. This pump station has two pumps each with a capacity - 100 gpm.

Industrial Contributions

There are no industrial contributions within the Derry Township sanitary conveyance system.

Description of the Existing Treatment Process

All wastewater treatment and process information for Derry is referenced in the Burnham and Lewistown Borough's wastewater treatment facilities section of this chapter.

Compliance Strategy

Because all of Derry Township's flows are transferred to the Burnham and Lewistown wastewater treatment facilities, the Township does not have a direct compliance requirements associated with the Chesapeake Bay Tributary Strategy but will have indirect compliance obligations as they send flows to both the Burnham and Lewistown wwtp.

Planned Upgrades and Extensions

There are no planned upgrades or extensions planned for the Derry Township sanitary conveyance system or pump stations.

Granville Township Official Sewage Facilities Plan; 1987 Update, Volume II, Maps; Revised 1988

The township owns and operates two wastewater treatment plants – Junction and Strodes Mills. Junction treatment plant began operating in 1991 and services portions of the township south of U.S. Route 522. The Strodes Mills system started operations in 1996 and serves the community of Strodes Mills, an elementary and a middle school, as well as several homes in Oliver Township.

A portion of the township, known as the Klondike area, has public sewers which are treated at Lewistown Borough's facility.

The area north of U.S. Route 522, predominantly the Ferguson Valley area is still served by on-lot systems. Since this area is a remote, rural area of the township, there are no immediate future plans of extending public service to this area. If necessary, the township will adopt stricter on-lot control measures.

Granville Township Official Wastewater Facilities Plan Special Study, May 2000; Revised December 2000

The Special Study for the Act 537 Official Wastewater Facilities Plan Revision was initiated because it was determined that the current plan does not address the need for improved sewage facilities. The study focused on the Granville Township Wastewater Treatment Plant, also known as the Junction Treatment Plant. The treatment plant serves three districts in portions of the township south of U.S. 522. The projected future growth for the three districts is expected to exceed the permitted treatment capacity at the Junction Treatment Plant.

The update addresses a two-phase flow increase to the Junction Treatment Plant. The first phase proposes an upgrade to the existing treatment plant to increase the plant's hydraulic capacity from 400,000 gpd to 500,000 gpd. The second phase proposes an expansion of the existing facility to increase the treatment capacity to 1 mgd.

The Junction Treatment Plant is presently designed to treat 500,000 gpd although it is only permitted to treat 400,000 gpd. By upgrading the existing plant to a treatment capacity of 500,000 gpd, the projected increase in flow for the five year planning period will be accommodated. Basic equipment changes at the existing facility will be required to achieve the desired upgrade.

Granville Township

Granville Township operates two Sequencing Batch Reactor (SBR) activated sludge wastewater treatment plants located in Granville Junction and Strodes Mills. The former Juniata Terrace (Trickling Filter) wastewater treatment facility has been decommissioned and replaced by the Juniata Terrace pumping station. Sanitary flow is presently conveyed from the Borough of Juniata Terrace to the Granville Junction plant.

The Granville Township Junction wastewater treatment facility has a permitted hydraulic capacity of 0.5 mgd. The Strodes Mills plant is also an SBR plant and has a permitted capacity of 0.066 mgd.

Three (3) full-time Pennsylvania-certified licensed operators and two laborers carry out of sampling, analysis and operational process control. They staff both treatment plants, service pumping stations and maintain the collection systems. An operator is on call 24 hours a day to respond to any emergency that may arise.

All testing for the Discharge Monitoring Reports for both plants are carried out at the Junction Plant in accordance with "Standard Methods for the Examination of Water and Wastewater" and/or other U.S. Environmental Protection Agency approved methods.

Service Areas

The Juniata Terrace Borough Sewage Treatment System was originally constructed in 1924 to serve the village of Juniata Terrace which was an unincorporated village within Granville Township. The treatment plant at that time was a primary treatment facility with a design capacity of 100,000 gallons per day. The collection system served the residential area on Viscose Hill which was a "Company Built" residential area for the American Viscose Plant. In 1968 Juniata Terrace incorporated to become a borough and in 1971 the borough's treatment plant was upgraded from primary to the secondary level with no change in the design capacity of the system. The treatment works were officially decommissioned in August of 2001 and replaced by the Juniata Terrace pump station that presently conveys flow to the Granville Township Junction system.

The Stodes Mills wastewater treatment facility serves the local community and a portion of Oliver Township. The community collection system as installed serves residential units in Strodes Mills as well as areas along Route 22-522 in both Townships and Township Road 710 as far south as Lockport and as far north as State Game Lands No. #113.

Collection System

The Sewer & Water Department performs periodic checks in the sanitary sewer system and obtain data for future use. While performing these checks, no observations of indicators were made for problems of overloading in the system except during extreame precipitation events. **These observations indicate the system is operating at less than design capacity.** The staff cleans and televises several areas each year.

A preventive maintenance schedule was implemented to clean, repair and record any problem areas in the gravity sewer line. This program will be continued as needed.

Wastewater in the Borough of Juniata Terrace is collected by over 3,000 linear feet of sewer lines of 6, 8, and 12 inch diameters. The collection system is 84 years old and is now experiencing significant inflow and infiltration problems.

The former trickling filter treatment plant was decommissioned in August of 2001. Borough flow is presently conveyed to Granville Township's Junction Plant by the Juniata Terrace pump station.

The Strodes Mills wastewater treatment facility project was constructed by a joint venture with Oliver Township in the Strodes Mills area. The project provided a secondary treatment plant and 30,000 linear feet of sanitary sewage lines.

Satellite Pumping Stations

The sewerage system includes seven (7) pumping stations. All of the pumping stations are functioning properly. Pumping Station No. 1, the Industrial Road pump station was replaced in 2006 as it was over 35 years old and in need of major work.

There are 20 grinder pumps located throughout the collection system. Spare parts are kept on hand to enable the Township to rebuild the grinder pumps as needed. Two complete spare pumping units are kept in stock to replace a disabled pump so that a homeowner should never be without service for any lengthy period.

Industrial Contributions

Service is provided to two industries which are technically Categorical Industrial Users (CIU) under 40CFR433. There are no other industries contributing process wastewater into the Granville Township System. The Township issues permits to industrial/commercial dischargers and monitors these sites regularly. Routine on-site industry inspections verify flows are exclusively generated by employee showers, lunch room and rest room facilities. The user permits are renewed every year. Random site visits are made to industrial facilities throughout the year to verify compliance with the rules and regulations governing industrial waste discharges. There are no known problems in any portion of the sewerage system associated with industrial wastes. Flows from industry are closely monitored and on average total approximately 40,000 gallons per day.

Recent Extensions

Industrial Park East, an industrially zoned complex consisting of approximately 316 acres, is expected with significant flow contributions anticipated in 2008. This industrial complex is expected to result in approximately 60 additional EDUs. A commercial retail complex is also expected to generate approximately 70 additional EDUs.

Future residential development, industrial park growth and growth resulting from the S.R. 0022 project are all expected to significantly contribute to wastewater flows to the treatment plant. **Due to major delays in completion of the S.R. 0022 project, flows that were anticipated previously in 2006 are just now beginning to be realized.**

Description of Existing Treatment Process

The Granville Township Junction Plant is an activated sludge biological treatment facility. The treatment plant makes use of primary screening, two Sequencing Batch Reactors (SBR's) and aerobic sludge digestion. The plant is relatively new and began operating on July 10, 1991. Disinfection is presently accomplished by chlorine addition.

The Strodes Mills Area Wastewater treatment facility is an activated sludge facility that also uses the Sequencing Batch Reactor design. The plant began operations in July 1995 under the Strodes Mills Area Wastewater treatment facility Npdes Permit No. 0084778, and PADEP-BWQ PART II no. 4493402 permit.

Plant Capacity

The Granville Township Junction Plant has a PADEP-BWQ Part II hydraulic permitted capacity of 0.5 mgd. The NPDES permit recognizes 0.75 mgd hydraulic loading capacity for peak 3 month flows. During 2007, the average daily flow of wastewater through the plant was 0.291 mgd.

The permitted organic capacity of the treatment plant is 1,300 lbs/day. This is based on a BOD concentration of 312 mg/L at a design flow of 0.5 mgd. The organic loading for 2009 is projected to be 735 lbs/day. This projection corresponds to a reserve organic capacity of 585 lbs/day.

The maximum one-month average daily organic loadings for the previous *five* years were used to calculate a five-year projection. The maximum one-month average daily organic loading for 2012 is projected to be 960 lbs/day. This projection corresponds to a reserve organic capacity of 340 lbs/day.

There are no projected overloads of the permitted capacity over the next 5 years.

The Strodes Mills wastewater treatment facility has a PADEP-BWQ Part II hydraulic permitted capacity of 0.066 mgd. The treatment plant is owned and operated by Granville Township. Based on the 2007 Chapter 94 Report, the average daily flow of wastewater through the plant was 35,000 gallons per day (gpd) or approximately 12,775,000 gallons for the year.

The hydraulic loading for the year 2012 is projected to be 0.037 mgd. Based on the permitted hydraulic loading capacity of 0.066 rngd, this projected loading corresponds to an average reserve capacity of 0.028 mgd.

The maximum three-month average daily flows for the previous five years were used to calculate a five-year projection. The maximum three-month average daily flow for the year 2012 is projected to be 0.038 mgd. This projection corresponds to a reserve capacity of 0.028 mgd.

The organic capacity of the Strodes Mills plant is designed for 147 lbs/day. The average organic loadings for the past five years were used to determine a five-year projection. The organic load for 2012 is projected to be 87 lbs/day. This projection corresponds to a reserve organic capacity of 52 lbs/day.

The maximum one-month average daily organic loadings from the previous five years were used to calculate a five-year projection. The monthly maximum daily loading for the year 2012 is projected to be 124 lbs/day. This projection corresponds to a reserve organic capacity of 23 lbs/day.

The Township's Act 537 Plan addresses the need to consider an expansion to increase the plant's hydraulic capacity to 1.0 mgd. It is anticipated that this expansion will be required within the next five to ten years.

The Township has experienced moderate growth over recent years. The Township anticipates several developments and/or industrial dischargers to be connected to the system over the next five to ten years. However, during 2004 the Township experienced a decrease in EDUs due to industrial and commercial closures and downsizing. Flows from the Borough of Juniata Terrace were reported by the Borough at an average of 26,700 gallons per day during 2007.

The Junction plant experienced a hydraulic increase from the 2006 report due to ten new customers and 8 more inches of rainfall. The equivalent dwelling units for this service area increased slightly over the year, due to new commercial units and houses being built. Lowe's store is constructed and using the sewage connection and the car wash is no longer discharging into the Borough System and is now discharging to the Junction collection system.

Hauled Liquid Waste

The Granville Township Junction Plant accepts septage that has been generated within Granville Township and surrounding municipalities. The Junction plant typically receives 10,000 gallons of domestic septage and 30,000 gallons of other liquid waste on an annual basis. The current rate established for accepting liquid waste is 7½ cents per gallon. The Strodes Mills wastewater treatment facility does not accept hauled liquid waste.

Chesapeake Bay Nutrient Removal

The Granville Junction Plant recently renewed its NPDES permit. Until December 31, 2009, Total Nitrogen and Total Phosphorus will be added to the Granville Township Junction wastewater treatment facility NPDES effluent monitoring requirements as an interim requirement. The nutrient monitoring requirement is relatively new and a limited amount of monitoring data exists regarding the present variations in effluent concentrations. The plant has reported average effluent concentrations of 1.3 mg/L phosphorus and 13.0 mg/L nitrogen. By the numbers reported, it appears that the existing treatment process is achieving denitrification. The phosphorus reductions are attributed to iron in solution from an industrial discharge. From January 1, 2010 to October 31, 2011 the plant can discharge maximum annual loadings of 15,196 lbs of Total Nitrogen and 1899 lbs of Total Phosphorus.

As stated previously, the PADEP Chesapeake Bay Strategy established the new TN and TP loading limits based on wastewater treatment facility's achieving an average 6.0 mg/L TN and 0.83 mg/L TP effluent concentration at projected flows for the year 2010. The Strategy focuses on treatment plants with a permitted capacity of 0.4 mgd or greater. The Granville Township Junction wastewater treatment facility has a design capacity of 0.5 mgd and is expecting a 2010 flow of 0.625 mgd.

The existing Granville Township Junction wastewater treatment facility effluent nutrient loads are 11,515 lbs. TN and 1,152 lbs. TP at the 2007 average annual flow of 0.291 MGD. The annual nutrient loading limits in relation to the plant design flow are 9,132 lbs. TN and 1,263 lbs. TP. **At the existing effluent concentrations the Junction plant will need to reduce existing nitrogen levels by 26 percent by the year 2010 to meet the anticipated allocation. The plant is very close to the anticipated limit for phosphorus and will need to reduce the phosphorus if the hydraulic flow and/or phosphorus levels increase above existing levels.**

The anticipated DEP nutrient loading limits presented are contained in the new permit. DEP used 0.625 mgd for the Granville Township Junction wastewater treatment facility 2010 flow.

Compliance Strategy

The Township's Act 537 Plan addresses the need to consider an expansion to increase the plant hydraulic capacity to 1.0 mgd. It is anticipated that this expansion will be required within the next five to ten years.

Planned Upgrades

The average hydraulic loading for the year 2012 is projected to be 0.423 mgd. Based on a permitted average hydraulic loading capacity of 0.500 mgd, the projected loading corresponds to a reserve hydraulic capacity of 0.077 mgd.

The maximum three-month average daily flows for the previous five years were used to calculate a five-year projection. The maximum three-month average daily flow for the year 2012 is projected to be 0.449 mgd. This projection corresponds to a reserve hydraulic capacity of 0.251 mgd.

The Granville Junction plant expects to reach capacity before the year 2015 unless development occurs more rapidly than anticipated. An expansion and upgrade are in progress to increase plant capacity to 1.0 mgd. The facility plans to convert the existing reactor basins to aerobic digesters. New reactor basins would be constructed in new tank configurations expandable in modules of 0.5 mgd up to a total of 2.0 mgd. The conversion would only require minor modifications and a modest amount of equipment. The SBR design is well suited for denitrification. A process control software upgrade is planned that will give operators the capability to reduce total nitrogen to the anticipated limits.

A conversion from Chlorine gas to ultraviolet light (UV) disinfection is also presently in the works. Temporarily, chemical feed equipment is under design to reduce the phosphorus levels in the effluent at the current facilities.

Recommended Improvements

The plant should be able to achieve the nitrogen allocation loading limit by implementing the planned software upgrade and SBR process controls. The plant is slightly above the anticipated limit for phosphorus while enjoying the current benefit of iron addition to the waste stream. To reduce the phosphorus concentration below the current level will require additional metal salt addition and effluent polishing filters.

Estimated Costs

The anticipated cost for a software up-grade of the process controls to achieve the required level of denitrification is approximately **$25,000**. The cost of chemical addition to achieve phosphorus removal includes the chemical storage, chemical pumps and piping with an estimated cost of **$100,000**.

Juniata Terrace Borough

Juniata Terrace Borough Act 537 Plan; April 1997

The 1997 Plan identified two major sewage related problems in the borough: the existing 0.12 MGD treatment facility has experienced deterioration and operational problems due to its age (it was constructed in 1924); and the condition of the existing collection system which is deteriorated in sections and dangerous due to the age of the manholes. Replacement and rehabilitation work has been identified that will fix the problems.

The solution to the first major problem is to abandon the existing treatment facilities and construct a gravity main to flow the sewage to the Granville treatment facilities for treatment. The solution to the second major problem is to slipline approximately 2,600 linear feet of sewer line, replace 450 linear feet of sewer line, and replace 19 manholes.

The old plant was expected to be abandoned by 2001. Existing flows are approximately 0.03 MGD and the projected 20 year flow is 0.07 MGD.

Juniata Terrace Borough contains a pump station that presently conveys flow to the Granville Township Junction system.

Lewistown Borough Official Sanitary Sewerage Plan, October 1971

The Lewistown Borough sanitary sewer system consists of over 28 miles of sanitary sewer mains ranging in size from six inch to 24 inches in diameter, 40 miles of four through six inch diameter service connections, over 620 manholes, two metering chambers, and the Lewistown WASTEWATER TREATMENT FACILITY. Lewistown also provides wastewater conveyance and treatment for Derry Township and a small portion of Granville Township. The Lewistown WASTEWATER TREATMENT FACILITY currently serves 7,375 equivalent dwelling units (EDUs) consisting of 4,375 EDUs in Lewistown Borough, 2,904 EDUs in Derry Township, and 95 EDUs in Granville Township.

Lewistown's records indicate the original sewer system was constructed prior to 1900 as a combined sanitary and stormwater system that discharged directly to the Kishacoquillas Creek and Juniata River. In the early 1950s, an interceptor system and the wastewater treatment plant were constructed and many of the combined sewers were separated. This original collection system and interceptors, which are mostly clay pipe still comprise much of the borough's sanitary sewer system.

In 1980, the wastewater treatment plant was expanded to a capacity of 2.4 mgd to handle existing and projected flows from Lewistown Borough and Derry and Granville Townships, and the plant was upgraded to provide secondary treatment.

In 1990, Granville Township constructed its own treatment plant and diverted much of its own sewered area from the Lewistown plant. In March 1999, the PADEP rerated the plant's hydraulic capacity to 2.818 mgd as an annual average flow and to 3.945 mgd as the monthly maximum flow.

Lewistown Borough Sewage Treatment Plan Additions and Alterations, Feasibility Report, 1972

All information relating to the Lewistown Borough sewage treatment plant and sewerage system was taken from the 2000 Mifflin County Comprehensive Plan, and is listed above.

Lewistown Borough Act 537 Sewage Facilities Plan Update; Draft April 2008

The major issues addressed as part of this update include:

- Projections of growth within the service area at design year conditions 2027 and resultant wastewater generation.
- Evaluation of alternative nutrient reduction technologies and strategies that will allow the Borough to comply with its new National Pollutant Discharge Elimination (NPDES) permit and the requirements of the PADEP Chesapeake Bay Tributary Strategy.
- Evaluation of improvements required to maintain normal operations during a 25 year storm.
- Evaluations of improvements required to protect the Lewistown Wastewater Treatment Facilities from damage during the 100-year flood.
- Evaluation of improvements required at Lewistown's WWTP to extend the service area to include the Borough of Burnham.
- Evaluation of improvements required to accept trucked sludge and/or septage for Burnham Borough's WWTP and other sources in the area.
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The recommendations contained within this document are under consideration from the PADEP.

Lewistown Borough

The Borough of Lewistown owns and operates a secondary waste water treatment plant located within the Borough. The Borough's primary sewage treatment plant was originally constructed in 1954 and put into continuous operation in early 1955. The facility was later

upgraded to secondary treatment and presently has a design capacity of 2.82 million gallons per day (mgd) with an estimated average flow of 1,690,000 gallons per day.

The plant has three full time licensed operators that monitor process controls and make any necessary process adjustments.

Service Areas

The Lewistown Sewage System serves three municipalities. Lewistown Borough is wholly served by the sewage system with the exception of five lots, while a portion of Derry Township is provided conveyance and treatment service, and Granville Township has the Mifflin County Industrial Park being served by sewage lines owned by the Mifflin County Industrial Development Corporation.

Collection System

Wastewater is collected in Lewistown Borough via 106,300 linear feet of sanitary sewer line. In Derry Township wastewater is collected via 129,706 linear feet of sanitary sewers including 3,100 linear feet of 14-inch force main. The Industrial Park area of Granville Township is served by 19,005 linear feet of sanitary sewer line (force main and gravity pipe). The Derry Township Sanitary Sewer Authority and MCIDC are responsible for the operation and repair of their respective collection systems.

The Borough of Lewistown owns a combination hydraulic & vacuum sewer cleaning unit (new in 1999), safety equipment and construction equipment that enables it to independently perform all sewer maintenance and sewer and manhole replacements and rehabilitation. In November 1995, a sewer CCTV Van was purchased by the Borough for use in performing internal inspections of the Sewer System. It is intended that the preventive maintenance program, which was initiated in 1990, continued during 2008 and beyond.

Granville Township's use of the system is basically restricted to industrial use, but residential use is anticipated in the future. **Some problems exist with the condition of Derry Townships Highland Park collectors which were originally part of a private system built in the early 1900's. These lines are old and have infiltration problems.** Lewistown Borough's Collection System is in fair condition, being more than 50 years old, but certain inflow and infiltration problems exist within sections of the system. Granville's lines are only a few years old and rated as being in good condition.

The Derry Township Sewer Authority operates and maintains its own wastewater collection system. Authority personnel perform maintenance and repair work as needed under the supervision of the Authority's superintendent. The Township's pump station is maintained on a daily basis. Major repair work involving the use of heavy equipment is contracted to local plumbing and sewer contractors.

Satellite Pumping Stations

Two pump stations serve Derry Township. The Derry Township Pump Station-Bridge Street and Electric Avenue serves all areas of the Township's sewer system with the exception of the South Hills area, Lewistown Heights and the Glenwood area. The pump station has ample capacity to handle projected flows. The second pump station serves the Upper Glenwood area of the Township. The pump station has ample capacity to handle projected flows. The pump station has an emergency generator located on site and an automatic dial system for emergencies.

Granville Township operates and maintains its own wastewater collection system. No pump stations exist in the portion of Granville Township which flows to the Lewistown Wastewater Treatment Plant. All pump stations have been disconnected from the portion of the sanitary sewer that flows to the Lewistown wastewater treatment facility for treatment. The Township also conducts random checks over the gravity sewer system to test for excessive amounts of infiltration. The preventive maintenance schedule, which was implemented in 1987 to clean, repair and record and problem areas in the gravity system, was continued during 2005 as needed.

Industrial Contributions

The Wasteload Management Report includes copies of Lewistown's, Derry Township's and Granville Township's sewer use ordinance. These ordinances limit or prohibit the discharge of wastes that could interfere with the wastewater treatment processes or damage the collection system.

The Wasteload Management Report included Article 8 of the Inter-municipal Service Agreement, which set forth an industrial waste discharge control program. The program requires that an industrial discharger file an application with the municipality. Following application approval, a discharge permit is issued to the industry by the municipality. Through this permit system, an inventory of the industrial dischargers is established and maintained. In conjunction with the permit application, an industrial waste survey questionnaire is required to be completed. Copies of the industrial waste discharge application, the industrial waste questionnaire, and the industrial waste discharge permit were included in the Wasteload Management Report.

No new industrial dischargers connected to the sewer system, and no apparent problems were experienced at the wastewater treatment facility or in the municipal collection systems due to industrial or commercial discharges.

Recent Extensions

Expansion of the collection systems in Derry and Granville Townships is anticipated and the treatment plant is being upgraded to adequately address this growth. Specific overall plans for expansion of the collection systems (in these townships) are indefinite at this time and subject to change.

Description of Existing Treatment Process

The present sewage treatment plant operates on the conventional activated sludge process. Unit processes include influent screening, primary clarification, biological treatment, secondary clarification and sodium hypochlorite disinfection.

Treatment of organic and hydraulic loading is adequate and the condition of the plant and machinery is fair. The plant struggles with high wet weather flows. Wastewater treated at the plant is ultimately discharged into the Juniata River.

Plant Capacity

The design capacity of the Lewistown Borough wastewater treatment facility is 2.818 Million Gallons per Day (MGD). As mentioned previously, the plant struggles with high flows during periods of wet weather. An examination of the wastewater treatment facility flow summary for the period from 2000 to 2004 inclusive shows average daily base wastewater flows that vary from 1.069 mgd (in 2001) to 1.124 mgd (in 2003). The average base wastewater flow for this period was 1.089 mgd. The ADF flows including I/I to the wastewater treatment facility vary during this same period from 1.480 mgd in 2001 to 2.000 mgd in 2003.

The average BOD_5 concentration during 2006 was 208 mg/L and the 5-year average BOD_5 concentration was 233 mg/L.

The projected average BOD_5 loading to the treatment plant from 2005 through 2009 is based on an average BOD_5 concentration of 255 mg/L for Lewistown, 175 mg/L for Granville Township and 280 mg/L for Derry Township and the wastewater flow from each municipality.

The CBOD (Carbonaceous Biochemical Oxygen Demand) of the final treated effluent discharging to the Juniata River averaged 4 mg/L (approximately 62 pounds per day), significantly under the daily allowable limits (from the NPDES Permit) of 25 mg/l and 822 pounds. The month with the highest daily average discharge was March with 130 pounds per day. The lowest monthly average was May 2004 with 7 pounds per day.

The TSS (Total Suspended Solids) of the final effluent discharging to the Juniata River averaged 11 mg/L (167 pounds per day). These are both under the daily allowable limits (from the NPDES Permit) of 30 mg/l and 987 pounds. The month with the highest daily average discharge was March with 218 pounds per day. The lowest monthly average was June 2004 with 107 pounds per day.

Based on the 2006 Chapter 94 Report, the plant did not exceed the maximum limitations on any of the effluent constituents required by the NPDES Permit. In addition to the TSS (Total Suspended Solids) & CBOD (Carbonaceous Biochemical Oxygen Demand) mentioned above, other constituents in the final chlorinated effluent that operators are required to sample & analyze are as follows: ADF (Average Daily Flow) monitor only, pH, DO (Dissolved Oxygen), TRC (Total Residual Chlorine) & fecal coliform.

No treatment plant organic overload occurred during 2004 nor is any overload anticipated within the next 5 years.

Average Flow

In 2005, the ADF (Average Daily flow) to the plant was reported as 1.69 MGD (Million Gallons Daily). In 2004, the ADF at the wastewater treatment facility was 1.91 MGD. This is very close to the ADF for 2003 which was 2.00 MGD. According to the NPDES Permit, the average annual discharge design rate is 2.818 MGD and the maximum monthly average is 3.945 MGD. The plant did not exceed the maximum monthly average at any time during 2004.

Flow rates have been monitored from 2001 to present to estimate the base wastewater flow, the extraneous flow (infiltration/inflow), and the average annual wastewater treatment facility flow. For the five-year period from 2000 through 2004, the extraneous flow averaged 38 percent of the total wastewater treatment facility flow. Both Lewistown and Derry Township are engaged in an

ongoing program to reduce the infiltration/inflow (I/I). The ratio of the 2004 annual precipitation to the 5-year average was 1.24.

It appears that the majority of the I/I occurs during periods of high ground water. With this in mind a manhole inspection program was initiated. The information gained during these inspections was used to select additional manholes for rehabilitation and sealing during 2005 and subsequent years.

In addition to manhole inspections, the closed circuit TV Sewer Inspection equipment is in almost continuous use to inspect the sewer lines within the sewer system for signs of infiltration. Identified defects are repaired as promptly as possible.

The Borough completed a program of temporary flow monitoring in order to determine how much flow is discharged at the two SSO's as well as how much flow continues to the wastewater treatment facility. Analysis of these results was made and was reported in the CAP report for the second half of 2001. As a result of this analysis and considering the fact that no overflows occurred during 2001 at either of the SSO's located within the Borough sewer system, the decision was made to plug both SSO's with temporary plugs upon the completion of the Juniata River Interceptor replacement project.

Projecting the annual I/I must be tempered by judgment due to its great dependence upon the annual precipitation and groundwater conditions. The average I/I volume from 2000 through 2004 was determined to be 689,088 gpd. This volume includes the extraordinary amount of flow due to the precipitation being almost 26% above normal during 2003. It also includes the reduced flow due to the precipitation being 32% below normal during 2001. Reduction of the 689,088 gpd by 15% yields an estimated volume of 585,725 gpd. A projected average extraneous flow of 585,750 gpd was used for 2005 to 2009 wastewater projections. This reflects the anticipated reduction of I/I as a result of the ongoing sewer system rehabilitation.

Projected raw wastewater flows through 2009 to the Lewistown Wastewater treatment facility from each tributary municipality are not expected to exceed the plant capacity. Flows were projected based on each municipality's anticipated residential dwelling unit additions and the respective base wastewater flow per dwelling unit and the anticipated non-residential flow. For Lewistown, Derry Township and Granville Township, a base flow per dwelling unit of 150, 165 and 150 gpd, respectively, was used to project residential base wastewater flow from the municipality. The five-year average daily flow for the period 2000 to 2004 was 1.78 mgd. For projection of the maximum consecutive 3-month average flow, the historic average peak flow factor of 1.11 was applied to the projected annul average daily wastewater flows.

Hauled Liquid Waste

The Lewistown Borough Wastewater treatment facility accepts septage from permitted local haulers within the surrounding municipalities. Trucks discharge directly to the headworks of the plant.

The Lewistown plant typically receives small quantities of liquid waste on an irregular basis and reports zero (0) gallons delivered to the plant in 2005. The current rate established for accepting liquid waste is 7½ cents per gallon.

Chesapeake Bay Nutrient Removal

Lewistown received an NPDES Permit renewal on February 1, 2008. The new permit became effective on February 1, 2008 and will expire on January 31, 2013. An addendum to the permit was received instructing operators to initiate monthly monitoring of nutrients. The initial months of monitoring indicate minor nutrient reductions are presently achieved by the existing unit processes. The nutrient monitoring requirement is relatively new and a limited amount of monitoring data exists regarding the present variations in effluent concentrations. The plant has reported average effluent concentrations of 26.0 mg/L nitrogen and 3.6 mg/L phosphorus. By the numbers reported, it appears that the existing treatment process is not achieving denitrification and less than 20% phosphorus reduction.

As stated previously, the PADEP Chesapeake Bay Strategy will establish the new TN and TP loading limits based on wastewater treatment facility's achieving an average 6.0 mg/L TN and 0.83 mg/L TP effluent concentration at projected flows for the year 2010. The Strategy focuses on treatment plants with a permitted capacity of 0.4 mgd or greater. The Lewistown wastewater treatment facility has a design capacity of 2.818 mgd and is expecting a 2010 flow of 2.045 mgd.

The existing Lewistown wastewater treatment facility effluent nutrient loads are 133,758 lbs. TN and 18,560 lbs. TP at the 2005 average annual flow of 1.69 MGD. The anticipated annual nutrient loading limits in relation to the plant design flow are 51,470 lbs. TN and 6,863 lbs. TP. If the existing effluent concentrations remain at the levels reported, the Lewistown plant will need to reduce existing nitrogen levels and phosphorus levels to meet the anticipated allocations for nitrogen and phosphorus.

Compliance Strategy

The plant effluent concentrations are significantly higher than the anticipated effluent loading limits for nitrogen and phosphorus. The conventional activated sludge process employed at the Lewistown wastewater treatment facility will require substantial up-grades to achieve biological nutrient removal. The wastewater treatment facility intends to initiate a preliminary study to determine a cost effective plan of action.

Planned Upgrades

In 2006, the Lewistown wastewater treatment facility was in the process of refurbishing the existing anaerobic digesters. The digester project construction is nearly complete.

Recommended Improvements

The existing conventional activated sludge aeration tanks are too small for conversion to a full BNR process at the anticipated 2010 flow. The Borough owns a parcel of land contiguous with the existing plant (near the anaerobic digester) that should be suitable for the construction of

two (2) new parallel oxidation ditches. This approach would utilize some existing tanks, but is dependant on the hydraulic profile of the existing unit processes.

The Bardenpho process is recommended for total nitrogen reduction and chemical precipitation is recommended for total phosphorus reduction. These processes are preferred because they provide consistent performance under both cold and average wastewater temperatures and have the ability to meet nutrient effluent design-year goals without the addition of a tertiary treatment process.

The Bardenpho process consists of a series of anoxic (lack of free oxygen) and aerobic zones (presence of free oxygen) that convert ammonia to nitrite/nitrate and then to nitrogen gas, which is released to the atmosphere. The bioreactors (formerly called aeration basins) will be divided into zones to accomplish denitrification.

Chemical precipitation with metal salts will be used to reduce phosphorus.

Additional work required at the facility will be required to meet DEP flood protection guidelines. The facility must raise unit process wall heights and weirs to meet the 25-year operational and 100-year structural flood protection requirements. These improvements are approximately 20% of the entire construction costs.

A majority of the equipment installed at the Lewistown facility was put into service during the last major construction project in 1973-1975. This equipment has been in service thirty years and requires replacement. The replacement of equipment due to age is approximately 29% of the entire construction cost.

Estimated Costs

The construction cost to implement the new treatment process to meet the Chesapeake Tributary Strategy requirements and protect the facility from flooding is approximately **$31,000,000.**

Southwest Central Region

Bratton Township Act 537 Plan, Prepared April, 1995; Revised July 1996 and October, 1996 and Plan Amendment, October 2001

Bratton Township prepared an ACT 537 Plan in April of 1995. The plan as revised through October 1996 was reviewed. The plan states that there are no public wastewater systems within the township. Wastewater disposal is accomplished through on-lot septic systems. In recent years, elevated sound mound systems have become more common because of soil limitations. The plan identifies the following as the main problem with septic systems:

- The treatment systems are not regularly maintained so they malfunction, and
- Septage haulers may not have permits to dump the septage on agricultural land.

There are indications that there are substandard on-lot sewage disposal systems in Bratton Township based on topographic analysis, soil analysis, complaints filed, and SEO records. The Longfellow section has been the location of many complaints regarding malfunctioning on-lot systems and the small lot sizes and wildcat discharges are priority issues in the Mattawana area.

Also included in the appendices of the plan are the On-Lot Subsurface Sewage Disposal Ordinance, Holding Tank Ordinance, and Privy Ordinance.

The major problems evaluated in the original plan have not changed in the amendment. The original plan recommended that wastewater collected by the proposed Mattawana system be conveyed to the McVeytown Borough treatment facility. However, Bratton Township and the McVeytown Borough Authority have failed to reach an agreement for wastewater treatment service and proposed costs are too high.

The most logical and economical alternative to the McVeytown Borough treatment option is to pump the Mattawana wastewater east along SR 103 to the proposed wastewater collection and treatment system to serve the Longfellow and Pine Glen areas. This will be accomplished via a previously proposed pump station along the Juniata River in Mattawana, and a relocated previously proposed pump station west of Pine Glen. Additional gravity main will also be required between Mattawana and Pine Glen. A separate treatment plant for the Mattawana area was not considered because of the additional expense involved with designing, constructing, and operating a second wastewater treatment facility wastewater treatment facility.

The plant is proposed near Carlisle Run and includes an effluent outfall main to the Juniata River because Carlisle Run is classified as a high quality stream. The plant will also be enlarged to accommodate wastewater from the Mattawana area.

The chosen method for the Mattawana, Pine Glen, and Longfellow areas is a conventional gravity collection system with pumping stations and pressure sewers along with an extended aeration treatment facility with a discharge to the Juniata River.

Bratton Township

Bratton Township owns and operates a secondary waste water treatment plant located within the Township. The Township's sewage treatment plant initially started construction in 2003 and was put into continuous operation in late 2004. As of October 2007, the plant provides service to 331 customers.

The plant has one part-time licensed operator that monitors the pumping stations, as well as the wastewater treatment process controls and makes any necessary process adjustments.

Service Areas
The Bratton Township wastewater treatment facility serves local residents along S.R. 103 between Mattawana and Pine Glen.

Collection System
The Bratton Township collection and conveyance system is a separate sanitary system that consists of a combination of 8-inch gravity sewers and pumping stations in operating series. The collection system is approximately two years old and is in excellent condition. A minor amount of wet weather inflow was reported for the system.

Satellite Pumping Stations
The Township collection system has five pumping stations. The stations are submersible type and operate in series with the gravity network to ultimately deliver sanitary sewage to the treatment plant for processing.

Industrial Contributions
The Bratton Township wastewater treatment facility does not receive any industrial wastewater.

Recent Extensions
The entire Bratton Township sanitary system is approximately two years old and no recent extensions of the collection system were reported.

Description of Existing Treatment Process
The package type sewage treatment plant operates on the extended aeration activated sludge process. Existing unit processes include preliminary screening, aerobic biological treatment, secondary clarification and chlorine disinfection. Waste activated sludge is stabilized by aerobic digestion.

No offensive odors were experienced on the day of the plant visit. The treatment of organic and hydraulic loading was reported to be adequate and the condition of the plant and machinery is excellent.

Plant Capacity

The new treatment facility is a pre-engineered package type dual train secondary treatment plant that presently has a design capacity of 90,000 gallons per day. The plant is relatively new and has not reported any significant operational issues or problems with the new treatment plant equipment.

Average Flow

An average flow of 18,000 gallons per day (gpd) was reported for the year 2005. The projected 2010 is 42,000 gpd as additional residences connect to the new system.

Hauled Liquid Waste

The Bratton Township wastewater treatment facility only employs a part-time operator and does not accept hauled liquid waste at the present time.

Chesapeake Bay Nutrient Removal

The Pennsylvania Department of Environmental Protection's Chesapeake Bay Strategy will establish the new TN and TP loading limits based on wastewater treatment facility's achieving an average 6.0 mg/L TN and 0.83 mg/L TP effluent concentration at plant design flow. The Strategy will initially focus on treatment plants with a permitted capacity of 0.4 mgd or greater. The Bratton Township wastewater treatment facility has a design capacity of 0.090 mgd and a projected 2010 flow of 0.042 mgd. The NPDES permit is not up for renewal until 2009 and nutrient monitoring is expected to be added to the effluent lab analysis at that time.

Compliance Strategy

The extended aeration treatment process employed at the Bratton Township wastewater treatment facility should be capable of achieving nitrification of the wastewater at the anticipated flow rates. No effluent monitoring is in place to verify efficiency of the nitrification process at the present time.

Influent and effluent phosphorus are also not monitored at the present time and no data is available.

Planned Upgrades

In 2007, Bratton Township submitted a grant application for $26,676.00 for the construction of a roof or housing structure over the existing drying beds at the treatment plants to allow them to be utilized year round.

Recommended Improvements

The plant is relatively new and recommended nutrient removal facilities added to the treatment scheme should require the fewest modifications of the existing plant.

The plant will most likely consider chemical addition for phosphorus removal. This process will require chemical storage and a metered chemical feed system. The implementation will not interrupt the existing treatment processes.

Nitrogen reduction can be achieved by adding denitrification filters to the end of the treatment process. These deep bed filters will introduce an additional unit process into the plant design. They should be well-suited with respect to the plant hydraulic profile requiring no effluent pumping. The filters would be sized accordingly.

Estimated Costs

The anticipated cost for the additional facilities to up-grade the process and achieve nitrogen removal to the anticipated required effluent levels is approximately **$400,000** assuming the

existing plant is operated within the parameters normally associated with the extended aeration process.

The cost of chemical addition facilities to achieve phosphorus removal (chemical storage and chemical pumps) is estimated at **$65,000**.

McVeytown Borough

McVeytown Borough does not have an Act 537 Sewage Facilities Plan.

The McVeytown Borough Authority owns and operates a conventional activated sludge wastewater treatment facility located within the Borough. The McVeytown Borough Sewage System was originally constructed in 1963 and it was designed to handle commercial and residential sewage from the Borough and nearby Oliver and Bratton Townships.

The initial treatment plant was only a primary treatment facility featuring sedimentation as the process of treating the wastewater and it had a design capacity of 75,000 gallons per day. In 1977 the plant was upgraded to secondary treatment and the capacity of the facility was also upgraded to 85,000 gallons per day. **This increase in capacity was attributed to possible service expansions into Oliver and Bratton Townships. Since that time, Bratton Township has constructed its own wastewater collection, conveyance and treatment systems.** Wastewater treated at the Borough plant is disinfected and discharged into the Juniata River which drains into the Juniata River watershed.

The plant has one full time operator and one part time assistant. The operators carry out routine maintenance of the wastewater treatment facilities on an as-needed basis. Major repairs are performed as needed on a contract basis with local contractors or by the Borough's personnel.

Service Areas

Hydraulic loading from Oliver Township (projected at 92 EDU's) is included in the original design of the plant. The added loading from Oliver has been discussed and tentatively approved, but there is no inter-municipal agreement, and no definite bidding and construction schedule is defined at this point.

Collection System

Wastewater is collected in the Borough via 10,674 linear feet of sewer lines of 10, 6, and 4 inch diameters. A few problems exist with the collection system as it is more than 40 years old. The sewer system does not contain any combined sewers or overflows. All overflows have been appropriately sealed to prevent any discharge prior to treatment at the wastewater facility.

The Borough has met with the DEP in the Spring of 2008 to discuss conducting infiltration/inflow investigation activities through a consent order agreement. The results of this investigation will dictate the extent of which the 40-year old system will need to be upgrade.

Satellite Pumping Stations

The McVeytown Borough Authority has one main pump station, the Wray Pump Station, and one small ejector pump station that transports the sewage collected from the Borough to the Treatment Facility.

The Wray Pump Station was installed in 1963 and upgraded in 1995. The Wray Pump Station is comprised of two pumps, which generally pump alternately but can pump simultaneously. The actual maximum capacity of the pumps is 201,600 gallons per day at 73 feet T.D.H. All flow entering the Wastewater treatment facility is pumped from the Wray Pump Station; therefore, wastewater treatment facility flow data is similar.

The small ejector pump station serves approximately twelve residences. No flow data is available for this station.

Industrial Contributions

The sewer use ordinance for the McVeytown Borough Authority requires submission of detailed operating information from any industries required to pre-treat their discharge. There are no "Major Contributing Industries" as defined by the National Pollutant Discharge Elimination System (NPDES). The Borough Authority has not entered into any formal agreements with or issued permits to any industrial discharges.

The sewer use ordinance also limits the discharge of extraneous flows such as those that might occur from downspouts and basement drains into the sewer system.

Recent Extensions

There were no new residential extensions within the past few years. The vast majority of all developable land within the corporate boundaries of McVeytown has been built out; therefore, growth is almost static. There is one development with up to 6 EDU's within the Borough that is expected to be built out in the next two years, and that flow has been added to the 2010 flow projection.

The past flow patterns indicate a declining hydraulic loading from the service area. In 2005- 2006 a slight increase was experienced due to the new 6-EDU addition. Starting in 2008, the hydraulic loading from Oliver Township (projected at 92 EDU's) is added to the flow projection. The added loading from Oliver has been discussed and tentatively approved, but there is no inter-municipal agreement, and no definite bidding and construction schedule defined at this point.

Description of Existing Treatment Process

The treatment plant operates on the activated sludge process and sludge is transported to an approved landfill site for final disposal. Treatment of organic and hydraulic loading is adequate and the condition of the plant and machinery is good.

Routine monitoring of operation is in compliance with requirements of the NPDES Permit. Flow is continuously recorded. BOD, suspended solids, and fecal coliform are analyzed bi-weekly.

Plant Capacity

The treatment facility is permitted to treat 0.085 million gallons of sewage per day (MGD). The present estimated average flow is 28,300 gallons per day which leaves a capacity of 56,700 gallons per day for future development. The sewage system presently serves 243 equivalent dwelling units or approximately 850 residents in the area.

No expansion of the treatment plant is anticipated in the near future, but the collection system may be extended both east and west of the borough to encompass as many as fifty or more

equivalent dwelling units. Plans at present are indefinite for expansion; however, more than adequate capacity does exist at the plant for the anticipated addition to the collection system.

The treatment facility is permitted to treat a maximum organic loading of 170 pounds of BOD_5 per day.

Projections show that overloading will not occur during the 5-year period for Average BOD_5. The highest monthly average for the next five years may be as high as 186.3 lbs/day. The possibility of re-rating the plant capacity was discussed with a DEP representative in 2004. The necessity for re-rating will depend on final projections once the Oliver Township addition is finalized. It has been discussed with DEP that the requirements for re-rating to higher organic capacity most likely can be met with minor modifications to current plant equipment and/or procedures.

Average Flow

The average daily flow for 2006 was measured to be 0.045 MGD. Chapter 94 projections show that hydraulic overloading will not occur during the projection period. The highest three consecutive months' average for the next five years may be as high as 0.067 MGD.

Hauled Liquid Waste

The McVeytown Borough does not accept hauled liquid waste at the present time.

Chesapeake Bay Nutrient Removal

The McVeytown Borough Wastewater treatment facility has recently completed the process of NPDES permit renewal. The new Permit will not expire until 2011 and indicates Total Nitrogen and Total Phosphorus will be added to the McVeytown wastewater treatment facility NPDES effluent monitoring requirements as an interim nutrient removal requirement.

The next permit renewal will identify effluent concentrations and associated nutrient loading limits. The nutrient monitoring requirement is relatively new and a limited amount of monitoring data exists regarding the present variations in effluent concentrations. The plant has monitored and reported average effluent concentrations of 38 mg/L nitrogen and & 5.0 mg/L phosphorus.

Compliance Strategy

As of the time of this plan, the plant effluent concentrations are five to six times higher than the anticipated Chesapeake Bay effluent loading limits for nitrogen and phosphorus. The conventional activated sludge process employed at the McVeytown wastewater treatment facility will require substantial up-grades to achieve biological nutrient removal. The wastewater treatment facility intends to initiate a preliminary study to determine a cost effective plan of action.

Planned Upgrades

No planned upgrades of the plant were identified at the present time.

Recommended Improvements

Based on the topography of the wastewater treatment facility site and land available, the Borough Authority should consider replacement of the existing process with sequencing batch reactors to achieve nitrification and denitrification.

Chemical precipitation of phosphorus would be the least costly option for phosphorus reduction.

Estimated Costs

The McVeytown wastewater treatment facility is more than 40-years old and this estimate assumes the existing tanks are structurally sound, but are too small to achieve the biological nutrient reductions anticipated. The cost of the SBR process equipment and chemical phosphorus facilities is approximately **$1,000,000**.

Oliver Township Official Sewage Facilities Plan, Prepared 1992; Revised, August 1993

The McVeytown Sewage Treatment Plant was designed and is currently permitted to serve the Borough of McVeytown and three distinct regions in Oliver Township that are adjacent to the borough. Due to economic factors, extension of the collection system into Oliver Township has not occurred. A regional approach to solving the many on-lot sewage disposal system malfunctions surrounding the borough continues to be the most effective solution to present and future sewage disposal problems. Four sewer districts were established in the McVeytown area of the township:
1. McVeytown Sewer District – this district is the area currently served by the McVeytown Sewage Treatment Plant. It includes all of McVeytown Borough and two areas in Oliver Township that are northwest and south of the borough.
2. McVeytown/Northeast Sewer District
3. McVeytown/Southwest Sewer District
4. Brookland Mills Sewer District

An evaluation of existing on-site sewage disposal and water systems revealed malfunctioning on-site sewage disposal systems concentrated in the following locations. In all of the areas except McVeytown/Southwest, one well was found to have fecal coliform bacteria. All of the locations have severe soil limitations for on-lot systems. It is anticipated that nearly all of the existing substandard systems will require repair and/or upgrade with 10-20 years.

- Lockport – 16 of 23 residential dwellings have malfunctioning on-lot systems. Most malfunctions are direct discharge into ditches, drain tile, and Strodes Run.
- Brookland Mills – 6 of 11 residential dwellings have malfunctioning on-lot systems.
- McVeytown/Northeast – 28 of 49 residential or small commercial structures have malfunctioning on-lot disposal systems. Most malfunctions are direct discharge of sewage to the ditch along SR 0022 or to the old canal along the north side of the Juniata River.
- McVeytown/Southwest – 8 of 20 residential or small commercial structures have malfunctioning on-lot disposal systems. Seven of the structures discharge into underground concrete tanks that allow the sewage to seep into Musser Run.

The maximum total anticipated allocation of the McVeytown Treatment Plant to meet the future needs of the Brookland Mills, McVeytown/Northeast, and McVeytown/Southwest Sewer Districts in Oliver Township would be 45,000 GPD. McVeytown's Wasteland Management Report for the 1991 calendar year projects average monthly flows in the year 1996 at approximately 30,000 GPD. The report also indicates no significant I/I problems. Therefore, the permitted capacity, 85,000 GPD of the McVeytown Plant would be adequate. Sludge disposal is by land applications through agricultural utilization.

An OLDS program was proposed to be implemented in late fall, 2000.

Oliver Township

Oliver Township does not contain a wastewater treatment system public sewer infrastructure is conveyed to the McVeytown and Strodes Mill (Granville Township) wastewater treatment facilities.

Southwest Region

Newton Hamilton Borough and Wayne Township Act 537 Plan, June 2003

The Act 537 Plan divided the township into two areas, Phase I and Phase II. The selected alternative recommends the construction of a collection system and wastewater treatment facility wastewater treatment facility to service the more densely populated Phase I area where a collection system is a feasible alternative. The Phase II area will be subject to inspections by the Township's SEO who will enforce operation and maintenance requirements for on-lot disposal systems in this more sparsely populated area of the township.

The selected alternative for the Phase I area involves the construction of a collection system in Newton Hamilton Borough and Wayne Township that will provide service to five areas of Wayne Township and the entire Borough. 0.19 MGD of collected wastewater will be directed through the pumping station in Kistler Borough and then to the Mount Union Municipal Authority treatment facilities. The existing 12,000 gpd wastewater treatment plant at the former Methodist Training Camp will be abandoned.

The first section of Wayne Township to be serviced in the Phase I area is the American Legion Country Club area. The proposed collection system will collect sewage from residential customers and flow via gravity to proposed Pump Station # 1. Sewage will then be forced through a pressure sewer to a manhole located along T-780 and flow via gravity to the Silver Ford Heights area.

The second proposed collection system in the Silver Ford Heights area will collect sewage from residential customers along with the sewage from the American Legion Country Club area and flow via gravity to proposed Pump Station #2 located at the intersection of T-780 and S.R. 3017. Sewage will then be forced through a pressure sewer to a manhole located in Kistler Borough and flow via gravity to the pumping station in Kistler Borough to be pumped to the Mount Union Municipal Authority (MUMA) system.

The third section of Wayne Township to be serviced is located along S.R. 3017 between the highest elevation of Silver Ford Heights and New Hamilton Borough. The proposed collection system will collect sewage from the residential customers and flow via gravity through the borough to Pump Station #4. A campground along the Juniata River in this area will send its sewage to Pump Station #3 which will pump the sewage to the gravity sewer located along S.R. 3017.

The fourth section of Wayne Township to be serviced is the Methodist Training Camp area located northwest of the borough. The proposed collection system will collect sewage from residential customers and flow via gravity to two manholes at separate locations within the borough. Sewage from the residential customers in the township and the borough will flow via gravity to proposed Pump Station #4 located in the borough. The sewage is then forced through a pressure main to a manhole located in the gravity collection system at the highest elevation along S.R. 3017 and flow by gravity to Pump Station #2.

The final section of Wayne Township to be serviced is located at the east end of the Township at the intersection of S.R. 3017 and T-302. The proposed collection system will collect sewage from the residential customers and will flow via gravity to Pump Station #4.

Kistler Borough Official Sewage Facilities Plan Revision Study, December 1988

The Borough's Act 537 Plan indicated that a complete system of combined sanitary and stormwater collection sewers were installed at the time of the original development of the borough by the American Refractories Corporation. The system is comprised entirely of eight-inch diameter vitrified clay pipe with concrete joints. Due to the age of this system, many problem areas exist, such as broken pipes, displaced joints, and blockages resulting from root penetration. The majority of improved properties in the borough are served by the existing sewer collection network, which discharges directly into the Juniata River.

A number of residential properties in the Borough exist beyond the extent of the existing collection system. These systems are served by on-lot disposal systems. The Act 537 Plan recommends that a new sewer system be installed and sewage conveyed to the Mount Union Sewage Treatment Plant.

This recommendation is inconsistent with the recommendation noted in the Western Mifflin County Comprehensive Plan.

Kistler Borough, Newton Hamilton Borough and Wayne Township
Wayne Township operate a packaged Sewage Treatment Plant (STP) located within the Borough and serve 48 customers. The plant is owned by Wayne Township and has a permitted capacity of 12,000 gallons per day. The plant has one part time licensed operator. The operator manages the treatment plant and collection system.

It was reported that the Wayne Township STP is scheduled for decommissioning in 2009 and all flow will be conveyed to the Mount Union wastewater treatment facility in Huntingdon County.

The municipalities recently formed a regional authority to discuss and plan regional wastewater needs.

Service Areas

The Mount Union Borough public wastewater treatment facility, conveyance system and collection system serves users in the Borough and also serves portions of Shirley and Wayne Townships. The Mount Union plant has a permitted capacity of 625,000 gallons per day.

The Wayne Township public wastewater collection and conveyance systems are owned and operated by the municipalities each serves.

Collection System

The Borough of Kistler was originally served by a combined sanitary and stormwater collection sewers that were installed at the time of the original development of the Borough by the American Refractories Corporation. This system discharged directly into the Juniata River. Due to the age of the system and extensive defects, the Borough 537 Plan recommended construction of a new separate system and connection to the Mount Union Borough system.

The Wayne Township wastewater treatment facility collection system is reported to be a combined sanitary and stormwater collection network. **Wayne Township is presently in the process of separating the system prior to its connection to the Mount Union Borough system.**

Satellite Pumping Stations
There were no pumping stations reported for the Wayne Township wastewater treatment facility.

Industrial Contributions
The Wayne Township wastewater treatment facility does not receive any industrial wastewater.

Recent Extensions
The Newton and Wayne Joint Municipal Authority has received $200,000.00 in Growing Greener money for a wastewater collection and pumping system which includes 55,000 feet of 8-inch gravity PVC line and 11,200 feet of 4-inch PVC force main. Approximately 460 households will be served by this system.

Description of Existing Treatment Process
The present sewage treatment system consists of a packaged wastewater treatment facility that operates by using a conventional activated sludge treatment process. Existing unit processes include preliminary screening, aerobic biological treatment, secondary clarification and chlorine disinfection.

The condition of the plant and machinery is good and consistently achieves effluent quality that meets or exceeds the current NPDES permit requirements.

Plant Capacity
The Wayne Township wastewater treatment facility operates under the NPDES permit # PA0083330 with a 12,000 gallon per day permitted capacity. Treatment with respect to hydraulic loading was reported to be good with only a moderate quantity of infiltration.

The treated effluent from the plant is discharged into an un-named tributary of the Juniata River.

Average Flow
The average daily flows reported for 2006 were approximately 5,000 gallons per day requiring less than half of the plant's 12,000 gallon per day rated capacity.

Hauled Liquid Waste
The Wayne Township wastewater treatment facility has accepted hauled wasted in the past, but has no dedicated facility or formal program in place. Wastes are typically discharged to the head of the plant.

Chesapeake Bay Nutrient Removal
The DEP Chesapeake Bay Strategy focuses on treatment plants with a permitted capacity of 0.4 mgd or greater. The Wayne Township wastewater treatment facility has a design capacity of 0.012 mgd and a projected 2010 flow of 0.005 mgd. It is estimated that it will cost $7,500,000 for Wayne to make improvements necessary for the Chesapeake Bay Tributary Strategy.

Compliance Strategy
It's most likely that the Wayne Township wastewater treatment facility will be decommissioned prior to the imposition of DEP Chesapeake Bay Strategy annual nutrient loading limitations.

Mount Union Borough, Huntington County

Service Areas
In addition to serving the entire Borough Of Mount Union, the Mount Union Borough Sanitary Sewer System currently serves all or parts of the following three (3) municipalities in two (2) Counties through several separate inter-municipal sewage treatment and conveyance agreements: Shirley Township (Shirley Township General Authority)/Huntingdon County (parts), Kistler Borough/Mifflin County (entire municipality), and Wayne Township (West Wayne Sewer Authority)/Mifflin County (parts).

Collection System
Night Flow Study, smoke testing, comprehensive manhole examinations were undertaken and completed during late 2005 in the eastern half (east of Division Street) of Mount Union Borough by a private contractor. Several problem areas were identified. One large problem area, on the property of the Mount Union Area School District, was corrected in May 2007. Mount Union Municipal Authority (MUMA) plans to complete a camera inspection of another significant problem area identified (co-joined storm sewer and sanitary sewer mains on East Milford Street from South Division to South Shaver Street) during Summer 2008 to develop remedial construction project to resolve problem.

Satellite Pumping Stations
The sewerage system includes seven (7) pumping stations: one in West Wayne (Wayne Township), one in Kistler Borough, ST6-A (Route 522) and Riverview Business Center in Shirley Township, and Liverpool, Mill Hollow and Industrial Park in Mount Union Borough. All of the pumping stations are functioning properly.

Recent Extensions
Connection of the collection system in the proposed service area of the Newton-Wayne Joint Authority is projected to include an additional 461 EDU's. Most are residential connections. However, there will be a few commercial connections as well. The proposed service area will also include homes in the "Shaversville Area" just north of the underpass outside of Newton-Hamilton Borough. MUMA's water system already currently serves this area.

Description of Existing Treatment Process
The Mount Union Borough wastewater treatment facility is an activated sludge biological treatment facility. The treatment plant makes use of primary screening, two sequencing batch reactors, and aerobic sludge digestion. The plant was last updated in 2002.

Plant Capacity
Permitted capacity is 1.1 mgd. Capacity will be re-rated and reduced slightly (approximately 6%) as part of planned Chesapeake Bay Nutrient Reduction Strategy improvements. Average daily flow for most recent year (2007) was .465 mgd, an increase of .108 mgd over 2006. Maximum three-month average flow during 2007 was .529 mgd.

Hauled Liquid Waste
Sludge is taken to the Shade Landfill operated by Waste Management, Inc. in Somerset County.

Chesapeake Bay Nutrient Removal
Mount Union Borough's sewage treatment plant is classified as a Cycle III facility. Compliance with the strategy is project to be achieved in 2015, as currently required. In April 2008, MUMA

voted to join the lawsuit against DEP and the strategy filed by the Capital Area Council Of Governments (CAPCOG). MUMA's sewer engineer, Gannet Fleming, Inc., completed a compliance study and made specific recommendations to achieve BNR compliance. These include addition of additional anoxic stages in each cycle of the treatment process; the re-timing and lengthening of all treatment stages; additional of additional mixers in the basins to increase aeration; an additional chemical treatment stage prior to discharge of the effluent; and re-rating the capacity of the plant. In 2006, the improvements were estimated to cost approximately $452,000.00. Accounting for an inflation factor, the improvements are projected to cost approximately $650,000.00 in 2015. The purchase of credits was studied and has been eliminated as a viable option because that approach is estimated to cost three times as much as the planned physical improvements on an annualized basis. Additionally, there is no guaranteed availability of and/or market for trading these credits.

Mount Union Borough, Huntington County; Act 537 Plan; Volume I and II, May 1995

The Mount Union Borough Wastewater Treatment Plant currently serves the Mount Union Borough and portions of Wayne and Shirley Townships. The permitted capacity of the wastewater treatment plant is 0.63 MGD. The annual average flow for 1998 was 0.42 MGD, while the maximum consecutive three month average daily flow was 0.75 MGD. According to the 1998 Municipal Management Wasteload Report, the wastewater treatment plant was hydraulically overloaded and is projected to be hydraulically overloaded in the next five years due to the expansion of the sewer service area. Also, starting in the year 2000 and progressing through the year 2003, the wastewater treatment plant is projected to be organically overloaded. In addition to limited system growth within the next five years, Mount Union Borough anticipates providing service to Kistler borough and campsites in Wayne Township as well as the Industrial Park in Shirley Township. (Mifflin County Comprehensive Plan)

In light of this study, the Borough realizes the information contained within their 537 Plan is out of date and needs to be updated based on the significant changes. The Borough has indicated they will be begun to financially prepare to update this plan.

Northwest Region
Menno Township
Menno Township does not have an Act 537 Sewage Facilities Plan or any public sewer infrastructure.

Union Township
The Municipal Authority of the Township of Union operates an extended aeration activated sludge wastewater treatment facility located in Belleville. The plant is owned by the Municipal Authority and has a permitted capacity 0f 650,000 gallons per day.

The plant has three full time employees of which two are licensed operators. The operators manage the treatment processes; carry out routine preventative maintenance at the plant and corrective maintenance of the wastewater collection system.

Union Township

Phase I Act 537 Plan; 1994
A review of the Union Township Act 537 Plan indicated that individual on-lot systems will continue to be utilized in the areas outside the sanitary sewer service district. The plan projected the township to have approximately 420 OLDS by design year 2015, representing a 35 percent increase over the 315 OLDS existing in 1994. In preparation for this projection, the plan recommended that local officials consider implementing a means of sewage management specifically through the adoption of a voluntary sewage management program. The plan also recommended that local officials develop, maintain, and regularly update a database of properties served by OLDS. Owners of on-lot systems are encouraged to have their systems pumped once every three to five years. (Mifflin County Comprehensive Plan)

The selected alternative involves the expansion and upgrade of the facility to treat 0.490 MGD with Fairmont Products discharging up to 0.150 MGD of pretreated industrial wastewater to the Authority's facilities. It is proposed that Fairmont Products pre-treat their wastewater to the strength of domestic sewage.

Act 537 Plan Phase 2, 1995
The Act 537 Plan – Phase 2 focused on evaluating alternatives to provide adequate wastewater services for those areas of Union Township served by on-lot disposal systems (OLDS). A voluntary Septage Management Program was implemented to serve the wastewater needs of the area outside the sanitary sewer district. As a result, the MATU provided a septage receiving station for screening, stabilization, and disposal of septage via permitted haulers.

Act 537 Plan Minor Revision, 2004
This minor update to the existing Act 537 plan was necessary in order for the Municipal Authority of the Township of Union to eliminate an aging privately owned pump station and force main that served the Valley View Retirement Community. The pump station and force main were replaced with an Authority owned gravity sewer main.

Act 537 Planning, 2007
This planning describes the elements necessary to upgrade the existing plant to meet its National Pollutant Discharge Elimination System (NPDES) Permit by December 1, 2008. The Permit requires compliance with a Total Phosphorus (TP) discharge limit of 10.8 lb. per day.

Service Areas
The Municipal Authority provides service to the Belleville vicinity of the County in the general area surrounding the plant.

Collection System
The Union Township wastewater treatment facility collection system is reported to be a separate sanitary collection network in good condition.

Satellite Pumping Stations
The Union Township collection system operates completely by gravity and does not contain any pumping stations.

Industrial Contributions
Service is provided to two industries which are technically Categorical Industrial User (CIU) under 40CFR433. These industries contribute approximately 90,000 gallons per day to the wastewater treatment facility representing one third of the daily plant flow. There are no other industries contributing process wastewater into the Union Township System.

CNH America, LLC., one (1) of two (2) Significant Industrial Users (SIUs), is scheduled to cease operation and its discharge of industrial wastewater to the Authority's wastewater treatment system in the spring of 2008. The termination of CNH America's discharge will mean the loss of an important regional employer and the Authority's second largest single source of revenue.

The Township issues permits to industrial/commercial dischargers and monitors these sites regularly. The user permits are renewed every year. Routine on-site industry inspections and random site visits are made to industrial facilities throughout the year to verify compliance with the rules and regulations governing industrial waste discharges. No reported problems in any portion of the sewerage system associated with industrial wastes were identified at the time of the plan.

Recent Extensions
The Township submitted and received a grant for $175,000.00 in Growing Greener funds to make phosphorus reduction improvements to its existing wastewater treatment facility to meet NPDES permit in anticipation of future Chesapeake Bay Tributary Strategy requirements.

Description of Existing Treatment Process
The present sewage treatment plant operates on the extended aeration activated sludge process. Existing unit processes include preliminary grinding, aerobic biological treatment, final clarification and chlorine disinfection. Waste activated sludge is stabilized by aerobic digestion.

No offensive odors were experienced on the day of the plant tour. Treatment of organic and hydraulic loading appears to be adequate and the condition of the plant and machinery is excellent.

Plant Capacity
The design capacity of the Union Township Municipal Authority wastewater treatment facility is 0.650 million Gallons per Day (MGD). The projected 2012 flow is reported as 0.287 MGD. The plant went through the process of re-rating the capacity in 1997. The facility was previously permitted for 390,000 gallons per day. The process was modified in 1994 to run two trains of 2

tanks in series. A separate aerobic digester was constructed to facilitate rededication of existing tankage.

Average Flow

The average daily flow for 2007 was measured to be 0.256 MGD.

The 2007 Chapter 94 projections show that hydraulic overloading will not occur during the projection period.

Hauled Liquid Waste

The Union Township Plant accepts septage that has been generated within the Township and surrounding municipalities. The plant has an existing septage receiving station that included mechanical screening of the liquid waste to remove any inorganic objects that may interfere with the plant process equipment.

The plant typically receives septage when residents are notified to have septic systems maintained. The plant reports 3,935 gallons of septage were received in 2007 and it is not unusual to receive 30,000 gallons of hauled liquid waste on an annual basis. The current rate established for accepting liquid waste is 7½ cents per gallon.

Chesapeake Bay Nutrient Removal

The Authority's NPDES Permit requires compliance with a Total Phosphorus (TP) discharge limit of 10.8 lb. per day by December 1, 2008. This limit is based on the hydraulic capacity (0.650 MGD) and an effluent phosphorus concentration of 2.0 mg/l. The Authority's facility is a "Phase 3" discharger under Pennsylvania's Chesapeake Bay Tributary Strategy (CBTS). Phase 3 dischargers are required to comply with the cap load limits by October 1, 2012. At this time it appears that the Authority's facility will receive cap limits of 11,872 lb. per year for TN and 1,583 lb. per year for TP. The cap loads are based on maximum month design flow of 0.65 MGD, and a maximum concentration of 6.0 mg/l of TN, and 0.8 mg/l of TP.

Based on data from 2005 and 2006, the Union Township wastewater treatment facilities annual effluent nutrient loads are approximatley14,600 lbs. TN and 16,900 lbs. TP. Thus, the plant must reduce its annual phosphorus loading by 12,960 lbs. per year by December 2009. Additionally, the plant must reduce its annual nitrogen loading by 2,730 lbs. per year by October 1, 2012, and its annual phosphorus loading by 15,320 lbs. per year by October 1, 2012.

Compliance Strategy

The Union Township wastewater treatment facility has applied for grant assistance to implement treatment process modifications to achieve biological nutrient reductions. Biological nutrient removal will require modifications to the aeration system, construction of tank baffles, installation of submersible mixers and an internal recycle system.

Planned Upgrades

As described in the 2007 ACT 537 Plan, an upgrade is recommended which calls for the installation of new chemical phosphorus removal facilities, and headworks improvements to address the phosphorus effluent requirements of the NPDES Permit by December 1, 2008. Future upgrades will address CBTS and TMDL nitrogen and phosphorus limits as required.

Recommended Improvements

Chemical Phosphorus removal will have the lowest cost to implement to meet the requirements of the NPDES permit. The necessary facilities include a chemical storage tank with a spill containment structure and a chemical feed system.

The existing plant has an influent anoxic zone that is necessary for nitrification. An additional anaerobic zone is required for denitrification. A portion of the existing biological treatment reactor basins were formerly aerobic digesters. A few pipe penetrations still exist and are located in the pipe gallery below the control building. This could be a possible location for an internal recycle pump to complete the process.

Estimated Costs

The estimated project cost is $400,000 to upgrade the facility to meet phosphorus effluent requirements of the NPDES Permit by December 1, 2008. Future upgrades will be required to meet the CBTS. Estimated project cost is approximately $4,000,000 to comply with the CBTS.

TABLE 8: WASTEWATER TREATMENT FACILITY SUMMARY

Municipality	Location	Age of wastewater treatment facility(Years)	Rated Capacity (MGD)	2005 Avg. Daily Flow (MGD)	2010 Flow (MGD)	Capacity Available (%)	Planned Expansion (MGD)	Infiltration & Inflow	Septage Receiving Station	NRT Upgrade Plans
Brown Twp	Reedsville	30	0.600	0.374	0.411	31.5	0.900	Minor	No	Yes
Bratton Twp.	Rt. 103	2	0.090	0.018	0.042	53.3	None	Minor	No	No
Burnham Borough	Burnham	45	0.640	0.446	0.498	12.0	None	Combined System Severe	No	No
Granville Twp (Junction)	Lewistown Junction	15	0.500	0.336	0.625	0	1.00	Moderate	Yes	Yes
Granville Twp (Strodes Mills)	Strodes Mills	11	0.066	0.033	0.38	3.4	None	Minor	Yes	No
Lewistown	Lewistown	51	2.818	1.69	2.045	27.4	None	Severe	Yes	No
McVeytown	McVeytown	43	0.085	0.028	0.68	20.0	None	Moderate	No	No
Union Twp	Belleville	27	0.490	0.269	0.311	36.5	None	Minor	Yes	No
Wayne Twp	Newton Hamilton	20	0.012	0.005	0.005	N/A	N/A	Moderate	N/A	N/A

*MGD: Million Gallons per Day

Other Wastewater Facilities

The County has two package plants that affect the public which include East Derry Elementary School and Reeds Gap State Park. Both these facilities have enough capacity to address their existing needs and are functioning properly. Both systems receive routine maintenance and annual inspections. Because package plants are not ask to comply with the Chesapeake Bay Tributary Strategy and neither plant is anticipated to expand no further analysis has been provided.

Biosolids Management Overview

Mifflin County has eight (8) operating municipal wastewater treatment plants (wastewater treatment facilities) and collection systems and three (3) non-municipal treatment systems. Since the time of the last Mifflin County Municipal Waste Management Plan Update in 2002, one (1) new municipal system was added to serve Bratton Township. The non-municipal treatment systems serve one school district and two recreational facilities. There has been no change in the status of these facilities since the last Update. The volume of biosolids generated at these facilities (estimated at 0.10 dry tons per day) is insignificant.

2006/07 reported trends in Pennsylvania indicate that a majority of biosolids are disposed of in landfills. Only 38% of biosolids generated in Pennsylvania are beneficially used. There are concerns about the rising costs of landfill tipping fees (up to $89 per ton in eastern Pennsylvania) and the actions by several landfills to refuse to accept biosolids (due to potential odors and capacity issues). As a result, many municipalities have decided to either develop Class B[1] beneficial use programs (in-house or contracted land application), or move to Class A[2] (Exceptional Quality) processing technologies. Class A biosolids can be beneficially used in lower end markets (land application), or used in higher end markets where end users pay a fee for the product (up to $100 per ton).

All Mifflin County wastewater treatment facilities produce biosolids that meet Class B pathogen reduction standards and are either beneficially used or landfilled, with the exception of Granville Township. Bratton and Wayne Townships have not yet confirmed pathogen status, but will likely meet the Class B standards. Granville processes solids to meet Class A pathogen reduction standards using Vermiculture, or composting with worms.

Granville has constructed a facility at its Junction Sewage Treatment Plant to process 500 tons per year of sewage sludge of biosolids. The facility uses vermiculture (earthworms) to transform the biosolids into a valuable and stable soil conditioner referred to vermicompost. Vermiculture is based on the use of hundreds of thousands of worms to process waste such as biosolids. The worm-processed materials are referred to as castings or vermicompost. After the worms process the biosolids to vermicompost, it is dried, screened and stored until tested for compliance with the facility permit. Granville than can sell the product to local users for value and use the funds to offset costs of construction and operation.[3]

Since the closure of the Barner Landfill, end use arrangements for all biosolids generated in the county have been established. For those wastewater treatment facilities that are directing biosolids to landfill, costs have increased significantly. Lewistown is using landfill disposal to manage biosolids, and Burnham is using landfill when other options are not available. End user arrangements for other wastewater treatment facilities are described later in this Chapter.

[1] Class B refers to pathogen reduction standards where pathogens are significantly reduced to levels acceptable for beneficial use in a program where the public has limited access to the site.
[2] Class A refers to pathogens reduction standards where pathogens are further reduced beyond Class B levels and are safe in high public contact sites.
[3] Granville Township Vermicomposting White Paper

BIOSOLIDS GENERATION

In order to obtain data on each source of biosolids generate in the County, a municipal survey was sent to eight (8) municipal wastewater treatment facilities. The completed surveys were reviewed individually with staff from each wastewater treatment facility during a site visit to confirm the data. Results of the surveys are included in tables throughout this report. A copy of the Biosolids Management and Wastewater Treatment System Survey is attached as Appendix B.

Table 9 provides a summary of the county solids generation in 2005, based on surveys completed for all eight (8) municipal wastewater treatment facilities by municipal staff. A total of 791,600 gallons of liquid biosolids and 1,286 wet tons of cake were generated in Mifflin County during 2005. Complete survey generation results can be found in Table # in appendix A.

BIOSOLIDS PROJECTIONS

Using the actual biosolids production data for 2005, and the projected wastewater treatment facility 2010 flows, projections were made for biosolids generation in 2010. Refer to Table # in Appendix A for a summary of the projected 2010 biosolids production. Biosolids produced in Mifflin County (as dry tons per year) are projected to increase by 20% by 2010. This projection does not include an accounting of additional solids that will be generated as a result of meeting higher effluent limits for nitrogen and phosphorus as part of the Chesapeake Bay Strategy.

TABLE 9: SUMMARY OF ANNUAL BIOSOLIDS AND SEPTAGE GENERATION QUANTITIES

Biosolids Generation	**2000 (1)**	**2005 (2)**	**2010 (2)**
Wet Tons Per Year (Dewatered Portion)	1,248	1,080	1,619
Gallons Per Year (liquid Portion)	1,306,700	811,600 (3)	859,065 (3)
Septage Portion	**2000 (2)**	**2005**	**2010**
Gallons	1,565,800		

(1) From the Mifflin County Municipal Waste Management Plan prepared by Gannett Fleming in 2002

(2) Based on responses from the Mifflin County Biosolids Management and Wastewater Treatment System Survey in 2006

(3) Union Township liquid production not included. Solids production included as cake.

A summary of the annual liquid and cake biosolids production for years 2000 and 2005, and projections for 2010 are included in Table 9. A summary of the daily biosolids production volumes for years 2000 and 2005, and projections for 2010 are included in Table 10. Approximately 1.38 dry tons were being produced each day in 2005, and 1.74 dry tons are projected to be produced daily in 2010.

TABLE 10: SUMMARY OF DAILY BIOSOLIDS AND SEPTAGE GENERATION QUANTITIES

Biosolids Generation (Municipal & Non-Municipal)	**2000** (1)	**2005** (2) (3)	**2010**(2) (3)	**Number of Customers in 2005**
Dry Tons Per Day (5-day basis)	1.34	1.39	1.75	14,774
Wet Tons Per Day (5-day basis)	4.80	3.71	4.84	
Gallons Per Day (liquid portion)	3,580	4,601	5,289	
Septage Generation	**2000**	**2005**	**2010**	
Estimated Population on Septic Systems	17,098			
Gallons Per Day	4,290			
Gallons Per Year	1,565,800			

(1) From the Mifflin County Municipal Waste Management Plan Update 2002

(2) Based on responses from the Mifflin County Biosolids Management and Wastewater Treatment System Survey 2006

(3) Excludes solids produced at non-municipal wastewater treatment facilities of approximately 61 gpd or 0.14 dry tons per day (5-day basis)

Biosolids End Use Methods and Alternatives

Approximately, 234 dry tons (65%) of the 358 dry tons of biosolids generated at County treatment plants was dewatered and landfilled in 2005. Approximately 48 dry tons (or 13%) of the 2005 production was land applied as a liquid. The remaining biosolids were either applied to reed beds (43 dry tons or 12%), taken to another wastewater treatment facility (12 dry tons or 3%) or processed into Class A (22 dry tons or 6%) using vermiculture.

Projected quantities for 2010 show that Granville plans to move all production into Class A vermiculture to produce 61 dry tons of product. Additionally, Burnham plans to optimize use of the drying beds and process all 23 dry tons on the drying beds. Union Township plans to remove solids from their reed beds (approximately 1,140 dry tons or an average of 114 tons over 10 years) in 2009 and may take the biosolids to landfill or beneficially use on farmland.

Class B processing technologies include aerobic and anaerobic digestion, lime stabilization, and reed beds. Generally, these less processed biosolids are used in lower value beneficial use

programs that include use as a supplemental fertilizer on farmland or mine reclamation. Class A processing technologies include drying and composting, along with some newer technologies. These technologies generate biosolids that are of a higher value and if properly classified, can be marketed in high-end markets. Generally, processing to meet Class A standards involve higher operating and capital costs. However, Class A biosolids meeting strict customer standards can generate up to $100 per ton, while Class B biosolids are given away to the end user with the generator supporting costs for transportation and application.

Biosolids processing methods practiced in Pennsylvania are listed below in Table 11 and 12.

TABLE 11: BIOSOLIDS CHARACTERISTICS AND END USE PRACTICES

Source	Digestion Process	Primary End Use Method	Class A or Class B?	Factor to Determine End Use Method	Willing to Serve as Regional Facility	Willing to Take Solids to Regional Facility	Factor Influencing Decision on Regional Facility
Bratton Twp	Aerobic Digestion	Drying Beds to Landfill	Unknown	Cost	No	Yes	Cost
Brown	Aerobic Digestion	Liquid to Land Application	Class B	Cost	No, but may take solids from other wastewater treatment facilities	No	NA
Burnham Twp	Clarigestor	Liquid to other wastewater treatment facility	NA	Cost & Reliability	No	Yes	Cost
	Air Drying	Cake to Landfill	Class B				
Granville	Aerobic Digestion	Cake to landfill	Class B	Public Acceptance	Yes	No	Cost & Reliability
	Vermicomposting	Compost to Product Sale	Class A				
Lewistown Borough	Anaerobic Digestion	All Cake to Landfill	Class B	Cost, Ease, & Reliability	May, under certain conditions (1)	Yes	Cost
McVeytown Borough	Aerobic Digestion	Liquid to Land Application	Class B	Cost	No	Yes	Cost
Union Twp	Aerobic Digestion	Reed Beds	Class B	Cost	No	Yes	Cost
Wayne Twp	Aerobic Digestion	Cake to other wastewater treatment facility	Unknown	No Answer	No	No	NA

(1) Would require payback within reasonable time for wastewater treatment facility upgrades (if necessary) and operation costs

TABLE 12: CLASS A (EXCEPTIONAL QUALITY) BIOSOLIDS PROCESSING OPTIONS

Process	Description	Relative Cost		Reliability	Process/Product Odor Potential (1)	Potential Product Value (2)	Level of Management
		Capital	Operating				
Composting – In-vessel	Closed system, controlled environment system	High	Moderate	High	Moderate-High	High	High
Composting – Static Pile	Open system, standing pile composting, non-turning	Moderate	Moderate	Moderate	High	High	High
Composting – Windrow	Open system, standing pile composting, mechanical turning	Moderate	Moderate	Moderate	High	High	High
Drying – Direct & Indirect	Fuel driven mechanical drying system – high air flow	High	High	High	Low-High	Moderate - High	Moderate
Drying – Solar	Greenhouse-type structure with mechanical material turning	High	Low	High	High	Moderate-High	Moderate
Pasteurization	Lime-addition driven mechanical pasteurization system	High	Moderate-High	High	High	Low-Moderate	Moderate
Vermiculture (Composting)	Open-system, standing pile worm-driven composting	High	Low	High	Low	High	Moderate-High
Lime stabilization	Lime-addition driven solids stabilization (Class A)	Moderate	Moderate	High	High	Low	Moderate

(1) Assume that process is operated in accordance with operating standards and that solids fed into the process are fully stabilized.
(2) Meets product specifications for quality and has value in the marketplace

TABLE 13: BIOSOLIDS PRODUCT END USE MANAGEMENT OPTIONS

End Use Method	Description	Relative Cost		Reliability	Process/Product Odor Potential (1)	Potential Product Value (2)	Level of Management
		Capital	Operating				
Land Application	In-house managed agricultural land application	NA	Low	Moderate	Low-High	Low	Moderate
Mine Reclamation	In-house managed application to mine sites being actively mined	NA	Moderate	Low	Low-High	Low	High
Land Application (managed by contractor)	Contractor managed mine reclamation, silviculture and agricultural land application	NA	Moderate	Moderate	Low-High	Low	Low
Landfill Disposal	Biosolids disposal	NA	High	Moderate – High	Low-High	N/A	Low
Market to Users	Class A products can be sold	High	Moderate	High	Low-High	High	Moderate
Municipal-owned farm	In-house managed land application on Authority-owned farm	High	Low	Moderate-High	Low-High	Low	Moderate

(1)Assume that process is operated in accordance with operating standards and that solids fed into the process are fully stabilized.
(2) Meets product specifications for quality and has value in the marketplace

Once processed, biosolids can be beneficially used in a number of ways or taken to landfill for disposal. Biosolids end use methods are identified and described below.

Land application – approximately 38% of the biosolids generated in Pennsylvania are land applied. They are typically Class B biosolids. Included is application to farmland and disturbed mine land under PADEP approved programs. Land application is widely practiced statewide with some pockets of public opposition. However in recent years, streamlined PADEP regulations and courts rulings against restrictive municipal ordinances have improved the atmosphere for land application. Typically, land application is the lowest cost option for biosolids end use. There have been some recent concerns about

potential limitations on land application due to soil phosphorus levels. However, Brown Township and McVeytown Borough have viable land applications programs.

Marketed products – a majority of Class A biosolids generated in Pennsylvania are marketed to landscapers or golf courses, or blended with other residual materials and beneficially used. Granville Township processes biosolids using vermicomposting, the only Class A technology practiced in Mifflin County. Granville Township biosolids are marketed to golf courses and generate up to $100 per wet ton. Fortunately, all 2007 production has already been committed (sold).

Landfill – a majority of biosolids, mostly Class B, are landfilled. The majority of biosolids generated in Pennsylvania are landfilled. Biosolids must meet Class B standards as a minimum and pass the paint filter test to be acceptable for landfill. The Barner landfill, that served Mifflin County in the past, is no longer in operation. Therefore, Mifflin County biosolids destined for landfill disposal must be taken out of the county. Lewistown and a portion of Burnham biosolids are taken to landfill. Representatives from Union Township indicated that they may take biosolids processed on their reed beds to landfill when the beds are at capacity. Landfill tipping fees fluctuate widely in Pennsylvania, ranging from $23 to $89 per wet ton. Transportation costs are related to the distance to the landfill, and range from $12 to $30 per wet ton.

TABLE 14: INDIVIDUAL SUMMARY OF BIOSOLIDS GENERATION QUANTITIES (2005)

Municipal wastewater treatment facility	2005 Solids Production							
	Dry Tons Per Day (5-day)	Dry Tons Per Year	Phase	Wet Tons Per Day Cake (5-day)	Wet Tons Per Year Cake	Gallons Per Day Liquid	Gallons Per Year Liquid	% TS
Bratton Twp	0.015	4	Cake	0.04	10	--	--	40%
Brown Twp	0.173	45	Liquid	--	--	1,858	678,000	1.6%
Burnham Twp	0.046	12	Liquid	--	--	191	69,600	4.1%
	0.035	9	Cake	0.04	11	--	--	80%
Granville Twp	0.054	14	Dewatered	0.36	93	--	--	15%
	0.085	22	Compost	0.15	40	--	--	55%
Lewistown Borough	0.535	139	Dewatered	2.81	732	--	--	19%
	0.262	68	Cake	0.30	77	--	--	88%
McVeytown	0.010	3	Liquid	--	--	164	60,000	1.0%
	0.008	2	Cake	0.01	2.3	--	--	0.83%
Union Twp	0.167	43	Cake		114	2,378	867,800	38%
Wayne Twp	0.001	0.23	Liquid	--	--	11	4,000	1.4%
TOTAL	1.391	361		3.71	1,080	4,602	811,600	

Source: Biosolids Management and Wastewater Treatment Survey

Biosolids Considerations

As previously noted, a survey was conducted to update information collected earlier relating to biosolids production and practices, and to determine if there were any opportunities for more cost effective management of the county's biosolids. The major Mifflin County wastewater treatment facilities all responded to the surveys, and plant visits were conducted to gain a better understanding of concerns and constraints of each respondent. A summary of the results of the surveys and information gathered during the plant visits follows.

Brown Township

Brown Township wastewater treatment facility employs aerobic digestion to stabilize solids generated in the wet end processes. The wastewater treatment facility staff recently made process modifications in order to extend the time under aeration, in order to improve the somewhat poor digestion capability. Current plans include upgrading the aeration system to an oxidation ditch that will allow for more time under aeration, producing a more stabile product. Design and construction began at the end of 2006. After the solids handling improvements have been completed, the wastewater treatment facility will also have expanded storage capacity to allow for storage for up to four (4) months.

The biosolids produced at the Brown Township wastewater treatment facility meet High Quality pollutants[4] (metals), Class B pathogen standards, and occasionally meet process vector attraction reduction[5] (VAR) standards. All biosolids produced are handled as a liquid as there is no means of dewatering at the wastewater treatment facility. The quality of the biosolids is good and they acceptable for beneficial use.

Brown Township developed and is operating a liquid land application program. They haul liquid biosolids to their own 24 acre farm about three (3) miles from the wastewater treatment facility where they apply 100% of their biosolids. It was reported that biosolids are applied to each field every year. Brown Township considers land application to be the most cost effective program available and plans to continue with this program. Reliability was considered the most important factor in making decisions about biosolids management and end use. Program costs were considered the second most important factor. Brown Township officials reported on the survey that they would not consider participation in a regional facility, unless their own program was no longer reliable and cost effective.

At the time of the survey, Brown Township wastewater treatment facility does not accept septage because of the limited solids handling capability. However, septage and/or solids from other wastewater treatment facilities may be accepted in the future, after the plant improvement project is completed.

Although the Brown Township biosolids management program is seen as cost effective and reliable, some improvements should be considered. Repeated biosolids applications to fields

[4] High Quality Pollutants refers to PADEP Table 3, or the lowest concentration of metals in the biosolids.
[5] VAR refers to the potential for disease transmission through vectors (rats, flies, etc) when vectors are attracted to biosolids. Highly stable and fully digested biosolids are less likely to attract vectors and transmit disease.

every year can lead to excessive phosphorus in the soils. It is suggested that the landbase be expanded so that biosolids field applications can be reduced to every 3rd year. Brown Township does not have a secondary option for handling biosolids. It is suggested that another option be developed, in case liquid land application is not possible. If transportation costs for liquid biosolids are considered too high, dewatering may be an option. It is suggested that a comparison of costs for liquid hauling verses dewatering and hauling solid material be considered. In the event that the current program is limited, dewatering may be necessary to take advantage of a secondary option.

Bratton Township

The Bratton Township wastewater treatment facility is newly constructed and has little flow. Solids are aerated and dewatered in uncovered drying beds. In 2007, the Township applied for a Growing Greener Grant for the construction of a roofing/housing structure to cover the drying beds. It was reported that when the drying beds are filled, the solids will likely go to landfill. It is assumed that after processing, the solids generated at the wastewater treatment facility will meet the minimum criteria for landfill and/or beneficial use. **There are no plans at this time to consider participation in a regional biosolids facility.**

Burnham Borough

Burnham Borough wastewater treatment facility employs anaerobic digestion (clarigester) to partially stabilize solids generated in the wet end, and processes and dewaters/further treats biosolids in covered drying beds. The wastewater treatment facility is an aging facility employing old technology for digestion. Solids processing and dewatering units are limited and must be managed carefully to meet minimum standards for processing. Storage capacity for solids in the clarigester and on the drying beds is limited. Current plans do not include any planned improvements to the wastewater treatment facility to better handle solids.

The biosolids produced at the Burnham wastewater treatment facility meet High Quality pollutants (metals), Class B pathogen standards in the warmer months, and occasionally meet process vector attraction reduction (VAR) standards. Biosolids produced are handled either as dried or as a liquid. The dried biosolids go to landfill and the liquid solids are transported to the Milton wastewater treatment facility. Drying biosolids is limited by capacity of the drying beds, seasonal temperatures, and staff limitations in cleaning the beds. The quality of the biosolids is marginal and may be acceptable for beneficial use.

Burnham's options for end use are limited to landfill for dried biosolids and hauling liquid to other wastewater treatment facilities. **Recently, their budget for handling solids increased significantly. Borough officials reported that they would prefer to transport all of their solids to a local wastewater treatment facility and use the drying beds for storage when necessary. Cost was considered to be a critical factor by Borough officials when making decisions about biosolids management and end use. Staff limitations and reliability were considered the most important factors by wastewater treatment facility personnel. Burnham Borough officials reported on the survey that they would consider participation in a regional facility, but only after considering the costs.**

Burnham wastewater treatment facility does not accept septage because of the limited solids handling capability.

Burnham Borough officials are very concerned about the costs associated with their biosolids management program. The following improvements should be considered. Landfill is most likely the most cost effective option at this point. Careful use of the drying beds may be the best option to lower costs. Liquid hauling to Milton is likely the most costly option. It is suggested that Burnham officials approach other local officials to discuss liquid hauling to their wastewater treatment facilities. Another possibility is for Burnham to provide the sludge in a liquid form instead of a cake form to Granville Township to process.

Granville Township

Granville Township wastewater treatment facility employs aerobic digestion to stabilize solids generated in the wet end process and vermicomposting to further treat biosolids. After digestion, solids are dewatered and applied to the vermicompost beds where worms assist in further digestion of the solids. Once composted, the biosolids are screened and dried to make a consistent product, called "GranVerm". Storage capacity for aerobically digested solids and composted product is in excess of 6 months.

The biosolids produced at the Granville Township wastewater treatment facility meet High Quality pollutants (metals), Class A pathogen standards, and process vector attraction reduction (VAR) standards. The quality of the biosolids is excellent and they are acceptable for all types of beneficial use options, including marketing and sales or blending with other residuals or soils to make value added products. Once the strict regulatory processing standards are met, beneficial use options are easily implemented and regulatory oversight is minimal.

Granville Township developed and is operating a marketing program to sell small lots (bagged) and bulk product. Their focus has been on sales to golf courses, but is also selling to vineyards and other high end markets. Although direct sales do not cover all operating costs, total program costs are low. Granville Township considers vermicomposting to be a reliable and sustainable program for managing biosolids and plans to expand the program as processing capacity becomes limiting. Public acceptance was considered the most important factor in making decisions about biosolids management and end use. Program costs were considered the second most important factor. **Granville Township officials reported on the survey that they would consider serving as a regional facility. However, expansion of the current facility would be necessary if Granville were to accept additional solids for processing. As would be expected, costs associated with facility expansion and operation would be shared by all participating municipalities. Land adjacent to the wastewater treatment facility was recently acquired by the Township to expand the facility, if necessary.**

Granville Township wastewater treatment facility does accept septage and solids from other wastewater treatment facilities. Solids generated at the Strodes Mills wastewater treatment facility are processed at the Granville wastewater treatment facility.

The Granville Township biosolids management program is viewed as cost effective, reliable, and sustainable. Granville Township worked with the vermicompost equipment manufacturer and

gain Environmental Protection Agency (EPA) approval for Class A pathogen reduction equivalency for the vermicompost process.

Lewistown

Lewistown wastewater treatment facility employs anaerobic digestion to stabilize solids generated in the wet end processes. Digested biosolids are dewatered either by belt filter press or on enclosed drying beds. Methane generated from the anaerobic digestion process is used for heating the digesters and buildings. The anaerobic digestion system is undergoing major improvements. After the digester improvements have been completed, there will be additional digester capacity and digester operation will improve. The wastewater treatment has little dewatered biosolids storage capacity at the plant and must move biosolids off site regularly.

The biosolids produced at the Lewistown wastewater treatment facility meet High Quality pollutants (metals), Class B pathogen standards, and process vector attraction reduction (VAR) standards. All biosolids are dewatered. The quality of the biosolids is excellent and they acceptable for beneficial use or landfill.

Lewistown is disposing of biosolids at a landfill in Clinton County. Costs for landfill transportation and disposal are relatively high compared to other options. Reliability was considered the most important factor in making decisions about biosolids management and end use by wastewater treatment facility personnel. Program costs were considered the most important factor by Lewistown officials. **Lewistown wastewater treatment facility personnel reported on the survey that they may consider investing and participating in a regional biosolids processing facility. However, cost would be a major consideration. Lewistown would also consider serving as a regional facility if they could recover investment costs for capital improvements and generate revenues. Plant personnel believe that beneficial use of the biosolids would be important if Lewistown were to serve as a regional facility.**

Lewistown wastewater treatment facility does accept septage, but receives little volume. If it appears that there is a need for regional septage treatment, Lewistown would consider constructing a septage receiving station to offload and pretreat septage prior to treatment.

The following suggestions should be considered to improve the cost effectiveness and reliability of the Lewistown biosolids management program. Lewistown produces an excellent quality biosolids and should consider a more cost effective end use method. Land application regulations are less restrictive than in previous years and are allowing numerous other municipalities to successfully manage beneficial use programs in Pennsylvania. If wastewater treatment facility storage is a constraint, on-farm storage is being permitted by PADEP for the land application program. At this time, Lewistown does not have a secondary option for handling biosolids. It is suggested that another option be developed, in case landfill disposal is discontinued. Finally, Lewistown may want to consider looking at opportunities for making use of potential excess capacity in their anaerobic digestion system (marketing for septage and/or solids processing, etc). Careful study of the costs and impacts on other plant processes would be important before making a decision.

McVeytown

McVeytown wastewater treatment facility employs aerobic digestion to stabilize solids generated in the wet end processes. Solids can be handled as a liquid or applied to drying beds to be dewatered. Lime is also added to the digester prior to end use to meet regulatory requirements for process VAR. The wastewater treatment facility has limited storage capacity in the digesters, but is able to regularly move biosolids off-site or apply to the drying beds.

The biosolids produced at the McVeytown wastewater treatment facility meet High Quality pollutants (metals), Class B pathogen standards, and process VAR standards. A majority of the biosolids produced are handled as a liquid, with the remainder dried. The quality of the biosolids is good and they are acceptable for beneficial use.

McVeytown developed and is operating a liquid land application program**. They haul liquid biosolids to a qualified farm about 1.5 miles from the wastewater treatment facility where they apply 100% of their biosolids.** McVeytown considers land application to be the most cost effective program available and plans to continue with this program. Public acceptance and reliability were considered the most important factors by plant personnel in making decisions about biosolids management and end use. Program costs were considered the most important factor by public officials. **McVeytown wastewater treatment facility personnel reported on the survey that they would consider participation in a regional biosolids facility, if the costs lower than costs for their existing program.**

McVeytown wastewater treatment facility does not accept septage because of the limited solids handling capability. McVeytown officials and plant personnel consider their biosolids management program to be cost effective and reliable.

Union Township

Union Township is the most distant from the main population center in Mifflin County and projected growth areas around Lewistown. Union Township wastewater treatment facility employs aerobic digestion to stabilize solids generated in the wet end processes. Solids are applied to reed beds where they are stabilized over a period of years. After the reed beds are full (5 to 10 years), the solids are removed from the beds and can be beneficially used or disposed of in a landfill. The reed beds were evacuated in the summer of 2007. 264 dry tons were removed from the reed beds and sent to a landfill at a total cost of $75, 920.38. A recent plant improvement project increased plant treatment capacity, so that there is greater than 100 days of liquid storage.

The biosolids produced in the reed beds at the Union Township wastewater treatment facility have not been tested recently, but most likely will meet High Quality pollutants, Class B pathogen standards, and occasionally meet process VAR standards. All biosolids are applied to the reed beds for further treatment. The quality of the biosolids is assumed to be good, but should be tested to confirm that they are acceptable for beneficial use.

Cost and reliability were considered the most important factors for Union Township officials in making decisions about biosolids management and end use. Environmental Stewardship and

public acceptance were considered the most important factors by wastewater treatment facility personnel. **Union Township personnel reported on the survey that they would participate in a regional facility, as long as the costs were comparable to other options.**

Union Township wastewater treatment facility accepts septage, and has purchased a simple septage receiving station but has not constructed it. Even though Union Township does not have mandatory on-lot system pump outs, neighboring townships have required pump outs in the past. Union Township has enough plant capacity to take and treat septage.

Although the Union Township biosolids management program focuses primarily on costs, some improvements should be considered. It is strongly suggested that the reed bed biosolids be tested for (regulatory requirements) for metals and pathogens annually. Concentration of certain metals may take place in the biosolids and may preclude beneficial use as one of the options. In addition, it is suggested that a cost be estimated for landfill disposal of the reed bed biosolids. Volumes can be projected and landfill costs established as the basis of the estimate, thereby eliminating any budget shortfalls if landfill disposal is selected as the end use method.

Wayne Township

The Wayne Township wastewater treatment facility is scheduled for closure in 2009 and all flows will be diverted to the Mount Union wastewater treatment facility. Biosolids from this plant will not be considered as part of this study.

Regional Options

As previously noted, all Mifflin County wastewater treatment facilities have made arrangements for some type of biosolids end use at this time. Costs for biosolids management end use for some wastewater treatment facilities has increased, particularly those who are hauling to landfill. Most municipalities were willing to consider a regional option.

Table 13 summarizes the responses from the municipal wastewater treatment facility staff on the Mifflin County Biosolids Survey. Cost was acknowledged as the primary consideration when considering biosolids end use options. Reliability was the highest rated secondary consideration. The factors included in the survey included cost, reliability, regulatory complexity, environmental stewardship, staff limitations, and public acceptance.

Class A verses Class B was not an issue for a majority of municipalities, with exception of Granville Township.

Four Options were considered for Mifflin County Biosolids Management. They are listed below.

Option 1 – Status Quo (Class B options may become limiting (includes landfill), each program can improve operation and economics and reliability,)

Option 2 – Status Quo, with some solids being transported to other facilities (same as Option 1, some facilities taking solids to other local wastewater treatment facilities),

Option 3 – Existing facility serves as a regional facility (no facility may want to take on that responsibility, establishing financial equality may become burdensome, may not have enough base solids to make the economics work and some may opt out, will want to focus on most densely populated areas for a regional facility,)

- Granville using the Class A vermiculture process
- Lewistown serves as a regional facility using the Class B anaerobic digestion process
- Lewistown, making additional improvements to their program to become more cost effective and reliable, and/or move to Class A

Option 4 – Form Regional Authority (depends on transportation distance, cost, willingness to work together and give up some control, ability to get grants,)

Nutrient Trading

Under the Chesapeake Bay Tributary Strategy, Pennsylvania needs to reduce its nutrient and sediment loadings on the Bay by addressing both point and non-point sources. To quantify the nutrient reductions needs, EPA has established maximum nutrient and sediment loads for each watershed tributary to the Chesapeake Bay. Trading may occur for either nutrient (total phosphorus and total nitrogen) or sediment credits. Credits are the unit of compliance that corresponds with a pound of reduction of nutrient or sediment as recognized by the Department which, when registered by the Department, may be used in a trade. Credits are measured, verified and accounted for on an annual basis. There are baseline, threshold, and documentation requirements for generating credits within a watershed that are outlined further under policy guidelines established by the DEP.

Credits may be used by NPDES permittees to meet effluent limits under specific conditions. Because the credits will be used to meet a permit effluent limit, permittees will only be authorized to use credits through the provisions of their NPDES permit. Further under Act 537 and its implementing regulations, all municipalities must develop and implement a sewage facilities plan that addresses present and future sewage disposal needs for the municipality. **The use of nutrient reduction credits may be included in any Act 537 proposal concerning a new or expanded discharge.**

Effluent Quality Requirements, Wastewater Collection and Treatment Facilities Summary

- The total design capacity for all the municipal facilities in Mifflin County for 2007 was 5.35 MGD verses a capacity of 5.26 MGD in 1999. There is 58% unused capacity available at the municipal facilities. Projected wastewater flows for 2010 are 3.843 MGD, leaving approximately 28% unused capacity. There are minimal flows associated with non-municipal treatment systems.
- All current and planned upgrades to the Brown Township wastewater treatment facility are being designed for an average daily flow of 900,000 gallons per day (0.9 MGD). This represents an anticipated expansion of 50% to accommodate future growth.
- Decatur Township does not contain any public sewer infrastructure.
- Since 1994, as funds become available, the Burnham Borough Authority has been implementing sewer system improvements to reduce extraneous flows to the wastewater treatment facility and reduce combined sewer overflows to Hungary Run and Kishacoquillas Creek. These improvements have been facilitated through the assistance of the Community Development Block Grant Program, which is administered by the Mifflin County Planning and Development Department. These grants have enabled the Authority to continue its sewer system improvements program.
- The wastewater conveyance system in the borough of Juniata Terrace is over fifty (50) years old, it is in sound condition and no significant inflow or infiltration problems exist. The system is operating at less than design capacity.
- The design capacity of the Lewistown Borough wastewater treatment facility is 2.818 million Gallons per Day (MGD). The projected 2010 flow is reported as 2.045 MGD. The Borough implemented an I/I reduction program which has corrected many sources of extraneous flow, many new sources are developing as the sewers age. Additionally, the wastewater treatment facility effluent concentrations are significantly higher than the anticipated effluent loading limits for nitrogen and phosphorus.
- It is estimated by the authority engineers, 75 million dollars will be needed to meet the anticipated expansion and maintenance requirements for all municipally owned wastewater treatment facilities within Mifflin County. Approximately 50% of this 75 million dollar estimate is associated with improvements necessary to meet the Chesapeake Bay Tributary Strategy. The remaining 50% is associated with requirements set for by flood plain provisions, routine maintenance, and planned expansion.
- Nutrient Trading Credits may be used by NPDES permittees to meet effluent limits under specific conditions. Because the credits will be used to meet a permit effluent limit, permittees will only be authorized to use credits through the provisions of their NPDES permit. The use of nutrient reduction credits may be included in any Act 537 proposal concerning a new or expanded discharge.

TABLE 15: WASTEWATER TREATMENT CAPACITY AND PROCESSES

Municipal wastewater treatment facility	Plant Capacity (MGD)	Wastewater Flows			Anticipated Cost to Meet Chesapeake Bay Tributary Strategy and/or System Expansion/Maintenance
		1999 (MGD)	2005 (MGD)	2010 (MGD)	
Bratton Township	0.09	NA	0.018	0.042	**$465,000**
Brown Township	0.60	0.33	0.374	0.411	**$4,344,000**
Burnham Borough	0.64	0.35	0.446	0.498	**$6,000,000***
Granville Township	0.50	0.24	0.260	0.469	**$21,000,000**
Lewistown Borough	2.82	1.72	1.690	2.045	**$31,000,000**
McVeytown Borough	0.09	0.03	0.037	0.062	**$1,000,000**
Mount Union	1.1	NA	0.337	0.465	**$452,000**
Union Township	0.49	0.23	0.269	0.311	**$4,000,000**
Wayne Township	0.12	NA	0.005	0.005	**$7,500,000**
TOTALS	**5.35**	**2.90**	**3.099**	**3.843**	**$75,761,000**

All costs are estimates were provided to RETTEW Associates, Inc. by the individual authority engineers based on costs associated with implementation of the Chesapeake Bay Tributary Strategy, floodplain improvement requirements and routine maintenance.

III. Land-Use Practices

Laws, policies, and institutions drive the infrastructure decisions that determine a region's economic and environmental future. Decisions about constructing or rehabilitating facilities to handle sewage can either support the sustainable use of land and watersheds, efficient patterns of growth and economic development, and continued vitality and economic health of existing urban communities, or they can contribute to sprawl, higher costs, and loss of urban vitality. Choices about sewage infrastructure are a significant piece of the land use puzzle, but they are poorly understood and little studied in comparison with more familiar growth and development issues such as transportation, education, taxes, water supply and land use regulation.

The Mifflin County Comprehensive Plan is rooted in smart growth principles utilizing a growth management system in which the future land uses range from the Urban Center and High Growth Areas to a Rural Development and Natural Resources Protection Area. This is a sound planning practice but implementations of these growth management practices are critical in achieving the County's goals. The following section provides an analysis of how the County along with each region's planning and ordinance are consistent with the County's planning document along with whether appropriate sewer planning provisions are implemented within the local planning documents and ordinances. Some specific items discussed in the following pages include capped sewer (dry) lines and sewer feasibility studies which are explained below and further defined in the glossary:

Capped sewer (dry) lines requirements: if a public sanitary system is not in place or cannot be extended, the developer may provide individual subsurface disposal systems subject to applicable regulations of the DEP; provided that, if a public sanitary sewer system will be provided within a six year period as indicated in the municipal sewage facilities plan, the elected officials may require installation of a capped sewer (dry) lines within the street right-of-way. This ordinance provision is usually provided within areas that are in a faster growing municipality that recently adopted its sewage facilities plan and understands where future public sewer extensions will ultimately be extended.

Municipalities can require sewer feasibility studies in which they require the development if it is within so many feet of an existing public sewer line prove that there is appropriate capacity at the wastewater treatment facility and conveyance system to hook-up or not to the system. Some municipalities have a size threshold requirement which requires subdivisions applications over a certain size (typically 25 lots) to produce a sewer feasibility study.

Mifflin County

The County's current Subdivision and Land Development Ordinance (SALDO) has provisions and regulations relating to both individual on-lot sewage disposal systems as well as centralized sanitary sewage facilities for all new subdivisions and land developments. These provisions include minimum lot area requirements for various residential uses, as Section 503.4.1 of the Pennsylvania Municipalities Planning Code (MPC) enables municipalities which have not enacted zoning ordinances to regulate lot sizes based on the availability and type of water and sewage. The County's minimum lot sizes appear to be adequate to accommodate the different uses based upon the availability and type of water and sewer for both residential and non-residential development.

Additionally, the County SALDO provides that developers of new subdivisions and land developments may be required to install capped sewer (dry) lines connecting to and within the subdivisions and land developments. The use of a capped sewer (dry) lines connection requirement places the cost burden of initial infrastructure investment on the developer. Finally, the County's ordinance differentiates and has allowances for both public and private centralized sewage facilities.

The County's ordinance does not require submission of a sewer feasibility study/report for connection to a centralized sewage system, and also does not require secondary sets of percs and probes for individual on-lot sewage systems. Sewer feasibility studies are typically required to be prepared by a professional engineer and submitted along with the preliminary land development plan. These studies are typically required when a municipality has centralized sewage facilities, but not all properties are or can feasibly be connected to such facilities. The purpose of these studies is to quantify the cost or feasibility of extending and connecting existing sewer facilities to the proposed subdivision or land development.

Northeast

Of the two municipalities in the Northeast planning area, only Brown Township has a zoning ordinance which regulates the municipality's lot sizes. The ordinance regulates minimum lot size based on three variables, the type of land use proposed, the type of water and type of sewer. In addition, Brown Township recently adopted a Township subdivision and land development ordinance. **Brown Township should consider revising its lot size requirements to allow for appropriate size and space for on-lot sewage disposal.**

Although Armagh Township does not have a zoning ordinance, they do have their own subdivision and land development ordinance and like the County's SALDO, they do regulate residential lot sizes based on the availability and type of water and sewer but unlike the County they do not have non-residential minimum lot sizes for water and sewer. Armagh's SALDO provisions relating to sewage facilities mirror those of the County SALDO, with provisions requiring capped sewers and allowances for private centralized sewage facilities. It should be noted that Brown Township does not have its own SALDO, and therefore utilizes the County SALDO.

As with the County's SALDO, Armagh's SALDO lacks provisions for sewer feasibility studies and requirements for secondary percs and probes for alternate on-lot sewage disposal site and system. Additionally, Armagh's ordinance does not require residential units within mobile home parks to be served centralized sewer.

Southeast

Decatur Township is the only municipality in the Southeast planning area. The Township does not have a zoning ordinance but they do have their own subdivision and land development ordinance in which they regulate residential lot sizes based on the availability and type of water and sewer but unlike the County they do not have non-residential minimum lot sizes for water and sewer. Decatur's SALDO provisions for sewage facilities include requirements for capped sewers and allowances for private centralized sewage facilities.

Decatur's SALDO also lacks provisions for sewer feasibility studies and requirements for secondary percs and probes for alternate on-lot sewage disposal site and system. Additionally,

Decatur's ordinance does not require residential units within mobile home parks to be served by centralized sewer.

South Central

Of the five municipalities in the South Central planning area, only Juniata Terrace Borough does not have a zoning ordinance. Therefore, among other things relating to sewer, Juniata Terrace Borough relies on the County's SALDO to regulate minimum lot sizes based on availability and type of water and sewer.

The other municipalities have their own zoning ordinances and subdivision and land development ordinances. Besides regulating lot sizes for uses by district based on availability and type of water and sewer within the zoning ordinance, Lewistown Borough does not have any provisions for requiring capped sewers, allowances for private centralized sewage facilities, sewer feasibility studies and/or requirements for secondary percs and probes for alternate on-lot sewage disposal sites and systems. Because of its urban geography, (smaller lot sizes served by public system) the Borough will not need to require secondary percs and probes for on-lot sewage disposal as they will require all new applicants to hook-up to the public system. The capped sewers ordinance may be appropriate but likely the Borough has very few areas that are not served or a developer would not be responsible for connection to the public system.

Granville and Derry Townships and Burnham Borough do have provisions for capped sewers, with Granville's provisions being similar to the County's. Burnham Borough's and Derry Township's capped sewer provisions are more detailed than other municipalities in the County. Specifically, the provisions state that the developer provide for the installation of capped sewer lines, including mains capped at the limits of the subdivision and laterals capped at the street right-of-way line. Additionally, if the developer is not required to connect to active sewer lines immediately, in addition to capped sewers, each lot must be provided with and served by an on-lot septic system until connection to the centralized system is made.

Although Burnham Borough and Granville Township do not require secondary percs and probes for alternate on-lot sewage disposal sites and systems, Derry Township's Zoning Ordinance does require them. Additionally, while Granville and Derry Township do not require sewer feasibility studies, and do allow for private centralized systems, Burnham Borough does require sewer feasibility studies, and does allow private centralized systems.

Southwest Central

Of the three municipalities in the Southwest Central planning area, only McVeytown Borough has a zoning ordinance which regulates the municipality's minimum lot sizes. The ordinance regulates minimum lot size based on three variables, the type of land use, the type of water and type of sewer. Relating to the zoning, a few of McVeystown's minimum lot size requirements for zoning districts served with water and sewer could be further reduced to accommodate more compact development, depending on local preference. Both McVeytown and Bratton Township do not have their own SALDO, and therefore rely on the County's SALDO.

Oliver Township has its own SALDO in which they regulate residential lot sizes based on the availability and type of water and sewer. Oliver's SALDO provisions relating to sewage facilities also require capped sewers and allowances for private centralized sewage facilities. **Oliver's SALDO lacks provisions for sewer feasibility studies and requirements for secondary percs and**

probes for alternate on-lot sewage disposal site and system. Additionally, Oliver's ordinance does not require residential units within mobile home parks to be served centralized sewer nor does it have non-residential minimum lot size requirements.

Southwest

Of the three municipalities in the Southwest planning area, only Kistler Borough has a zoning ordinance which regulates the municipality's minimum lot sizes. The ordinance regulates minimum lot size based on three variables, the type of land use proposed, the type of water and type of sewer. Relating to zoning, a few of Kistler's minimum lot size requirements for zoning districts served with water and sewer could be further reduced to accommodate more compact development, depending on local preference. **Finally, all three municipalities do not have their own adopted SALDOs, and must therefore rely on the County's SALDO.**

The Western Mifflin County Future Land Use Plan indicates the entirety of Kistler Borough as a "Village Center", while the Zoning Map provides for five (5) different designations including agriculture-residential, open space conservation, medium density residential and two village designations, residential, and commercial.

Northwest

Of the two municipalities in the Northwest planning area, only Union Township has a zoning ordinance which regulates the municipality's minimum lot sizes. The ordinance regulates minimum lot size based on three variables, the type of land use proposed, the type of water and type of sewer. Relating to zoning, within the RS and V zones, the minimum required lot sizes, especially for those not served with centralized water and sewer, appear rather small. Although Menno Township does not have a zoning ordinance, they, like Union Township, have their own SALDO. Menno's SALDO does regulate residential lot sizes based on the availability and type of water and sewer but unlike the County they do not have non-residential minimum lot sizes for water and sewer.. The SALDO provisions for both Menno and Union Township relating to sewage facilities require capped sewers and provide allowances for private centralized sewage facilities.

The SALDOs for both Menno and Union Township lack provisions for sewer feasibility studies and requirements for secondary percs and probes for alternate on-lot sewage disposal site and system. Additionally, Menno's ordinance does not require residential units within mobile home parks to be served centralized sewer.

TABLE 16: SEWER PLANNING IN LOCAL ORDINANCES SUMMARY

Location / Region	Zoning Ordinance	Adequate Lot Sizes	Capped Sewer &/or Extension/Connection	Secondary Perc/Probes & Easements	Sewer Feasibility Study	Private Centralized Systems
Mifflin County		Yes	Yes	No	No	Yes
Northeast						
Armagh Township	No	Yes	Yes	No	No	Yes
Brown Township	Yes	No	Yes	No	No	Yes
Southeast						
Decatur Township	Yes	Yes	Yes	No	No	Yes
South Central						
Burnham Borough	Yes	Yes	Yes	No	Yes	No
Derry Township	Yes	Yes	Yes	Yes	No	Yes
Granville Township	Yes	Yes	Yes	No	No	Yes
Juniata Terrace Borough	No	Yes	Yes	No	No	Yes
Lewistown Borough	Yes	Yes	No	No	No	No
Southwest Central						
Bratton Township	No	Yes	Yes	No	No	Yes
McVeytown Borough	Yes	Yes	Yes	No	No	Yes
Oliver Township	No	Yes	Yes	No	No	Yes
Southwest						
Kistler Borough	Yes	Yes	Yes	No	No	Yes
Newton Hamilton Borough	No	Yes	Yes	No	No	Yes
Wayne Township	No	Yes	Yes	No	No	Yes
Northwest						
Menno Township	No	Yes	Yes	No	No	Yes
Union Township	Yes	Yes	Yes	No	No	Yes

PA DEP

Although there are no state laws requiring a specific minimum or maximum lot size, generally in Pennsylvania, the minimum lot size allowed for the placement and use of an individual on-lot sewage system is approximately one acre. This is dependent on many local factors including soil type and characteristics, depth to bedrock, depth to water table, etc.

According to PA DEP, the minimum setback/separation distances relating to individual on-lot sewage disposal systems include the following:

	Septic Tank	Drainfield
• Dwelling/structure -	10'	10'
• Well-private well -	50'	100'
• Surface water -	25'	50'
• Property lines -	10'	10'
• Seasonal high water table/ limiting layer -	-	4'
• Wetlands -	25'	25'

Land-Use Practices Summary

- The Mifflin County Comprehensive Plan is rooted in smart growth principles utilizing a growth management system in which the future land uses range from the Urban Center and High Growth Areas to a Rural Development and Natural Resources Protection Area. This is a sound planning practice but implementations of these growth management practices are critical in achieving the County's goals.
- The County's ordinance does not require submission of a sewer feasibility study/report for connection to a centralized sewage system, and also does not require secondary sets of percs and probes for individual on-lot sewage systems.
- Armagh's SALDO lacks provisions for sewer feasibility studies and requirements for secondary percs and probes for alternate on-lot sewage disposal site and system. Additionally, Armagh's ordinance does not require residential units within mobile home parks to be served centralized sewer.
- Lewistown Borough does not have any provisions for requiring capped sewers, allowances for private centralized sewage facilities, sewer feasibility studies and/or requirements for secondary percs and probes for alternate on-lot sewage disposal sites and systems. Granville and Derry Townships and Burnham Borough do have provisions for capped sewers, with Granville's provisions being similar to the County's.
- Oliver's SALDO lacks provisions for sewer feasibility studies and requirements for secondary percs and probes for alternate on-lot sewage disposal site and system. Additionally, Oliver's ordinance does not require residential units within mobile home parks to be served centralized sewer.
- Finally, all three municipalities in the Southwest do not have their own adopted SALDOs, and must therefore rely on the County's SALDO.
- The SALDOs for both Menno and Union Township lack provisions for sewer feasibility studies and requirements for secondary percs and probes for alternate on-lot sewage disposal site and system. Additionally, Menno's ordinance does not require residential units within mobile home parks to be served centralized sewer**.**
- Brown Township's minimum lot size provisions are not large enough to adequately provide for on-lot sewage disposal.
- Armaugh, Decatur, Menno and Oliver Townships do not have non-residential minimum lot sizes.

IV. Sewage Facilities Planning and Impact on Economic Development

This chapter reviews existing municipal land-use practices to determine consistency between long range planning and local ordinances. The Mifflin County Comprehensive Plan long range planning was also compared to local planning for consistency purposes. This Chapter also identifies areas of economic development potential based on local zoning ordinance provisions, and wastewater and conveyance capacity.

The forthcoming analysis is based on the following definitions from the Pennsylvania Municipalities Planning Code:

Pennsylvania Municipalities Planning Code Definitions:

Consistency: an agreement or correspondence between matters being compared which denotes a reasonable, rational, similar, connection or relationship.

General consistency, generally consistent: that which exhibits consistency.

Northeast

County Planning Consistency

The 1999 Armagh Township future land use plan is consistent with the Mifflin County Comprehensive Plan. Brown Township's comprehensive plan was adopted in 1971, given the date of adoption the 1979 Zoning Ordinance was used to compare against the County Comprehensive Plan. Brown Township's zoning map is generally consistent with the County the only exception is the intersection of SR 655 and Barrville Road where the Township is zoned low and medium density residential and the County has identified this area as rural development.

Local Planning Consistency

Armagh Township does not contain any zoning so no evaluation could be made between the local comprehensive planning and its zoning. Brown Township's 1971 comprehensive plan is consistent with its zoning ordinance. Brown Township recently updated its subdivision and land development ordinance but should address its zoning ordinance. It should be noted that Brown Township is close to completion of its Act 537 Plan update. **It is our recommendation that the area consider developing a regional comprehensive plan and subsequent implementation recommendations. The region should also consider combining with Derry Township and possibly Decatur Township for this regional planning effort.**

Southeast

County Planning Consistency

Decatur Township has not adopted a comprehensive plan or zoning ordinance to compare to the Mifflin County Comprehensive Plan. It is assumed that the Township participated as part of the County's comprehensive plan process and their visions for future land uses were reflected in the plan.

Local Planning Consistency

Decatur Township has not adopted a comprehensive plan or zoning ordinance to conduct a consistency analysis. **It is our recommendation for the Township to consider either developing community development objectives and a zoning ordinance to reflect the interests that are reflected in the Mifflin County Comprehensive Plan or work with the municipalities within the Northeast to develop long range planning together and subsequent implementation recommendations. This will protect the rural development character of the Township and its important natural resources as well as focus infrastructure to areas of the region that have been identified for limited growth.**

South Central

County Planning Consistency

The 1994 Granville Township's Future Land Use Plan is generally consistent with the Mifflin County Comprehensive Plan. All of the future land use classifications are consistent with the exception of the area that abuts Oliver Township associated with the US 22/522 corridor in the western section of the Township. The Township's future land use plan indicates a limited commercial and residential and a general commercial designation which differs from the County's rural development natural resource area designation. Additionally, the County has identified a limited growth area centered over an existing development in the central-eastern portion of the Township, however; the Township identifies this area as a low density residential area expanding from the existing development area in an easterly direction to Derry Township line.

Burnham and Lewistown Boroughs along with Derry Township's future land use plans are generally consistent with the Mifflin County Comprehensive Plan. The non-residential land use classifications are consistent with the County and the residential designations are classified as urban center in the Mifflin County Comprehensive Plan.

Juniata Terrace Borough has an action plan that is used as its comprehensive plan but does not have a zoning ordinance. Because of the age of the document no comparison against the Mifflin County Comprehensive Plan for consistency purposes was prepared. It is assumed, that elected officials and residents participated in the County's Comprehensive Plan process and the plan reflects their wishes.

Local Planning Consistency

Burnham and Lewistown Borough's and Granville and Derry Township's comprehensive plans are consistent with their respected zoning ordinances. Juniata Terrace Borough has an action plan but no zoning ordinance to compare against each other for consistency purposes. **It is our recommendation that the municipalities within this region consider developing a regional comprehensive plan to assist in coordinating regional efforts.**

Southwest Central

County Planning Consistency

Bratton Township does not have a comprehensive plan or zoning ordinance to compare against the Mifflin County Comprehensive Plan for consistency purposes. Oliver Township's last long range planning effort was in 1970 when they adopted a comprehensive plan. It is assumed, that residents and elected officials from Bratton and Oliver Township participated in the Mifflin

County Comprehensive Plan process and their wishes are reflected in the County's future land use plan. **However, on a day to day basis the presence of sewer infrastructure likely dictates development.** McVeytown Borough's planning is generally consistent with Mifflin County Comprehensive Plan. The entire Borough was identified Village Center as part of the County's future land use plan which allows for both non-residential and residential classifications. The Borough's zoning ordinance separates uses by zoning district so while some uses are mixed within the various districts some restrictions are in place for allowing more intensive non-residential activities to occur in residential districts.

Local Planning Consistency

Bratton Township does not have a comprehensive plan or zoning ordinance to compare against each other for consistency purposes. Oliver Township does not contain a zoning ordinance that can be compared to its comprehensive plan. McVeytown Borough adopted community development objectives and a shortened comprehensive plan concurrently with a zoning ordinance; therefore, the local planning is consistent with each other. **It is our recommendation that Bratton and Oliver Townships along with McVeytown Borough consider developing a regional comprehensive plan and subsequent implementation recommendations. While McVeytown has recently conducted long range planning and adopted a zoning ordinance the Borough would benefit from regional coordination with its adjacent municipalities.**

Southwest

County Planning Consistency

The Western Mifflin County Regional Comprehensive Plan was developed after the Mifflin County Comprehensive Plan therefore; the future land uses are closely tied together in both text description and geographic location. Specifically, the four land use classifications in the Western Mifflin County Regional Comprehensive Plan: Village Center, Limited Growth, rural Development, and Natural Resources are consistent with the land classifications in the form and function as the land classifications proposed in Mifflin County Comprehensive Plan for this region of the County.

Local Planning Consistency

Kistler Borough's Zoning Ordinance is generally consistent with its future land use plan with the exception of the area south of the medium density residential zoning district. This area is zoned agricultural-residential in the 1997 Zoning Ordinance but is identified as a Village Center in the 2001 Regional Comprehensive Plan. **It is our recommendation for the Borough to update its Zoning Ordinance to reflect the Village Center land classification in this area. Additionally, to achieve the region's vision to encourage growth into the Limited Growth and Village Center land classification Wayne Township and Newton Hamilton Borough must implement the future land use plan as identified in its comprehensive plan with the development of a new zoning ordinance. This will protect the rural development character of the region and its important natural resources as well as focus infrastructure to areas of the region that have been identified for limited growth.**

Northwest

County Planning Consistency

Union Township's future land use designations are consistent with the Mifflin County Comprehensive Plan. Specifically the Village, Residential Suburban, Commercial and Industrial designations are consistent with the County's planning document. Menno Township's comprehensive plan is generally consistent with the Mifflin County Comprehensive Plan

specifically; the commercial and industrial designations in the Township's plan are generally consistent with the village center and limited growth area designations in the County plan. The rural residential and agricultural uses in the Township's planning correlate with the rural development and natural resource areas in the County Comprehensive Plan.

Local Planning Consistency

Union Township's future land use designations are consistent with its zoning text and district boundaries. Menno Township does not have a zoning ordinance to compare its 1998 comprehensive plan with for consistency purposes. **Both Union and Menno Townships have expressed interest in developing new zoning ordinances. This plan supports these efforts and encourages them ensure that any ordinance focuses its infrastructure development so as to maintain their rural heritage.**

The following table provides a quick snapshot of the above referenced material:

TABLE 17: LOCAL PLANNING CONSISTENCY ANALYSIS SUMMARY

Location / Region	Zoning Ordinance	Comprehensive Plan	Consistency between local planning and zoning	Consistency with County planning
Mifflin County	None	2000	N/A	N/A
Northeast				
Armagh Township	None	1999	N/A	Consistent
Brown Township	1979	1971	Outdated *	Generally Consistent
Southeast				
Decatur Township	None	None	N/A	Consistent
South Central				
Burnham Borough	2003	1973	Consistent	Generally Consistent
Derry Township	1997	1997	Consistent	Generally Consistent
Granville Township	2007	1994	Consistent	Generally Consistent
Juniata Terrace Borough	None	No	N/A	Consistent
Lewistown Borough	1986	1990	Consistent	Generally Consistent
Southwest Central				
Bratton Township	1979	No	N/A	Consistent
McVeytown Borough	2004	2004	Consistent	Generally Consistent
Oliver Township	None	1970	N/A	Consistent
Southwest				
Kistler Borough	1997	2001- Regional	Generally Consistent	Consistent
Newton Hamilton Borough	None	2001- Regional	N/A	Consistent
Wayne Township	None	2001- Regional	N/A	Consistent
Northwest				
Menno Township	None	1998	N/A	Generally Consistent
Union Township	1976	1976	Consistent	Consistent

* Outdated: For the purposes of this analysis, the zoning map was utilized to determine consistency.

Economic Development Opportunities

While it is important to continue to upgrade and maintain municipal wastewater facilities, the County should assist local municipalities and authorities in focusing expansion areas to regions that provide economic opportunities for the County. Economic development can also be stymied if local planning and zoning do not support additional growth. So as to avoid economic bottlenecks, each region was evaluated for areas of economic development and their implementation readiness. While sewer infrastructure is not the only reason for economic development to occur it can affect a developer's decision should it not be present or easily obtained. The following is a suggested implementation timeframe for economic development projects within Mifflin County based on existing planning and wastewater conditions at the time of this plan:

Implementation Timeframe for Economic Development

Immediate:

- Have wastewater treatment plant capacity for additional service.
- Have conveyance system capacity for additional service.
- Appropriate ordinance provisions are in place for development.
- Long range planning identifies area for growth
- Within existing public sewer service area
- Potential infill or redevelopment area

Short:

- Not within an existing sewer service area but is within 2,000 feet of existing lines
- Have or will have wastewater treatment plant and conveyance system capacity
- Have appropriate zoning for new development or has a long range plan adopted that supports new growth

Medium:

- Areas that are outside the short term timeframe, but represent opportunity for economic development identified by county or local planning
- Requires substantial capital investment for wastewater treatment plant and conveyance system capacity
- Requires appropriate zoning modifications for development to proceed

Long:

- Rural village or existing development density area that is not served by public sewer
- Significant capital investment necessary to service new development

Based on the above timeframe the following areas were selected as possible Economic Development Opportunities within the County:

Northeast

Immediate:
Brown Township contains several areas for immediate economic development areas associated with in-fill between the Rt. 322 Bypass and Old Rt. 322. These areas are all within the existing public sewer service area and Brown has adequate capacity at its wastewater treatment facility.

Short:
The area bounded by the Rt. 322 Bypass to the east, Airport Road to the west, and Quarter Horse Drive to the north is an opportunity area for economic development and is within 2,000' of the existing public sewer service area. Additionally, the Township is in the final stages of Act 537 sewage facilities planning which can proactively plan to add this area into the public sewer service area in a short time frame.

Medium:
The area north of Church Lane in Armagh Township has been identified as a transitional area from agriculture to residential, commercial and industrial in the County Comprehensive Plan. Unfortunately, the Township has limited sewage capacity to accommodate additional development.

Medium:
The area between Old Rt. 322 and the Rt. 322 Bypass known as Roseann in Armagh Township is another area that was identified in the County Comprehensive Plan as a high growth area. But the Township has limited sewage capacity to accommodate additional development. Additionally, extending west of the Rt. 322 bypass is an area identified as a transitional area between agriculture to commercial and industrial.

Southeast

Long:
Several limited growth areas and village center were identified in Decatur Township primarily along the SR 522 corridor that is not serviced by public sewer service. According to the Township's 1994 Act 537 Plan, the Township should suggest placing small package treatment systems or community on-lot disposal systems to address existing malfunctions which would lead to minimal economic development opportunities.

South Central

Immediate:
Based on the zoning map there appears to be pockets for infill opportunities which could lead to immediate economic development in Burnham and Lewistown Boroughs along with Derry Township. These areas have adequate capacity to service the infill and redevelopment opportunities within Derry Township and Burnham and Lewistown Boroughs.

Short:
Within Derry Township, a few areas are zoned rural that lie adjacent to both Burnham and Lewistown Boroughs and have adequate wastewater treatment facility capacity.

Medium:
A pocket of agricultural zoned land also appears to be an economic development opportunity located east of high density zoned land and south of Green Avenue Extension and zoned heavy industrial zoned land. This area is within the existing public sewer service area and the wastewater treatment facility has adequate capacity to service the development. At this stage, coordination with Derry Township is necessary as they have $4 million of the $10 million required for the Back Maitland (Green Avenue Extension) project.

Southwest Central

Immediate:
Within McVeytown Borough there remain some areas for infill economic development and the McVeytown wastewater treatment facility has significant capacity to service these opportunities.

Short:
Several limited growth areas as identified within the County Comprehensive Plan are identified in both Bratton and Oliver Townships that have adequate wastewater capacity and are within existing or planned public sewer service areas.

Southwest

Medium:
Wayne Township operates a packaged Wastewater treatment facility located within the Borough and serves 48 customers. The facility is owned by Wayne Township and has a permitted capacity of 12,000 gallons per day. It was reported that the Wayne Township wastewater treatment facility is scheduled for decommissioning in 2009 and all flow will be conveyed to the Mount Union Wastewater treatment facility in Huntingdon County.

Northwest

Long:
Several limited growth areas and a village center future land use designations in both Union and Menno Townships falling along the crossroad communities and major roadway infrastructure are identified in the County Comprehensive Plan but with the exception of Belleville in Union Township the area is not serviced by public sewer service.

Sewage Facilities Planning and Impact on Economic Development Summary

Northeast

- It should be noted that Brown Township is developing a new zoning ordinance in which minimum lot requirements for non-residential uses should be addressed. Armagh Township has not and should address in a future zoning amendment minimum lot requirements for non-residential uses.
- It is our recommendation that the area consider developing a regional comprehensive plan and subsequent implementation recommendations. The region should also consider combining with Derry Township and possibly Decatur Township for this regional planning effort.

Southeast

- Decatur Township has not adopted a comprehensive plan or zoning ordinance to conduct a consistency analysis. It is our recommendation for the Township to consider either developing community development objectives and a zoning ordinance to reflect the interests that are reflected in the Mifflin County Comprehensive Plan or work with the municipalities within the Northeast to develop long range planning together and subsequent implementation recommendations. This will protect the rural development character of the Township and its important natural resources as well as focus infrastructure to areas of the region that have been identified for limited growth.

South Central

- The allowance of commercial, industrial, and public properties intermeshed with the residential designations as identified in the County Comprehensive Plan was not the intent of these residential zoning designations developed locally.
- Burnham and Lewistown Boroughs along with Derry and Granville Township's future land use plans are generally consistent with the Mifflin County Comprehensive Plan.

Southwest Central

- Bratton Township currently does not have a comprehensive plan or zoning ordinance to compare against the Mifflin County Comprehensive Plan for consistency purposes.
- McVeytown Borough's planning is generally consistent with Mifflin County Comprehensive Plan. The entire Borough was identified Village Center as part of the County's future land use plan which allows for both non-residential and residential classifications.
- It is our recommendation that the area consider developing a regional comprehensive plan and subsequent implementation recommendations. While McVeytown has recently conducted long range planning and adopted a zoning ordinance the Borough would benefit from regional coordination with its adjacent municipalities.

Southwest

- The Western Mifflin County Regional Comprehensive Plan was developed after the Mifflin County Comprehensive Plan therefore; the future land uses are closely tied together in both text description and geographic location.
- It is our recommendation for Kistler Borough to update its Zoning Ordinance to reflect the Village Center land classification in this area. Additionally, to achieve the region's vision to encourage growth into the Limited Growth and Village Center land classification Wayne Township and Newton Hamilton Borough must implement the future land use plan as identified in its comprehensive plan. This will protect the rural development character of the region and its important natural resources as well as focus infrastructure to areas of the region that have been identified for limited growth.

Northwest

- Union and Menno Township's future land use designations are consistent with the Mifflin County Comprehensive Plan.
- It is our recommendation that Menno Township follows through with its long range planning stemming from its 1998 comprehensive plan effort and adopts local zoning to protect its rural heritage and focus infrastructure development.

V. On-Lot Sewage Disposal

Over the last forty years, on-lot sewage disposal systems are being used more than ever in areas not suitable for central sewage systems. At first, these areas were on the fringe of suburbia, where funding for sewage systems or sufficient population density were available. Over the last two decades, for a variety of reasons, development is taking gigantic leaps and is not merely centered on the suburban fringes, but is moving now into the rural landscape of Mifflin County. The "hollowing out" of the County's Boroughs and Villages as discussed in the demographic section of the plan places an ever-increasing dependence on on-lot sewage disposal systems.

These rural municipalities now face sewage-related problems on a scale never before realized. The need for sewage planning in these areas is becoming far more commonplace, and the number of on-lot sewage disposal systems is increasing. Because of this development pattern, it is important to take a closer look at rural Mifflin County and its dependency on on-lot sewage disposal systems.

Over the years, many small subdivisions, village crossroads, and single-family lots have used on-lot sewage disposal systems in the County. Prior to Act 537, many of these homes would have been served by small septic tanks connected to "wildcat" sewers that discharged to gullies and small streams, sewer lines from homes directly into pits or "dry wells," or septic tanks with an insufficient amount of subsurface drainage area. These systems were well documented in the Act 537 Plans produced in the 1990s within the County. Evidence of stream and groundwater pollution, ponding of liquid waste material in backyards, and discharges to road culverts were discovered.

Complicating matters associated with known malfunctions are areas with some new homes or by a farm or woodland that, if not now, will eventually looked at for future home development. Added to the situation are farmers who are approaching retirement, who do not have heirs interested in maintaining the agriculture business, and who now want to provide for their retirement by selling their land for new or second-home development. On top of all this, are minimal development regulations enforced at the local level.

Education

Since the 1990s, the Pennsylvania Department of Environmental Protection has heightened its concerns on municipalities utilizing proper on-lot sewage management disposal and maintenance. Sewage management programs should, at a minimum and as a first step, have an ongoing educational program for homeowners with on-lot sewage disposal systems. The program can vary from short articles in the municipal newsletter to periodic flyers and reminders addressed to system owners to formal information sessions for system owners. Educational material and information sessions should emphasize that:

- Effluent from settling tanks and from malfunctioning systems can cause human illnesses. Malfunctioning systems are health hazards to the individual family and to the neighborhood.
- Settling tanks do not provide complete treatment but rather, serve to settle solids and trap scum to prevent clogging the drain field. As such, these tanks need to be pumped out regularly. To demonstrate how systems are constructed and where problems can occur, local agencies should provide a pictorial representation of some of the more common disposal systems.

- If an owner's sewage system has electric and/or mechanical components, it should be checked by a knowledgeable individual every year.
- The life-cycle cost for an on-lot sewage disposal system is less expensive than a centralized community treatment system. Consider the example that if residents were connected to a public treatment system, they could be paying $40 to $80 a month plus the initial tap-in fee. The cost to have their on-lot system pumped or inspected (about $135 to $150 every three years for most systems) is a small amount in comparison. It is only when systems malfunction and have to be periodically replaced that their costs begin to equal that of central systems. Proper maintenance and operation of on-lot systems, therefore, is "good insurance" in preventing large future costs.

In addition, the local agency should have understandable, written procedures with fee schedules for anyone seeking to obtain a permit for a new on-lot system. Whenever possible, the SEO should meet with the applicant at the beginning of the permitting process to clarify issues and to answer questions. When the final inspection is completed and the permit is issued, a pamphlet should be given to the system owner that details the importance of system maintenance and provides helpful hints on system operation and maintenance. Based on our analysis, only Menno Township does not provide this education component.

The practice of setting aside an easement for a replacement area for an on-lot sewage disposal system has become a common practice over the last decade. By setting aside a replacement area, the investment for public sewer infrastructure is avoided. By not introducing public sewer infrastructure into an area also assists in maintaining a rural setting. Requirements for on-lot sewage disposal replacement area easements can be placed within a subdivision and land development ordinance. Currently, Derry Township is the only municipality within the County that requires replacement easement requirements. However, the sewage enforcement officers that practice within the County all shared it has become a common practice for siting areas for both primary and replacement facilities. **While the sewage enforcement officers have been successful in siting primary and replacement areas they have no legal requirement to support this initiative and it is recommended that the local municipalities and County amend their ordinances to include easements for both primary and replacement areas for on-lot sewage disposal.**

Improved On-lot Processes

Over the past several years, the Pennsylvania Department of Environmental Protection has asked municipalities to implement sewage management programs which require septic pumping and some form of system inspection. The inspection portion of the program may consist of simple inspections of septic tanks and disposal fields by septic tank pumpers to more complex inspections using certified third-party inspectors.

After conducting this inspection, the system owner is notified of any needed corrections and assigned a deadline to furnish acceptable proof that the corrections have been made. Acceptable proof is usually certification by a contractor listing the types and dates of corrections made and final inspection by the SEO. The local agency may also make the corrections and charge the system owner. However, the agency would also be accepting responsibility for such repairs and perhaps liability for future system operation unless the agency is willing to accept system ownership. The inspection service can be performed by the local agency at a set fee to cover the cost of the entire inspection or at a lower fee, with the difference being made up by state reimbursement.

An inspection program is usually coupled with a septic tank pumping program. Required septic tank pumping is usually every three to five years. The local agency notifies the system owner when pumping is due, and the septic pumper either coordinates the date and time of pumping with the SEO so that an inspection can be made or performs the inspection at the time of pumping using a local agency inspection form. A copy of the form is sent to the local agency for follow-up by the SEO.

Administration of a sewage management program can be performed by the SEO or, if the work load warrants, by individuals under the supervision of the SEO who have knowledge of on-lot sewage disposal system design, installation, and operation. In the case of mandatory septic tank pumping and/or inspections contracted by the system owner, clerical staff in the local agency may send out reminder notices, keep appropriate records, and inform the SEO of deviations from the agency's standard procedures so the SEO can follow through with appropriate action.

Sewage management programs are established by the municipality adopting an ordinance mandating local agency or local agency-contracted inspections and/or septic tank pumping or system owner-contracted inspections and proof of tank pumping. In the case of local agency services, the fees should be set in the ordinance. Records, including time sheets for all local agency employees participating in the program, are necessary, along with a log of all direct services performed and all expenses incurred. At the time of the plan preparation, eight municipalities have adopted an on-lot management program.

Eight out of the eleven potential municipalities to administer on-lot management programs in the County have adopted ordinances and begun implementing this program (Table 18). While all of them are not consistent with their requirements they do all generally contain: initial and routine inspection (generally from the SEO), requirements and time restrictions for replacing broken/malfunctioning equipment, required pumping every three to four years depending on the municipality, and penalties. **The remaining municipalities should consider adopting an on-lot management program. It is also recommended that the municipalities consider sharing this information regionally to determine if problem areas are within close proximity of each other and can be addressed regionally.**

Regionalization

Throughout the County municipalities are working together on regional sewer planning that are generally consistent with the planning regions established in the County Comprehensive Plan, see Table 18 in the Regulatory Requirements Chapter. In all but one of these regions a public infrastructure and on-lot sewage disposal alternative is available for consideration. The southwest region which includes only Decatur Township has only on-lot alternatives to address sewage facility demands. As identified in other chapters, while the region is conducting sewer planning together many have not conducted long range land use planning together which provide an opportunity for the regions to dictate development as opposed to be driven by development activity.

The municipalities should consider working together in developing a county-wide sewage management committee in which its responsibilities could include review of draft Act 537 Plans, Chapter 94 reports, and on-lot management reports to determine consistency with local and county comprehensive plans.

Other Opportunities

As mentioned earlier the eight out of the eleven potential municipalities to administer on-lot management programs in the County have adopted ordinance and have begun implementing

this program. The remaining three should strongly consider administering such a program and the County could take this opportunity to assist in offering to administering and facilitating this program. By doing so, the County will be able to monitor those areas that are experiencing a density of malfunction and react in a proactive manner so as to possibly save existing system faster, discourage unwanted growth into a known malfunction area, possible revise or create land use controls to direct growth away from these conditions, and avoid costly public sewer infrastructure investment.

Another opportunity is associated with the increasing number of on-lot systems in the County. Because the County continues to receive more on-lot systems, more septage is being generated that could be transported to a regional facility. Consideration of a regional facility was previously discussed in an earlier chapter.

On-Lot Sewage Disposal Summary

- Throughout the County municipalities are working together on regional sewer planning that are generally consistent with the planning regions established in the County Comprehensive Plan.
- Eight out of the eleven potential municipalities to administer on-lot management programs in the County have adopted ordinance and have begun implementing this program (Table 18). The remaining three should strongly consider administering such a program and the County could take this opportunity to assist in offering to administering and facilitating this program.
- Because the County continues to receive more on-lot systems, more septage is being generated that could be transported to a regional facility.
- While the sewage enforcement officers have been successful in siting primary and replacement areas they have no legal requirement to support this initiative and it is recommended that the local municipalities and County amend their ordinances to include easements for both primary and replacement areas for on-lot sewage disposal.
- The County's municipalities that are using on-lot sewage disposal should consider developing a regional database of the information provided in the on-lot sewage disposal system management reports. At the very least, the municipalities should share this information with each other to possibly address areas of concern that are adjacent to each other but are separated by a municipal boundary.

VI. Regulatory Requirements

In Mifflin County sewage facilities plans and comprehensive land use plans should carry out a consistent vision of growth, development, and conservation. Unfortunately, this is not the case and Mifflin County is not alone. Rather the entire state is mired in this disconnect of modeling sewer planning with comprehensive planning that while so simple in thought very difficult in execution.

Pennsylvania Sewage Facilities Act, enacted in 1966, requires every municipality to adopt an official "sewage facilities plan" and to revise it continuously as circumstances change. The Municipalities Planning Code (MPC), enacted in 1968, empowers municipal governments to plan and zone for land use and development. Yet key weaknesses in both laws have made it difficult to ensure that a municipality's comprehensive plan and sewage plan support one another. Consequently, these weaknesses produce adverse effects on communities such as:

- Insufficient ratepayer and taxpayer funding to support aging sewer systems in slow-growing or declining cities and boroughs.
- Duplication of existing infrastructure by approval and construction of new public or private sewage facilities or community systems in municipalities adjacent to areas that have existing treatment capacity.
- Common use by townships of zoning and subdivision regulations that require large-lot (one acre or greater) forms of development simply in order to avoid dealing with sewers. This, in turn, can relate to another problem called "septic sprawl" – construction of single family homes and scattered retail establishments that rely on on-lot sewage disposal but that receive minimal scrutiny under either local zoning regulations or sewage facilities plans.
- Sewage facilities plans that are modified reactively in response to private development proposals. Most sewage facilities plans within the Commonwealth consist of old plans supplemented by dozens of individual planning "modules" that support development proposals rather than a comprehensive plan.
- Rural municipalities that rely on sewage facilities planning (and on-lot certification) as virtually their only form of development planning, because sewage facilities planning is mandatory, but comprehensive planning and zoning is not. [6]

The MPC and Act 537 were ahead of their time in the 1960s, but are now desperately in need of modernization – and especially the creation of accountability between decision about development and infrastructure.

Shortcomings in Mifflin County Municipal Act 537 Planning

The weaknesses identified in *the Planning for Development and Sewage Infrastructure: Can We Be Consistent* from the Environmental Law Institute referenced above provide the appropriate backdrop for this chapter based on findings over the course of plan development. Specific examples of these weaknesses in Mifflin County include:

[6] Planning for Development and Sewage Infrastructure: Can We Be Consistent? Environmental Law Institute Issue Paper pages 1 and 2

Insufficient Ratepayer and Taxpayer Funding

Lewistown Borough sanitary sewer system consists of over 28 miles of sanitary sewer mains, over 620 manholes, and the Lewistown wastewater treatment facility. Lewistown wastewater treatment facility serves nearly 15,000 equivalent dwelling units (EDUs) across portions of Derry and Granville Townships along with the entire Borough. Like most boroughs within the State, they are losing population which equates to the Authority continues to lose ratepayers.

Since the beginning of this Plan, the Lewistown Borough, Derry Township and Burnham Borough have been working on a regional Act 537 Plan. Burnham Borough owns and operates a .64 MGD wastewater treatment facility that serves approximately 990 customers. Much like Lewistown Borough, Burnham Borough has limited potential for growth and anticipates significant capital investment associated with meeting the requirements of the Chesapeake Bay Tributary Strategy. Therefore, Burnham Borough working with Lewistown to see whether it is economically feasible to shift its customer base to Lewistown's wastewater treatment facility. **Both parties would appear to gain from this approach in that Lewistown would receive additional ratepayers to assist in upgrading its facilities and Burnham would not have to incur significant capital investments associated with upgrading its plant. Every effort should be made to ensure that this regionalization is orchestrated.**

Duplication of Existing Infrastructure

Bratton Township and McVeytown Borough sewage facilities planning are a perfect example of duplication of existing infrastructure. The 1996 plan identified many malfunctioning on-lot sewage disposal systems due to poor site conditions, small lot sizes, and wildcat discharges. To address these malfunctioning on-lot systems the Township selected an alternative of construction of a public collection and conveyance system that would be treated at the existing McVeytown wastewater treatment facility.

In 2001, an amendment was developed that indicated that the malfunctions identified in the previous 1996 plan had not changed due largely to the fact that Bratton Township and McVeytown Borough Authority had failed to reach an agreement for wastewater treatment service and proposed cost were too high. Consequently, the Township pursued a second alternative of pumping the wastewater to a new wastewater collection and treatment system to serve the existing malfunctions.

While the immediate concern was addressed in this situation, the addition of new infrastructure could compromise the rural heritage of the Township especially given the fact that the community does not have a zoning ordinance. Further, additional capacity is still available at McVeytown Borough's wastewater treatment facility for a stagnant/declining population which will result in time to higher fees for its customers.

Septic Sprawl

Several municipalities within the County rely on a minimum lot size through either their individual or the County's subdivision and land development ordinance. The majority of these areas are rural in nature and do not contain public sewer infrastructure; therefore, development is predicated on on-lot sewage disposal methodology which often leads to larger lot sizes. The planning as part of this process is entirely focused on the immediate with little to no long range planning put in place. This is not to say that all the municipalities within the County need public sewer infrastructure but rather long range planning needs to be considered so as to not encourage the proliferation of septic sprawl across the landscape and compromising the rural heritage of the County and the need for costly infrastructure investment.

Of equal concern in this scenario are municipalities that administer zoning containing large lot requirements as a measure for preservation. Large lot requirements are not an effective preservation tool for long range planning because of the septic sprawl concern. If a municipality's intent is for preservation there are tools such as Conservation By Design, Sliding Scale Ordinances, and other modern planning tools to consider. The following are a description of some of the tools available to local municipalities for preservation:

Designated Growth Areas
The municipalities planning code defines designated growth areas as a region within a county or counties described in a municipal or multi-municipal plan that preferably includes and surrounds a city, borough or village, and within which residential and mixed use development is permitted or planned for at densities of one unit to the acre or more, commercial, industrial and institutional uses are permitted or planned for and public infrastructure services are provided or planned.

How it Works
The Mifflin County Comprehensive Plan has set forth areas in their land use plan as growth areas which include: Urban Center; High Growth Areas, Residential and Commercial/Industrial; Village Centers; and Limited Growth Areas that promote land development to occur in a more concentrated area. These growth areas are the regions within the County in which concentrated development is promoted and improved transportation, school, sewer, and water infrastructure is generally provided or concentrated. The local municipal comprehensive plans are asked to be generally consistent with the county's comprehensive plans which includes designated growth areas within the land use plan. The Western Mifflin County Comprehensive Plan is an excellent example of a local municipal planning document's land use plan being consistent with the county comprehensive plan. Specifically, the Western Mifflin County Comprehensive Plan incorporates the following designated growth areas in their land use plan: the Village Center and Limited Growth.

Planned Residential Development
Planned residential development provisions are a means of permitting and encouraging innovative, well planned developments by allowing some variation in dimensional and use requirements to achieve the preservation of sensitive natural areas or historic sites. This is accomplished by permitting development to be shifted to more appropriate portions of the site.

How it Works
Planned residential developments may be permitted throughout a municipality, but more commonly are permitted in limited areas as specified in the zoning ordinance. A community may also define more than one category of planned residential developments. Both planned residential development provisions and site design requirements for planned residential developments are included in the zoning ordinance. Within the zoning ordinance, the municipality must specify where planned residential developments are permitted, the uses to be allowed and standards for density of development. The review procedures and any special design requirements may be included in the subdivision and land development ordinance. Derry Township has implemented an ordinance that contains planned residential development provisions.

Traditional Neighborhood Development (TND)

Traditional Neighborhood Development, or Traditional Neighborhood Design, is a principal that has gained acceptance in recent years as a viable design standard for suburban communities. Traditional Neighborhood Development creates village-like neighborhoods with housing for a diverse population, a mix of land uses, walkable streets, public space which is a focal point for the neighborhood, integrated civic and commercial centers and accessible open space. Traditional neighborhoods are more compact communities that are designed to encourage bicycling and walking for short trips. This is accomplished by providing destinations that are close to home and work and by providing sidewalks and a pleasant environment for walking and biking.

How it Works

Traditional Neighborhood Development requires a large site and/or coordinated development of adjacent sites for full implementation of the concept. Before a municipality can approve and implement a traditional neighborhood design, it must allow for these concepts in its local zoning and subdivision and land development ordinances. The concept of Traditional Neighborhood Development may be applied as infill development within an urban setting, on the outskirts of an existing urban area, or in a suburban area. Brown Township currently has a Traditional Neighborhood Development Ordinance in place and a development called Quillas Creek is being proposed under this ordinance.

Exclusive Use Agricultural Protection Zoning

Exclusive use agricultural protection zoning designates areas where farming is the primary land use, and discourages other land uses in those areas. Exclusive use agricultural protection zoning stabilizes the agricultural land base by keeping large tracts of land relatively free of non-farm development. This can reduce the likelihood of conflicts between farmers and non-farming neighbors. Exclusive use agricultural protection zoning is most appropriate where there is limited pressure for residential development and there are already existing large areas of prime or unique agricultural resources.

How it Works

Exclusive agricultural zoning prohibits non-farm residences, non-agriculture activities, and retail businesses. Of course, in some instances exceptions are granted after appropriate local review. Examples might be roadside farm sales from producing farms or nursery retail sales from producing nurseries within the agricultural zone. In some instances, other uses are allowed in exclusive agricultural zones, such as cemeteries, landfills, schools, churches, animal hospitals, etc., which can be placed on lower quality land but also provide services to the agricultural community.

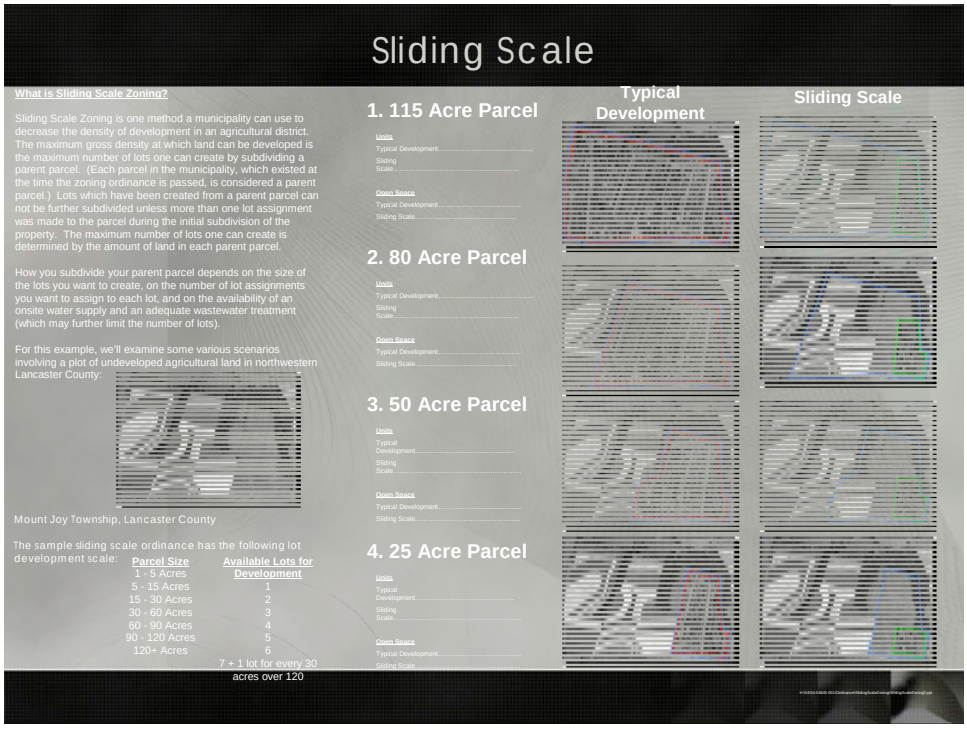
Exclusive zoning programs may be more successful than other programs in sustaining large blocks of agricultural land. This occurs because an entire area, usually engulfing hundreds if not thousands of acres, is set aside for farming activities where other land-use programs base decisions on a parcel-by-parcel basis. Exclusive zones should have a better success rate in reducing farm versus non-farm complaints than do nonexclusive agricultural zones due to the strict limits placed on land use and new construction. Some even argue that exclusive agricultural zones limit urban sprawl by limiting extension of infrastructure such as water, sewer, road expansion, etc. in the exclusive zone.

Sliding Scale Ordinance

Unlike exclusive use zoning, sliding scale zoning allows some non-farm residential development without special land use or other reviews. Sliding scale zoning can be useful in agricultural areas where there are significant development pressures and land speculation. The use of sliding scale zoning is most effective in areas where a wide range of parcel sizes exist and non-farm residential development has already begun to occur. Since this method does permit some use of land for non-agricultural uses, it allows communities to more effectively avoid a claim that land has been "taken" without compensation.

How it Works

Sliding scale zoning limits the number of times that a parent parcel (a parcel existing on the date of ordinance adoption) can be split, based on its size, i.e., the larger the parcel the more splits that may occur, up to a maximum number established. A larger minimum parcel size is also established. Minimum and maximum building lot sizes can be used to encourage the location of non-farm development on less productive farmland and/or in areas where development is more concentrated to direct growth onto already fragmented land. The use of buffer areas is highly recommended to avoid land use conflicts between new residential development and agriculture fields. Many of the municipalities within Lebanon and York Counties use the sliding scale ordinance style to protect agriculture within their communities.



Cluster Development

Cluster Development is a zoning technique which provides flexibility in housing density on a parcel as a means of integrating at least a minimal amount of open space into a new subdivision. Typically, both the lot size reductions and the percentage of open space that is

created are fairly modest. The open space that is protected through cluster design may be owned by a homeowners' association, a nonprofit conservation organization, the municipality, or by a combination. Frequently, density is calculated on the basis of total tract area, rather than on actual buildable land area, which results in a density inflation on parcels containing significant amounts of undevelopable land.

How it Works
Cluster ordinances ideally base density on net usable land to reflect the number of dwellings that could be built on the property with conventional lot layout. In addition to wetlands and steep slopes, cluster ordinances specify a percentage of relatively flat, dry land as the minimum required open space, to provide suitable areas for village greens, playing fields, or meadows. They sometimes offer a modest density incentive, paired with a similarly modest disincentive applied to conventional layouts.

Open Space / Conservation Design
Open space / conservation design is an enhanced variation of the cluster zoning technique in which a higher percentage of the site is dedicated to open space. The purpose of this advanced technique is to preserve a larger amount of land for conservation uses, while still allowing full-density development. In contrast to cluster development, where the emphasis is more often placed on providing active recreational areas, open space zoning is more suited for protecting farmland, woodland habitat, historic sites, and scenic views. Under this technique, developers of a subdivision are required to dedicate a significant portion of their unconstrained land to permanent open space uses. Housing is designed to compliment the aesthetic views of the preserved land and streets are designed to access the residential community in a manner that minimizes disturbance of natural areas. Mifflin County's Subdivision and Land Development Ordinance has an Open Space Development Option.

How it Works
Conservation subdivisions can be formalized within an ordinance. One of the more popular methods advocated by Randall Arendt is a four step process that first identifies primary and secondary conservation areas, then designs open space to protect them, next arranges houses outside of those protected areas and finally lays out streets, lots and infrastructure.

Open space regulations can also be implemented through a municipality's zoning ordinance. The number of dwellings permitted is based on the net acreage of buildable land and the underlying density in the zoning district. Easements are then placed on the open space to ensure that it will not be further subdivided or developed.

Growing Greener Conservation Design

Growing Greener Conservation Design is a package of related techniques for conserving interconnected networks of open space within expanding communities. It enables local officials to designate and protect portions of nearly every property as each parcel is proposed for residential development. This package of techniques is unique in the way that it accomplishes its conservation objectives without disturbing landowner equity, without constituting a "taking," without depending upon public tax dollars or landowner generosity, and without involving complicated regulations for transferring development rights from one part of the community to another.

How it Works

Growing Greener combines several land use practices relating to the comprehensive plan, zoning ordinances, and subdivision and land development ordinances. Growing Greener places an emphasis on build-out maps and greenway maps that predetermine the location of open space within new conservation subdivisions. Open space zoning and density determination based on unconstrained lands are included in the zoning ordinance. Practices pertaining to the subdivision and land development ordinance include the submission requirements, review procedures, and the four step design approach. The Natural Lands Trust has numerous examples of Growing Greener Conservation By Design ordinances but two specific examples include Newberry and West Manheim Townships, York County.

Borough Infill

Infill focuses on the reuse of underutilized or underdeveloped buildings and sites within established developments. The practice of infill aids in renewing existing neighborhoods and concentrating growth within the boroughs while preserving the undeveloped land in open

space areas and rural areas. Infill development aids in decreasing costs of public facilities and services like public water and sewer.

How it Works

Infill occurs on existing brownfield or greenfield sites within urbanized areas in accordance with zoning regulations. There are many benefits to infill including lower costs for the project because they are using existing infrastructure and depending on the scale of the infill development it has the potential to lower the user costs for public sewer and water. MCIDC should be active in promoting effective infill within local municipal ordinances.

Reactive Sewage Facilities Planning

Armagh Township public sewer infrastructure service is provided through Brown Township. The two municipalities meet on a regular basis to discuss wastewater needs. This is a good example of regional sewage planning. However, Brown Township is working on developing its Act 537 Plan for the Township and Armagh Township is not participating in this planning effort. The reserve capacity available to Armagh Township is limited to very minimal economic development. This runs counter to the County's Comprehensive Plan which identifies this area as a high growth area for both non-residential and residential development. Armagh should look to proactively partner with Brown Township in this planning effort as well as the two should work regional on a comprehensive plan to proactively plan for growth. Instead of taking a reactive response and allow private development proposals to dictate the future plans of the community. The municipalities within Mifflin County need to work together to determine their future growth through a comprehensive plan process and implement it through limiting growth to identified areas in the local zoning ordinances and determine public sewer infrastructure needs to meet this demand.

Sewage Modules

As required by 25 PA. Code Chapter 71, Subchapter C relating to New Land Development Plan Revisions all applicants must completed a Component 4B: County Planning Agency Review. During this process the County Planning Department has the opportunity to comment on whether the applicants plan is consistent with all long range planning and addressing any local wastewater concerns. **It is strongly recommended that the County's municipalities support and promote the effective use of the Component 4B process in regards to the implementation of this and local planning efforts. The sewage module review process is an opportunity to utilize this Plan and its suggestions on an application by application basis to ensure proper implementation occurs.**

TABLE 18: LOCAL PLANNING DOCUMENTS STATUS SUMMARY

Location / Region	Zoning Ordinance	Comprehensive Plan	Act 537 Plan	On-lot Management Program
Mifflin County	None	2000	N/A	N/A
Northeast				
Armagh Township	None	1999	1997	1999
Brown Township	1979	1971	Currently planning	Currently planning
Southeast				
Decatur Township	None	None	1994	1997
South Central				
Burnham Borough	2003	1973	1987	N/A
Derry Township	1997	1997	1997/2004	1997
Granville Township	2007	1994	2000	OLDS Education
Juniata Terrace Borough	None	1996	1997	N/A
Lewistown Borough	1986	1990	1972/Currently Planning	N/A
Southwest Central				
Bratton Township	None	No	2001	No
McVeytown Borough	2004	2004	1971 (Regional Report)	N/A
Oliver Township	None	1970	1993	2000
Southwest				
Kistler Borough	1997	2001- Regional	1988	N/A
Newton Hamilton Borough	None	2001- Regional	2003	2003
Wayne Township	None	2001- Regional	2003	2003
Northwest				
Menno Township	None	1998	None	
Union Township	1976	1976	1994	1994

Investigate opportunities for municipalities to regionally plan together on addressing wastewater planning, on-lot sewage disposal education, sewage enforcement, economic development, and growth management.

Regulatory Requirements Summary

- Adopting and implementing the designated growth and rural area concept identified in the County's Comprehensive Plan specifically coordinating zoning districts, density and intensity of uses, and public infrastructure improvements (sewer).
- Requiring Sewer Feasibility Studies within local regulations for properties within growth areas as identified in the County Comprehensive Plan and centralized sewage facilities to ensure appropriate accommodation of uses and infrastructure and services is applied.
- Requiring sewer extensions and/or capped sewers for properties within growth areas as identified within the County Comprehensive Plan, while prohibiting extension into designated rural area zoning districts which are designated for less intense uses and types of infrastructure and services.
- Including, along with any sewer feasibility study, provisions in the zoning ordinance that developments proposed to be served with individual on-lot sewage systems within designated growth area zoning districts (served or planned to be served with centralized sewer) obtain a special exception or conditional use approval. Specific criteria to demonstrate compliance as part of the review and approval process may include a sewer feasibility study (see also SALDO), percs and probes, and special siting requirements such as a large lot width (i.e. 300 ft), one large required side yard setback (i.e. 225 ft) and one small required side yard setback (i.e. 10 ft). Such requirements allow development to occur in a manner that when water and sewer are provided in the future, ample area is reserved to allow for in-fill development.
- Requiring secondary percs and probes for alternate on-lot sewage disposal sites and systems, and perpetual easements to reserve an area on lots to allow for a secondary back-up or alternate disposal system.
- Amend local subdivision ordinances to include minimum lot provisions for non-residential uses.
- Allowing any type of DEP approved centralized sewage treatment facilities (if not specified by a sewer authority) within growth area zoning districts designated and able to accommodate more intense uses and infrastructure and services.
- Developing an on-lot sewage disposal management program in municipalities that do not administer a maintenance program to ensure among other provisions, education, mandatory pumping, inspection, maintenance, and/or rehabilitation of on-lot sewage disposal systems, as well as allowances for the municipality to intervene in situations where public nuisances or hazards to the public health are present, and charge fees for administration and levy penalties for non-compliance.
- Educating officials, developers, land development professionals, and citizens on the PA DEP Planning Module review and approval process.
- Update or prepare zoning ordinances with effective agricultural and open space provisions.
- The sewage module review process is an opportunity to utilize this Plan and its suggestions on an application by application basis.

VII. Plan Recommendation and Implementation Strategy

Areas that Stimulate Economic Activity and Mitigate Environmental Impacts

Generally, the areas identified in the Mifflin County Comprehensive Plan as urban center, high growth, and village centers are good candidates for stimulating economic activity. **But to focus capital investments within the County, the two areas that should be considered include: the Greater Lewistown Area and the area around the 322 Bypass exit in the Northeast region.** Both of these areas contain wastewater treatment plants that serve multiple municipalities with Lewistown Borough are considering the addition of Burnham Borough's service area. By providing regional facilities the regions limit the number of discharges into the local water bodies.

Capital Improvements Plan

It is anticipated that over 75 million dollars will be needed to address the Chesapeake Bay Tributary Strategy requirements and/or provide opportunities for system expansion or routine maintenance associated with the existing wastewater treatment facility within the County over the next five to ten years. This money will come in the form of new development, grants, or existing ratepayers. This is a base figure and likely will be higher as construction and labor cost are anticipated to escalate until the project is constructed.

Of the 75 million dollars, over half is associated with Granville Township and Lewistown Borough's wastewater treatment facility. While cost savings could occur by closing the Burnham Borough wastewater treatment facility and conveying to an improved Lewistown wastewater treatment facility, it is yet to be determined. This coupled with the fact that the Borough is largely built-out and has experienced a loss of ratepayers in the shifting of the population from the urban center to adjacent municipalities further complicates the matter. The outcome of the regional 537 plan involving Burnham and Lewistown Borough along with Derry Township will dictate future growth in the area along with the overall cost. While it may be too costly for Burnham to connect directly into the Lewistown wastewater facility in its entirety Burnham has been exploring other methods of regionalization with Derry Township.

Brown Township's wastewater treatment facility upgrades are the other wastewater treatment facility that could have a significant impact on its existing population. However, in this instance the Township is building additional capacity through its upgrades in which new users can help offset the significant capital improvements anticipated.

Granville Township's Junction Plant is very close to capacity but planning is already in place for the plant to upgrade however, the period between the design and construction of the upgrade the Township may be limited in what economic development can occur.

These expenses are significant to the affected regions and as indicated earlier the existing ratepayers will be the individuals that will be the greatest impacted. Efforts will need to be made by the County to assist in offsetting these costs either through seeking grant assistance, increased regional planning, or long-term financial planning.

The County should focus its main capital improvement efforts on facilities that affect the largest density of population within the County.

Legal Action against The DEP

At the time of finalizing the plan, three municipalities Lewistown Borough, Derry and Brown Townships have agreed to join the Capital Regional Council of Government in an effort to challenge the Chesapeake Tributary Strategy. The ultimate outcome of this challenge will determine the improvement requirements and financial obligations these and other wastewater treatment facilities will be responsible for.

Areas Where Improved Land Use Planning Would Assist in Improved Wastewater Planning

Northeast

The municipalities in the Northeast would greatly benefit from continued regional cooperation. Brown and Armagh Township's have a regional wastewater treatment facility and Authority associated with managing its facilities and customer base. This area has been identified containing immediate and short term economic development opportunity areas based on local land use ordinances along with an anticipated expansion to the wastewater treatment facility that will accommodate 50% more capacity for future growth.

With Brown Township planning future wastewater needs within the area, the region needs to consider implementing growth management practices so as to not entice future development outside of planned public wastewater infrastructure investment. This plan strongly recommends the region develop a comprehensive plan to proactively address future development. Implementing the plan in local or county ordinances in a timely fashion will be equally important. Some specific recommendations stemming from this plan that can be part of these ordinance updates include: sewer feasibility studies, requirements for areas set aside for secondary on-lot sewage disposal areas, and lot requirements for non-residential uses.

Southeast

The Township does not contain any public sewer infrastructure this coupled with not having an adopted comprehensive plan or a recent zoning ordinance provides an opportunity to proactively plan for future growth while trying to maintain its rural heritage. The Township should try to develop a regional comprehensive plan with possible the municipalities to the Northeast or South Central. By doing so, duplication of infrastructure and reactive wastewater and land use planning can be avoided.

South Central

The South Central region contains the most population and contains four wastewater treatment facility between the 2 facilities in Granville Township, and Burnham and Lewistown Boroughs plants. All of the wastewater treatment facility's with the exception of Burnham have additional capacity. The two Boroughs have experience a loss of ratepayers due to the "hollowing out" of their populations. Because all long range planning within this area is greater than ten years old, the area needs to develop a regional comprehensive plan and subsequent ordinance revisions in which anticipated population should be focused on the existing Boroughs and public sewer infrastructure areas.

Southwest Central

The Southwest Central area has been identified with immediate and short term economic opportunity areas. This is due in large part to the available capacity found in the McVeytown wastewater treatment facility and age of the Bratton Township wastewater treatment facility being constructed within the last five years. Modifications to the McVeytown wastewater treatment facility are anticipated in the near future based on the Chesapeake Bay Tributary Strategy requirements as well as standard maintenance associated with a 40+ year old system. McVeytown has recently developed a comprehensive plan and subsequent zoning ordinance which provides areas for infill development to occur but these areas need to be marketed. In both Bratton and Oliver Townships any planning is over thirty years old which does not reflect modern planning nor looks regionally at solving wastewater infrastructure. Thus, it is recommended that this area seriously consider multi-municipal planning.

Southwest

The southwest region has recently (2001) completed a regional comprehensive plan. Over the past year, Wayne Township has been working on decommissioning its wastewater treatment facility and conveys all flow to the Mount Union wastewater treatment facility. This drastically impacts the economic development opportunities within in the region. The region still needs to implement its regional plan through either joint or local ordinances.

Northwest

The region should build off of the partnership established through shared wastewater infrastructure and consider regional planning together. Menno Township last planning efforts are nearly ten years old while Union's is over thirty. While no immediate economic opportunities are identified within this region in the plan the combination of excess capacity at the treatment plant and the need to modernize the planning regulations could mean future growth occurring in areas that are not intended for growth.

Plan Implementation Aids

Regional Sewer Authority

As part of the development of this plan a steering committee was established to review draft work products and discuss possible future solutions to the County's sewer infrastructure. It is recommended that a sewer authority be formed from members of this steering committee, economic development and business owners, local officials, county planning staff, and authority members. By furthering the discussions that were initiated as part of the plan, the County has the opportunity to think and react regionally which ultimately will implement the plan's goal of protecting its rural heritage, providing adequate infrastructure, and be fiscally responsible.

Proactive Planning

McVeytown Borough and Union Township would benefit from developing a regional 537 Plan with its neighboring municipalities. The other municipalities in which a wastewater treatment facility is present are currently working on updating its 537 Plans. In these instances, these municipalities should be looking regionally to determine future growth needs so as to avoid unanticipated growth occurring on the fringe of the existing pubic wastewater service areas. A

regional comprehensive plan should be pursued or at the very least prior to final adoption of the Act 537 Plan future land use planning should occur.

The County should finish its Economic Strategy to better understand where opportunities exist for development within the County within the next two years. Another plan element of the County Comprehensive Plan that should be addressed over the next five years is the development of a water resources plan that determines the quantity and quality of water available for future development.

Regionalization Sewage Management Program:

The opportunity exists for a regional sewage management program in which a regional agency would be responsible for coordinating routine inspections and pumping associated with on-lot sewage disposal systems management ordinances. This process is typically an administrative labor intensive process of sending notifications out, reminder letters, and follow-up correspondence that can tax municipal staff. Another associated benefit of utilizing a regional agency all the data is stored at one place along with the opportunity to review and address concerns on a regional basis if routine malfunctions begin to occur across municipal boundaries. Lebanon County is administering a regional sewage management program for many of its municipalities that enforce an on-lot management ordinance and could provide a good model for Mifflin to follow.

Regional Septage Facility

There are three wastewater treatment facilities that accept septage however; the majority of septage is transported outside of the county based on existing rates. The County continues to receive more on-lot systems, more septage is being generated that could be transported to a regional facility. With the price of gas to continue to increase, increased septage may be placed within the County at one of the three existing wastewater treatment facility that accept septage. However, the County could consider studying what opportunities could be available if a regional facility for receiving septage is developed.

Funding Priority tied to Approved Planning

In the future, to facilitate sound financial investments Mifflin County could provide financial support to those municipalities that support growth management principles based on the County's comprehensive plan. Such projects for consideration could be economic, community and neighborhood development projects that would: promote the revitalization of County's boroughs and at the same time protect the agricultural and rural heritage of the landscape. One type of project that could be funded could be sewer infrastructure.

Glossary of Terms and Abbreviations

Aerobic digester- A device found at a wastewater treatment facility that allows matter in suspended waste to be dissolved by microorganisms

Biosolids- They are nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility. When treated and processed, these residuals can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth.

BOD_5- Biochemical Oxygen Demand

Capped Sewer (dry) lines- Are sewer lines extended throughout a new development with the understanding that it is planned to be connected to public wastewater treatment facility based on the municipal Act 537 Plan within the next five years.

CBOD- Carbonaceous Biochemical Oxygen Demand

CIU- Categorical Industrial User

Clarifier- A device that is used to separate solid waste from liquid waste, and is used in the wastewater treatment process

CSO- Combined Sewage Overflow

Denitrification- the reduction (nitrates) to nitrites, ammonia, and free nitrogen, as in soil by microorganisms

EDU- Equivalent Dwelling Unit

Effluent- Outflow of liquid waste, such as discharge from a wastewater treatment plant

FOG- Fat, Oil and Grease accumulations

Grinder Pump- A device that grinds up wastewater produced in a household and pumps it into a public sewer system

MCPSP- Mifflin County Public Sewer Plan

MDIDC- Mifflin County Industrial Development Corporation

MGD- million(s) gallons per day

NPDES- National Pollutant Discharge Elimination System

Nitrification- The process of converting ammonia to nitrite and nitrate in the presence of oxygen, especially by the action of naturally occurring bacteria.

OLDS- On-Lot sewage Disposal Systems

On-lot Replacement Area- Secondary percs and probes for alternate on-lot sewage disposal sites and systems are required to be conducted and approved by the Sewage Enforcement Officer at the time the primary percs and probes are completed. These secondary or alternate sites help ensure that should the primary individual on-lot sewage systems fail, each lot will be provided with an adequate, undisturbed area to continue on-lot sewage disposal. This open area is typically indicated on the subdivision or land development plan as a perpetual easement to reserve an area on the lot to allow for a secondary back-up or alternate disposal system. The eased area is protected from excavation, construction and other disturbance type activities.

PPD- Pounds Per Day

PA DEP- Pennsylvania Department of Environmental Protection

SALDO- Subdivision and Land Development Ordinance

TSS- Total Suspended Solids

VAR- Vector Attraction Reduction

Wastewater Treatment Facility- Wastewater Treatment Plant

APPENDIX A: POPULATION PROJECTIONS FOR INDIVIDUAL MUNICIPALITIES

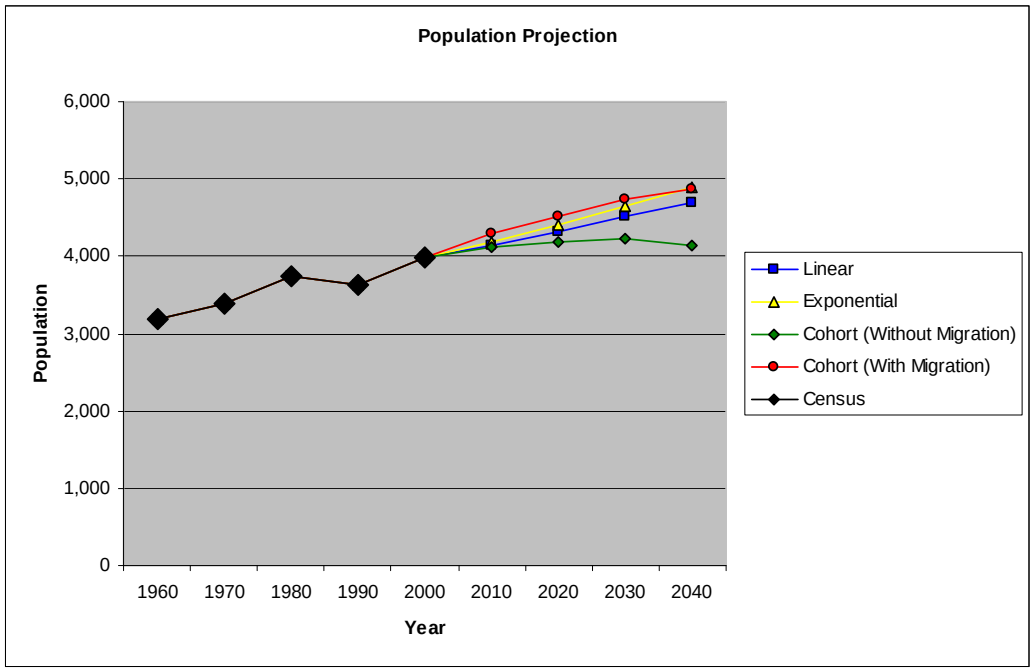
Northeast Region

TABLE 19: ARMAGH TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	3,179	3,179	3,179	3,179	3,179
1970	3,385	3,385	3,385	3,385	3,385
1980	3,742	3,742	3,742	3,742	3,742
1990	3,627	3,627	3,627	3,627	3,627
2000	3,988	3,988	3,988	3,988	3,988
2010	***	4,142	4,180	4,118	4,291
2020	***	4,328	4,404	4,186	4,526
2030	***	4,514	4,640	4,234	4,737
2040	***	4,700	4,889	4,139	4,862

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 12: ARMAGH TOWNSHIP POPULATION PROJECTIONS



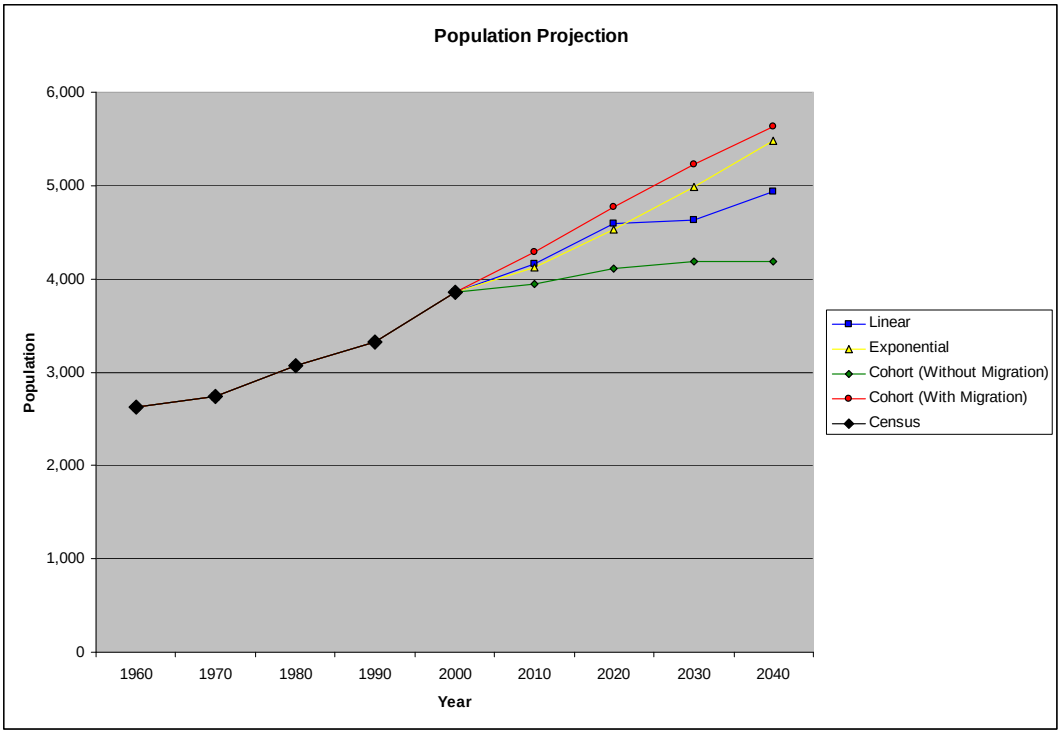
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 20: BROWN TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	2,631	2,631	2,631	2,631	2,631
1970	2,742	2,742	2,742	2,742	2,742
1980	3,069	3,069	3,069	3,069	3,069
1990	3,320	3,320	3,320	3,320	3,320
2000	3,852	3,852	3,852	3,852	3,852
2010	***	4,161	4,118	3,949	4,293
2020	***	4,589	4,530	4,107	4,771
2030	***	4,633	4,983	4,192	5,229
2040	***	4,935	5,482	4,182	5,631

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 13: BROWN TOWNSHIP POPULATION PROJECTIONS



Source: U.S. Census Bureau; RETTEW Associates, Inc.

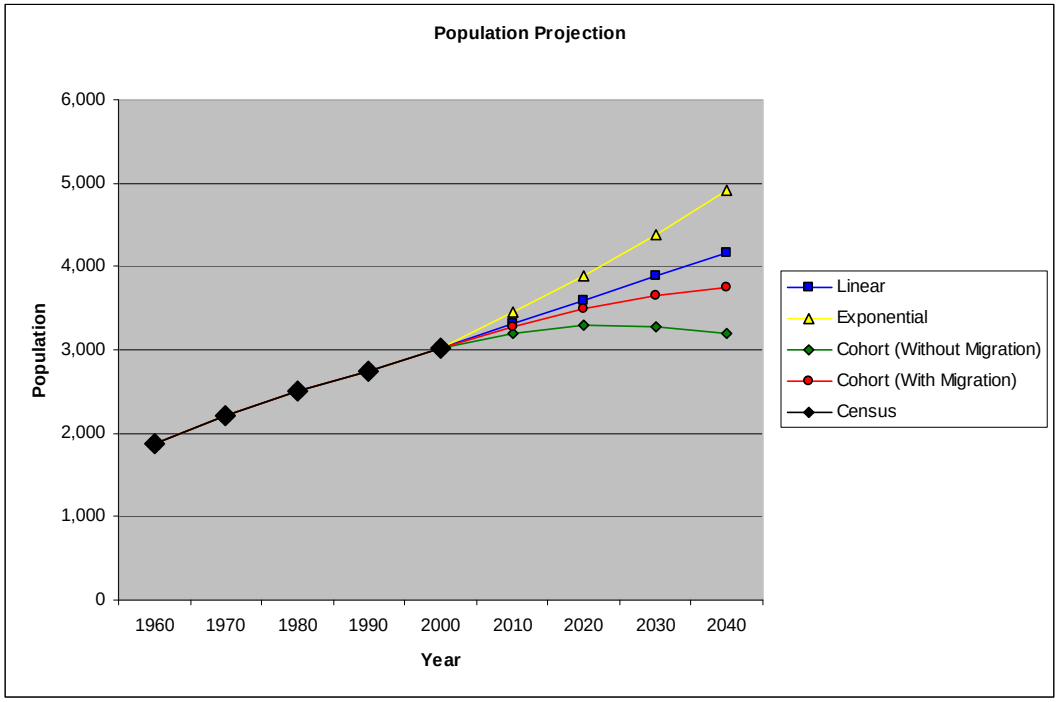
Southeast Region

TABLE 21: DECATUR TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	1,868	1,868	1,868	1,868	1,868
1970	2,216	2,216	2,216	2,216	2,216
1980	2,513	2,513	2,513	2,513	2,513
1990	2,735	2,735	2,735	2,735	2,735
2000	3,021	3,021	3,021	3,021	3,021
2010	***	3,318	3,464	3,203	3,281
2020	***	3,601	3,894	3,295	3,502
2030	***	3,883	4,378	3,281	3,657
2040	***	4,166	4,923	3,196	3,754

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 14: DECATUR TOWNSHIP POPULATION PROJECTIONS



Source: U.S. Census Bureau; RETTEW Associates, Inc.

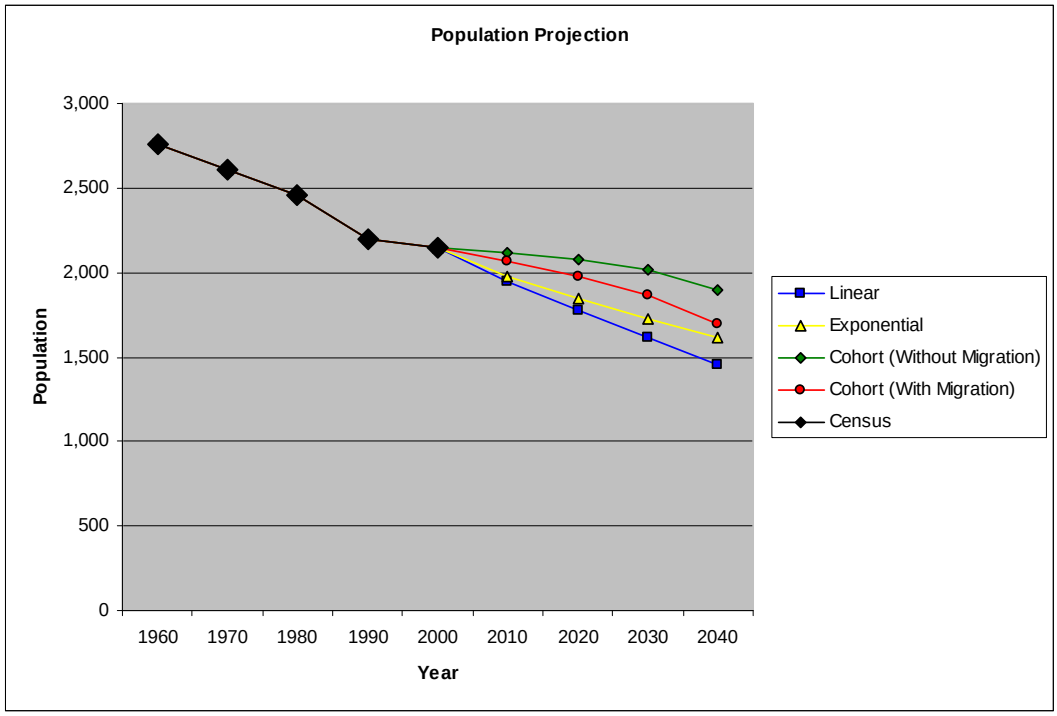
South Central Region

TABLE 22: BURNHAM BOROUGH POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	2,755	2,755	2,755	2,755	2,755
1970	2,607	2,607	2,607	2,607	2,607
1980	2,457	2,457	2,457	2,457	2,457
1990	2,197	2,197	2,197	2,197	2,197
2000	2,144	2,144	2,144	2,144	2,144
2010	***	1,942	1,978	2,115	2,062
2020	***	1,779	1,850	2,080	1,976
2030	***	1,616	1,729	2,019	1,864
2040	***	1,453	1,617	1,896	1,697

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 15: BURNHAM BOROUGH POPULATION PROJECTIONS



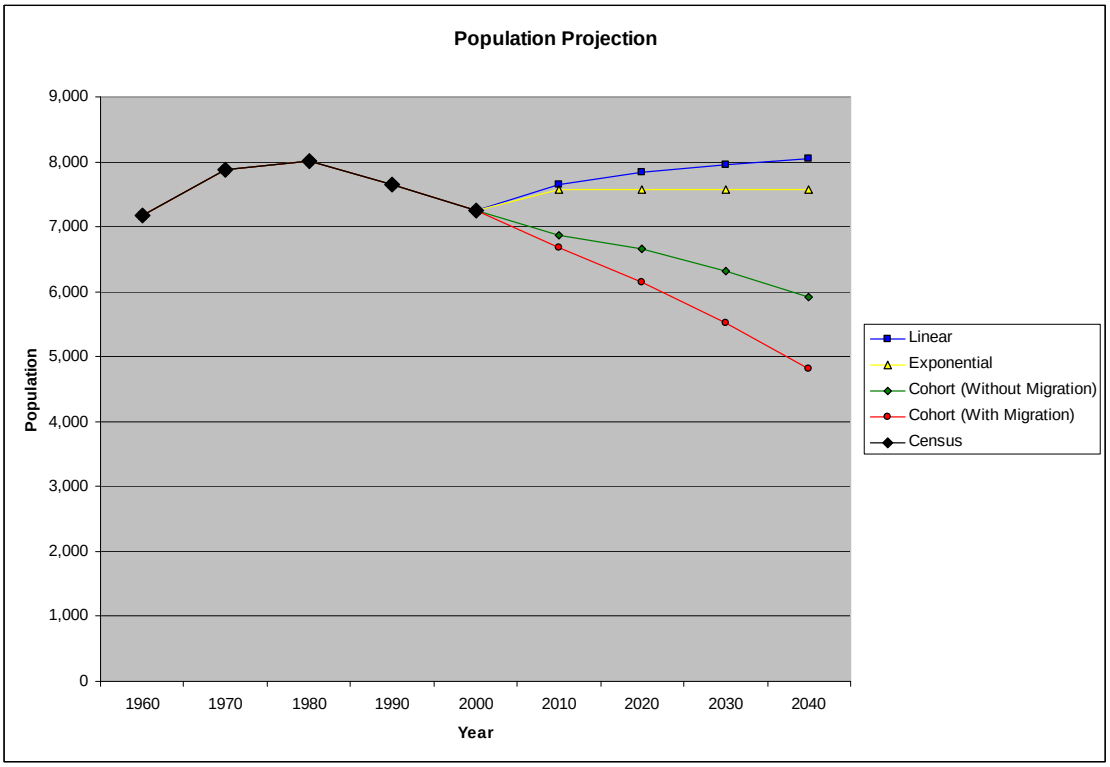
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 23: DERRY TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	7,167	7,167	7,167	7,167	7,167
1970	7,877	7,877	7,877	7,877	7,877
1980	8,008	8,008	8,008	8,008	8,008
1990	7,650	7,650	7,650	7,650	7,650
2000	7,256	7,256	7,256	7,256	7,256
2010	***	7,656	7,574	6,874	6,676
2020	***	7,845	7,570	6,661	6,150
2030	***	7,945	7,567	6,322	5,527
2040	***	8,050	7,564	5,925	4,809

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 16: DERRY TOWNSHIP POPULATION PROJECTIONS



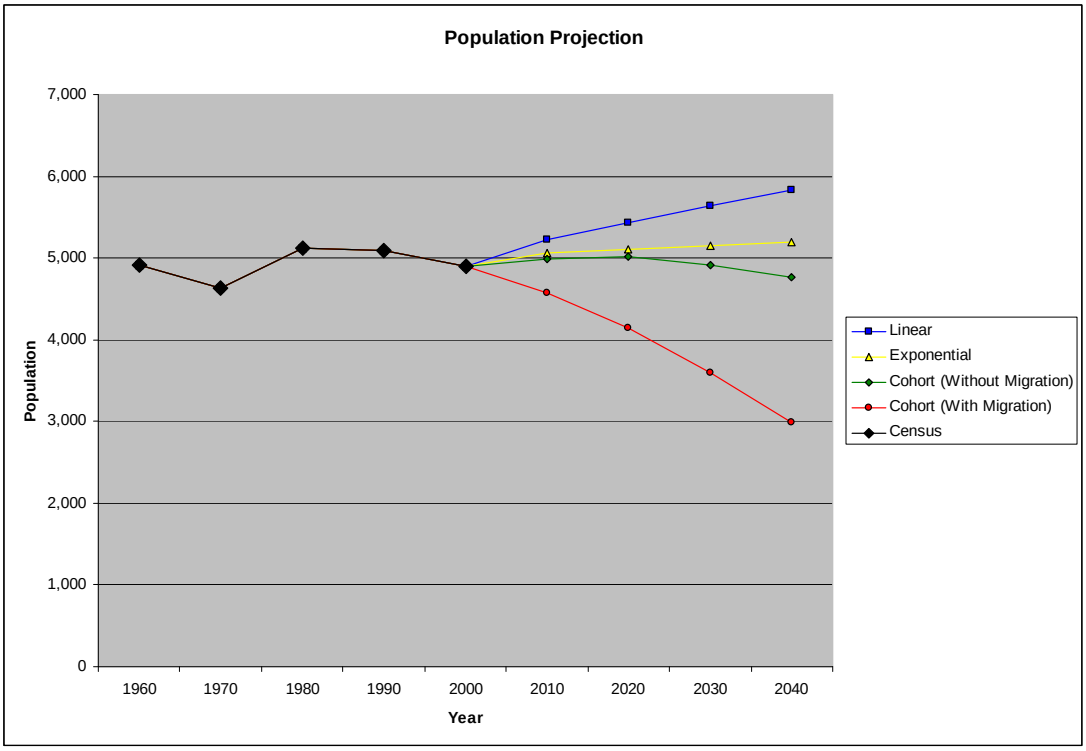
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 24: GRANVILLE TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	4,908	4,908	4,908	4,908	4,908
1970	4,626	4,626	4,626	4,626	4,626
1980	5,116	5,116	5,116	5,116	5,116
1990	5,090	5,090	5,090	5,090	5,090
2000	4,895	4,895	4,895	4,895	4,895
2010	***	5,226	5,059	4,992	4,568
2020	***	5,434	5,105	5,013	4,138
2030	***	5,636	5,151	4,916	3,593
2040	***	5,838	5,198	4,769	2,992

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 17: GRANVILLE TOWNSHIP POPULATION PROJECTIONS



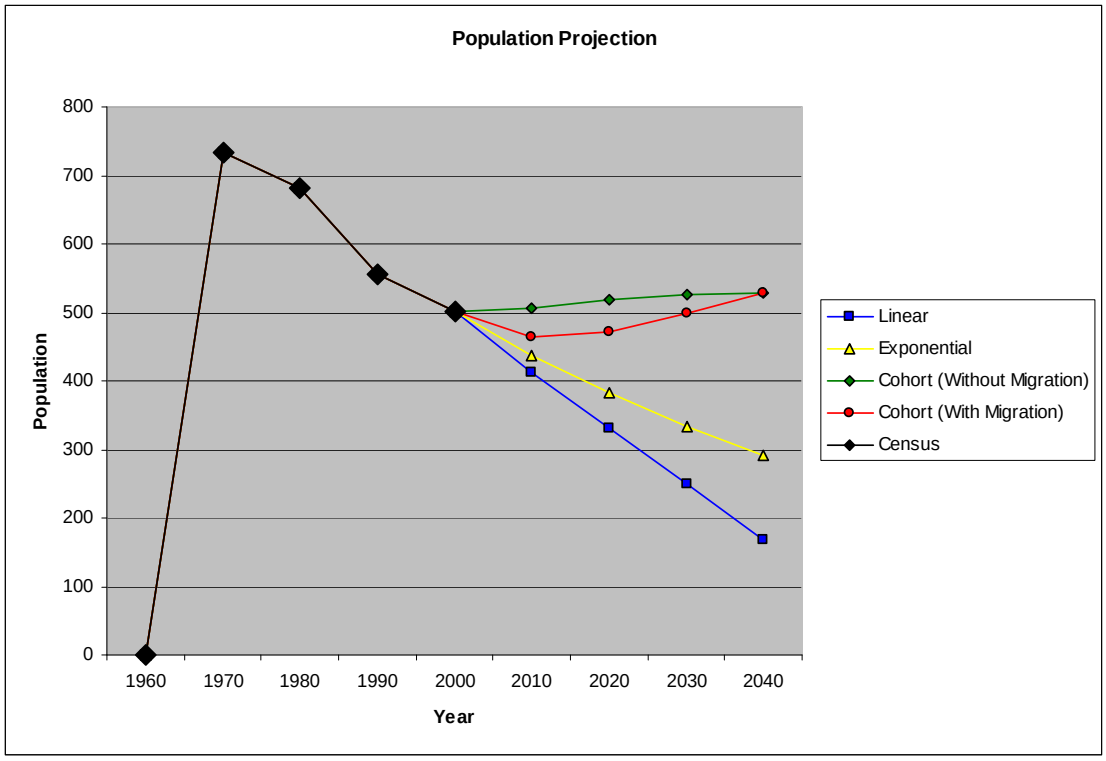
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 25: JUNIATA TERRACE BOROUGH POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	***	***	***	***	***
1970	733	733	733	733	733
1980	682	682	682	682	682
1990	556	556	556	556	556
2000	502	502	502	502	502
2010	***	414	437	507	464
2020	***	332	382	519	471
2030	***	250	334	525	499
2040	***	168	292	528	528

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 18: JUNIATA TERRACE POPULATION PROJECTIONS



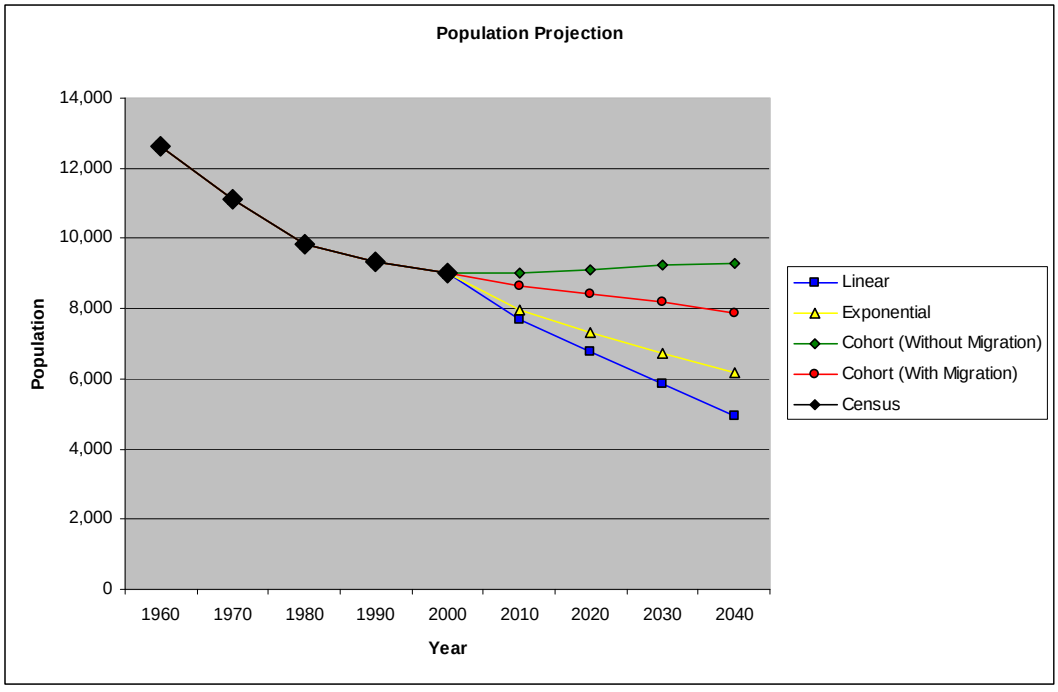
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 26: LEWISTOWN BOROUGH POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	12,640	12,640	12,640	12,640	12,640
1970	11,098	11,098	11,098	11,098	11,098
1980	9,830	9,830	9,830	9,830	9,830
1990	9,341	9,341	9,341	9,341	9,341
2000	8,998	8,998	8,998	8,998	8,998
2010	***	7,669	7,976	9,020	8,654
2020	***	6,765	7,325	9,088	8,400
2030	***	5,861	6,727	9,221	8,186
2040	***	4,957	6,177	9,303	7,881

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 19: LEWISTOWN BOROUGH POPULATION PROJECTIONS



Source: U.S. Census Bureau; RETTEW Associates, Inc.

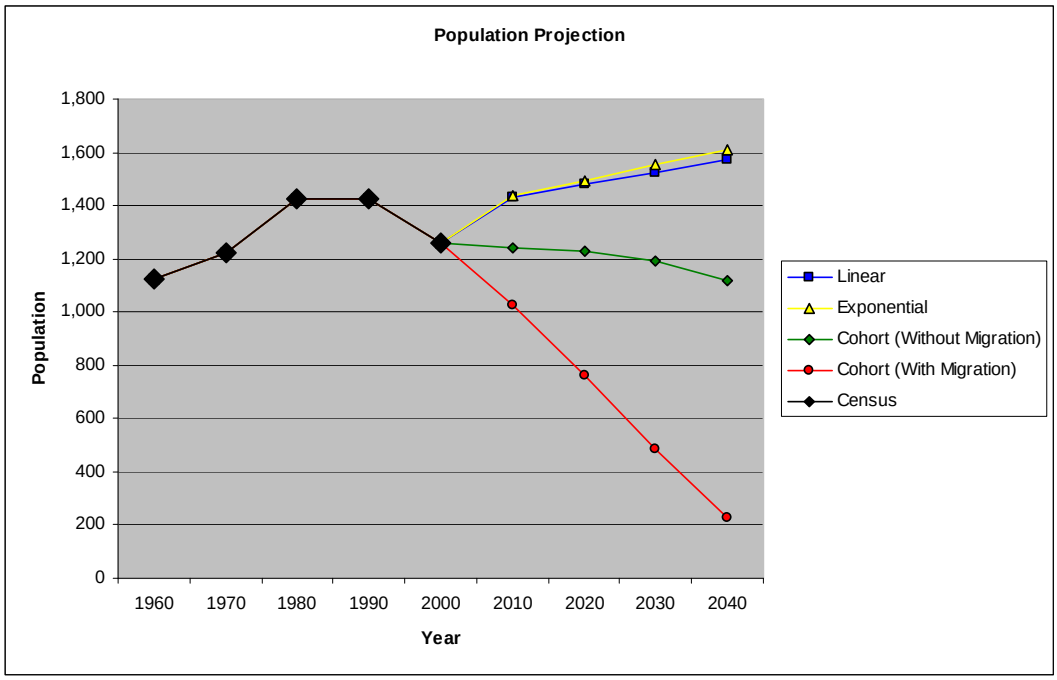
Southwest Central Region

TABLE 27: BRATTON TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	1,127	1,127	1,127	1,127	1,127
1970	1,224	1,224	1,224	1,224	1,224
1980	1,426	1,426	1,426	1,426	1,426
1990	1,427	1,427	1,427	1,427	1,427
2000	1,259	1,259	1,259	1,259	1,259
2010	***	1,433	1,440	1,238	1,024
2020	***	1,479	1,496	1,228	761
2030	***	1,526	1,553	1,192	484
2040	***	1,573	1,612	1,120	227

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 20: BRATTON TOWNSHIP POPULATION PROJECTIONS



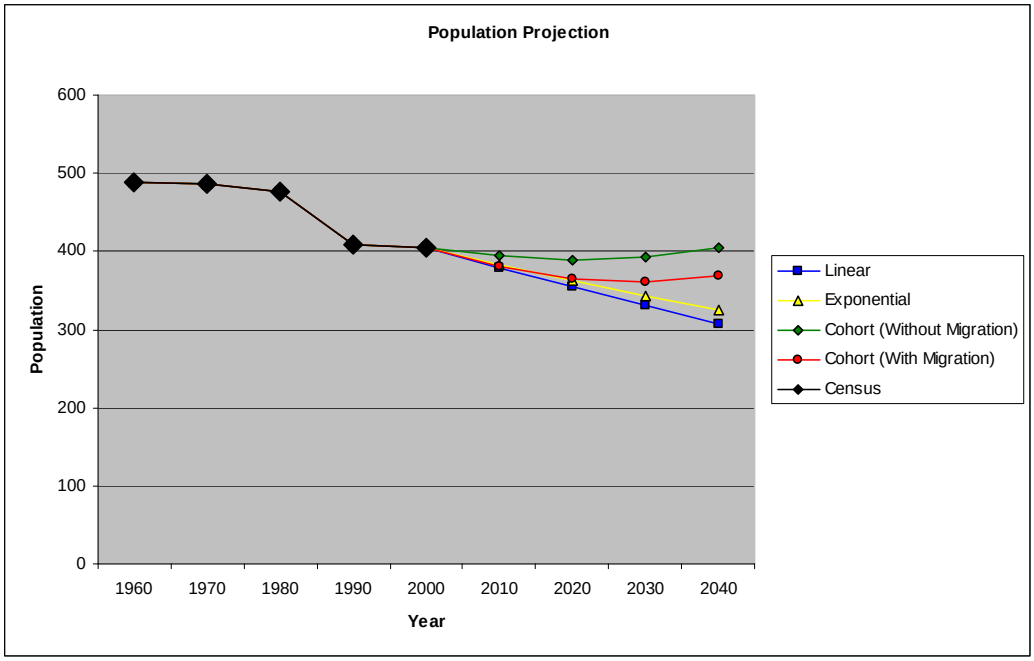
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 28: MCVEYTOWN BOROUGH POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	488	488	488	488	488
1970	486	486	486	486	486
1980	477	477	477	477	477
1990	408	408	408	408	408
2000	405	405	405	405	405
2010	***	380	383	395	381
2020	***	355	362	389	366
2030	***	331	343	393	361
2040	***	306	325	404	368

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 21: MCVEYTOWN BOROUGH POPULATION PROJECTIONS



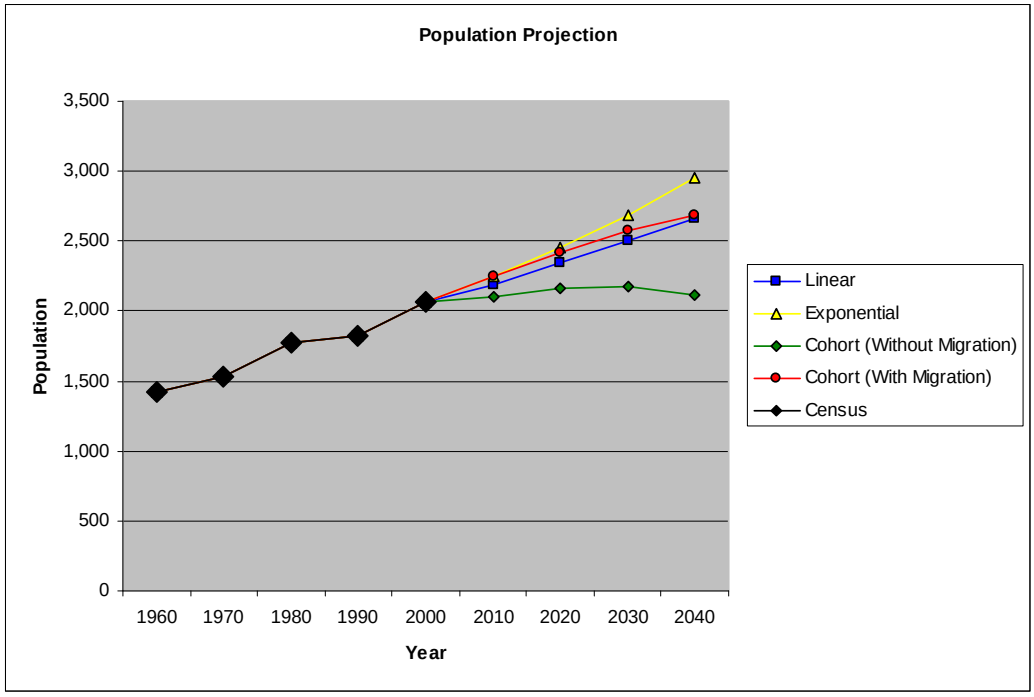
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 29: OLIVER TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	1,427	1,427	1,427	1,427	1,427
1970	1,528	1,528	1,528	1,528	1,528
1980	1,774	1,774	1,774	1,774	1,774
1990	1,822	1,822	1,822	1,822	1,822
2000	2,060	2,060	2,060	2,060	2,060
2010	***	2,190	2,244	2,108	2,244
2020	***	2,346	2,458	2,167	2,415
2030	***	2,502	2,692	2,170	2,574
2040	***	2,658	2,948	2,111	2,683

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 22: OLIVER TOWNSHIP POPULATION PROJECTIONS



Source: U.S. Census Bureau; RETTEW Associates, Inc.

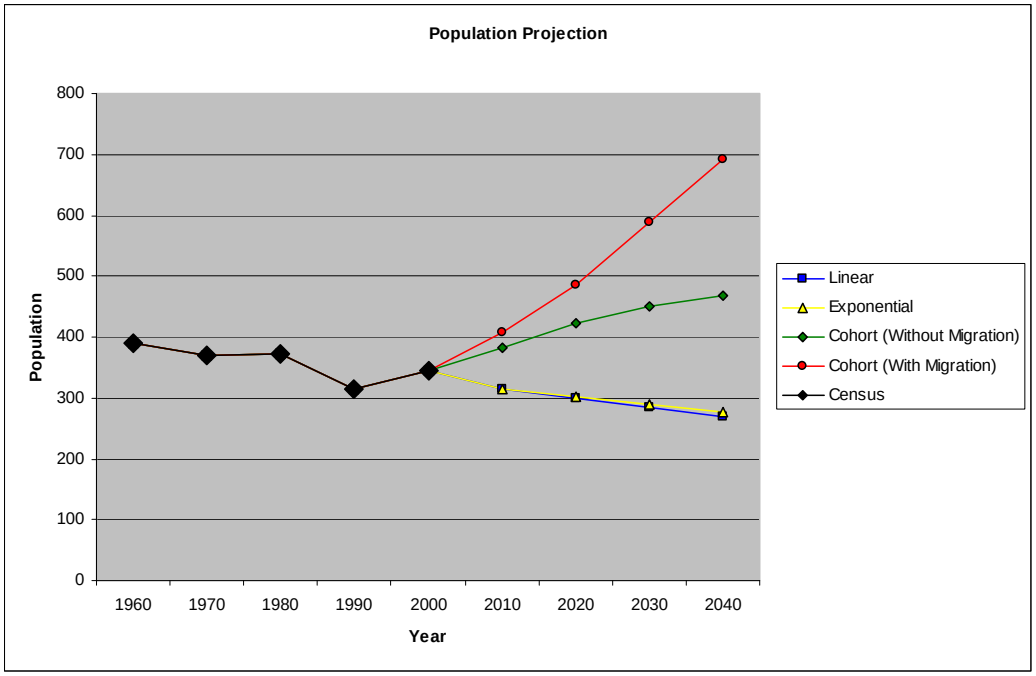
Southwest Region

TABLE 30: KISTLER BOROUGH POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	391	391	391	391	391
1970	369	369	369	369	369
1980	372	372	372	372	372
1990	314	314	314	314	314
2000	344	344	344	344	344
2010	***	313	315	381	407
2020	***	298	302	422	486
2030	***	284	290	451	588
2040	***	269	278	469	693

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 23: KISTLER BOROUGH POPULATION PROJECTIONS



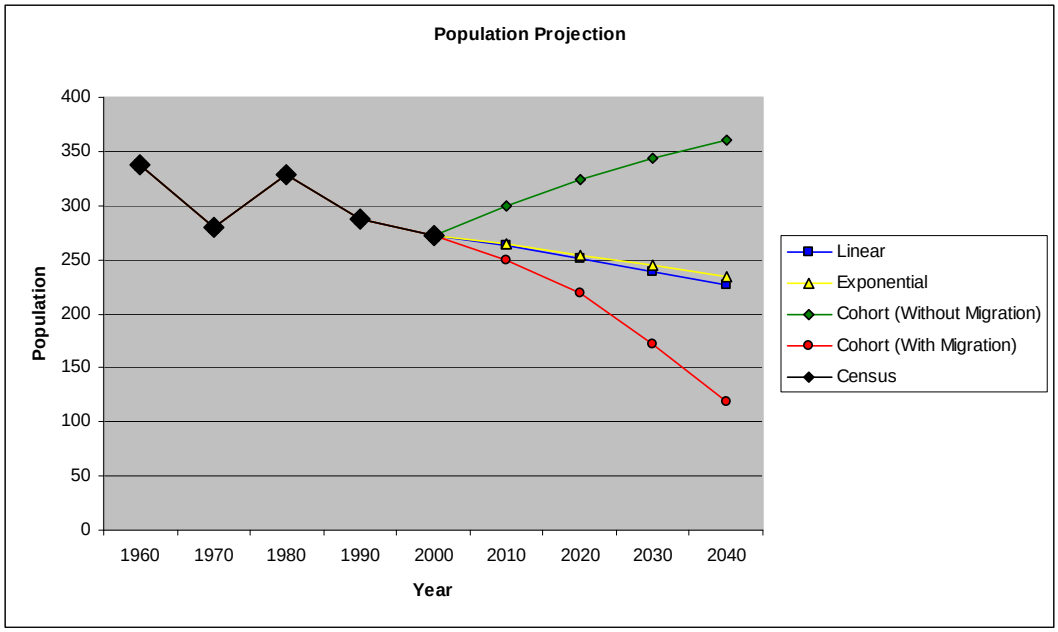
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 31: NEWTON HAMILTON BOROUGH POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	338	338	338	338	338
1970	280	280	280	280	280
1980	328	328	328	328	328
1990	287	287	287	287	287
2000	272	272	272	272	272
2010	***	264	265	299	249
2020	***	251	255	325	219
2030	***	239	244	343	172
2040	***	226	234	361	118

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 24: NEWTON HAMILTON BOROUGH POPULATION PROJECTIONS



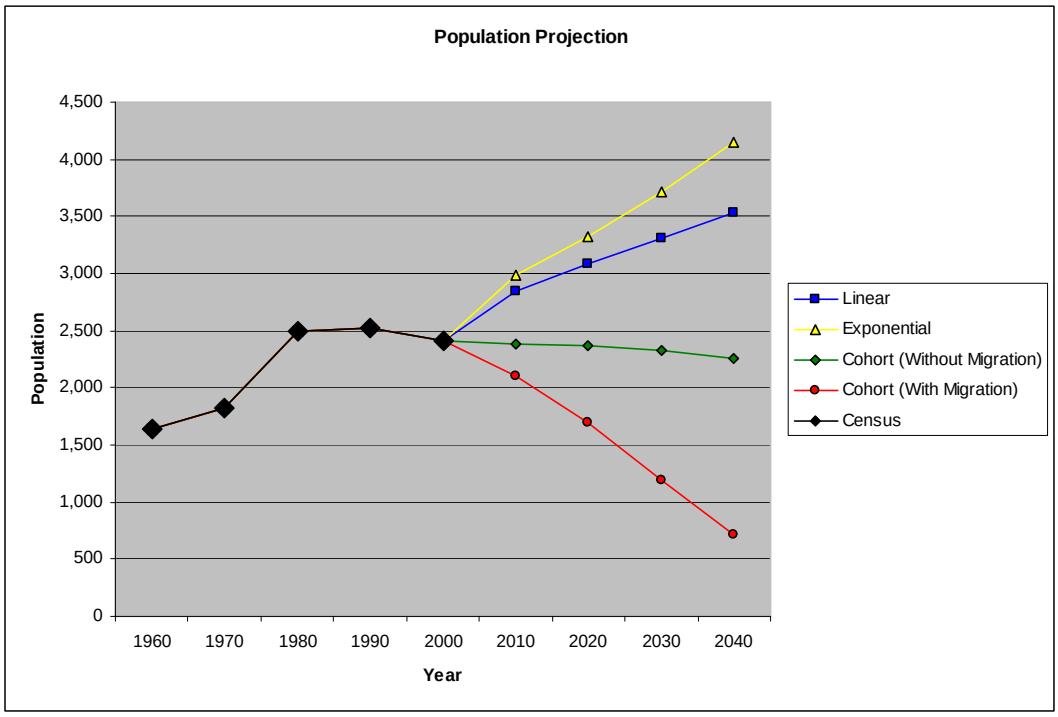
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 32: WAYNE TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	1,637	1,637	1,637	1,637	1,637
1970	1,824	1,824	1,824	1,824	1,824
1980	2,491	2,491	2,491	2,491	2,491
1990	2,521	2,521	2,521	2,521	2,521
2000	2,414	2,414	2,414	2,414	2,414
2010	***	2,853	2,982	2,383	2,100
2020	***	3,078	3,329	2,376	1,692
2030	***	3,303	3,716	2,331	1,195
2040	***	3,528	4,149	2,258	708

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 25: WAYNE TOWNSHIP POPULATION PROJECTIONS



Source: U.S. Census Bureau; RETTEW Associates, Inc.

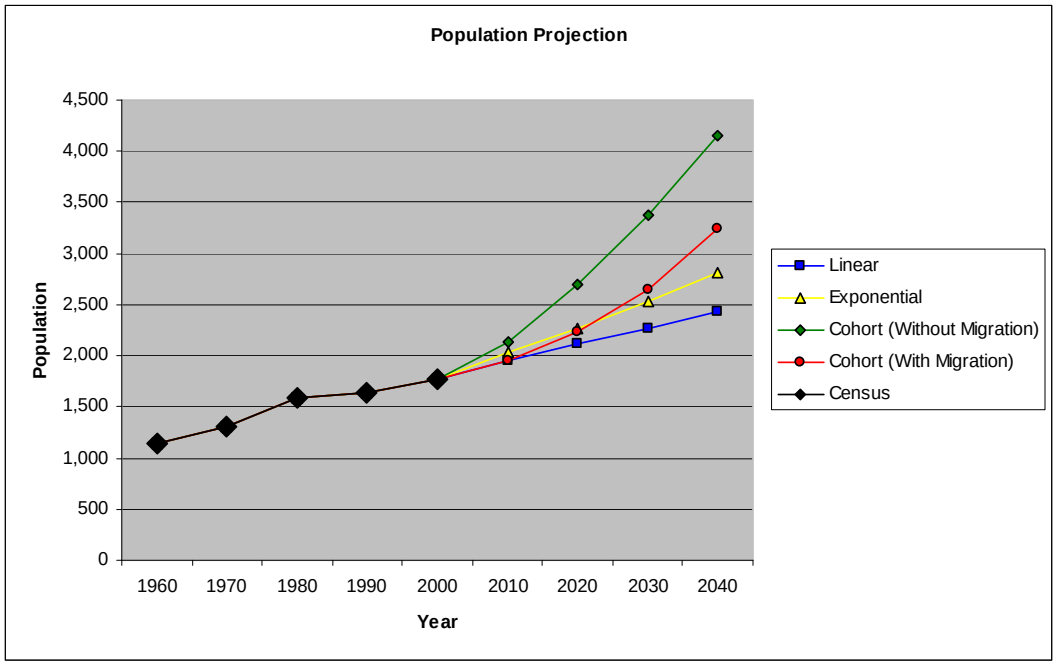
Northwest Region

TABLE 33: MENNO TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	1,147	1,147	1,147	1,147	1,147
1970	1,308	1,308	1,308	1,308	1,308
1980	1,590	1,590	1,590	1,590	1,590
1990	1,637	1,637	1,637	1,637	1,637
2000	1,763	1,763	1,763	1,763	1,763
2010	***	1,957	2,036	2,139	1,957
2020	***	2,113	2,269	2,697	2,228
2030	***	2,270	2,529	3,379	2,647
2040	***	2,426	2,819	4,159	3,243

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 26: MENNO TOWNSHIP POPULATION PROJECTIONS



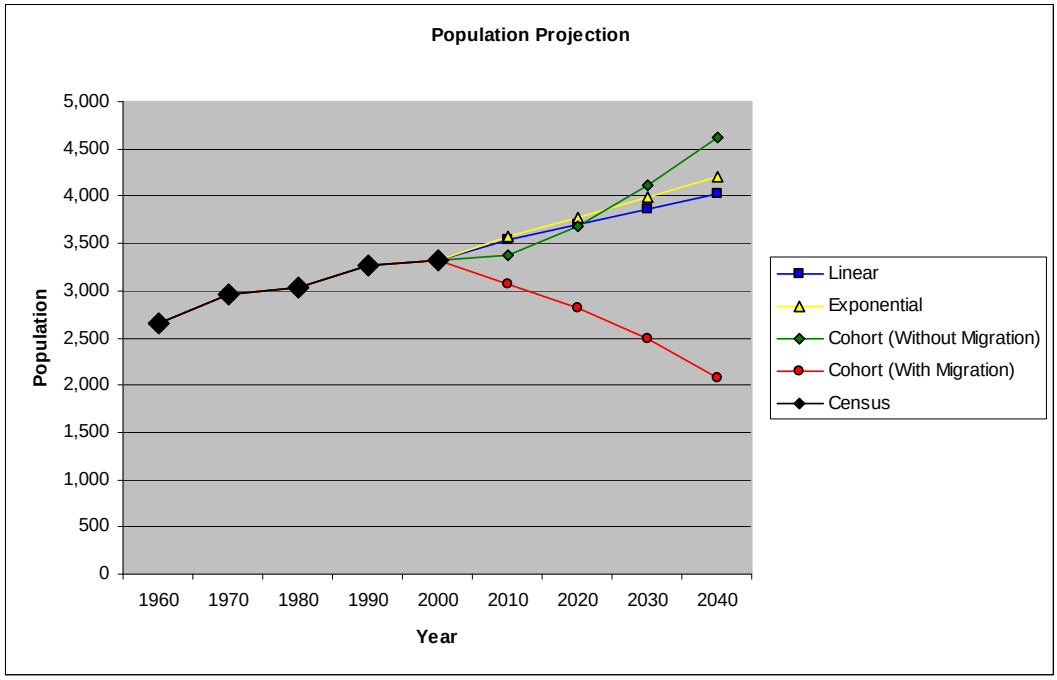
Source: U.S. Census Bureau; RETTEW Associates, Inc.

TABLE 34: UNION TOWNSHIP POPULATION PROJECTIONS

	Census	Linear	Exponential	Cohort (Without Migration)	Cohort (With Migration)
1960	2,645	2,645	2,645	2,645	2,645
1970	2,965	2,965	2,965	2,965	2,965
1980	3,033	3,033	3,033	3,033	3,033
1990	3,265	3,265	3,265	3,265	3,265
2000	3,313	3,313	3,313	3,313	3,313
2010	***	3,535	3,575	3,368	3,073
2020	***	3,699	3,776	3,682	2,808
2030	***	3,862	3,989	4,123	2,495
2040	***	4,026	4,213	4,625	2,072

Source: U.S. Census Bureau; RETTEW Associates, Inc.

FIGURE 27: UNION TOWNSHIP POPULATION PROJECTIONS



Source: U.S. Census Bureau; RETTEW Associates, Inc.

Appendix B: Biosolids management and wastewater treatment survey results

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey

Rettew Associates
Material Matters, Inc.

Municipality	NPDES Permit	Municipal Agency or Name	Address	City	State	Zip	Contact 1st Name	Contact last Name	Phone 717 area code
Brown Twp	PA0028088	Brown Twp Municipal Authority	7748 SR 655	Reedsville	PA	17084	Jerry	Middlesworth	667-6711
		Brown Twp			PA				
Burnham	PA0038920	Burnham Borough Authority	200 1st Avenue	Burnham	PA	17009	David Christian	Rhinehelder Hassinger	248-6351
		Burnham			PA				
Granville Twp	PA0032051, PA0084778		100 Helen Street	Lewistown	PA	17044	Larry	Craig	242-1838
		Granville Twp			PA				
Juniata Terrace	PA0022268	Juniata Terrace Borough	80 Hudson Avenue	Lewistown	PA	17044			248-4383
					PA				
Lewistown	PA0026280	Lewistown	2 East 3rd Street	Lewistown	PA	17044	Michael	Dippery	242-2823
					PA				
McVeytown	PA0028983	McVeytown Borough Authority	PO Box 321	McVeytown	PA	17051	Steven	Boozel	899-7436
					PA				
Union Twp	PA0024708	Union Twp Municipal Authority	PO Box 5625	Belleville	PA	17004	Alfred	Fultz	935-5202
					PA				
Wayne Twp	PA0083330	Wayne Twp Mifflin County	3055 Ferguson Valley Road	McVeytown	PA	17051	Rodney	Fleck	899-7430 or 814-542-9796
					PA				

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey
May 9, 2006

1. Name of Facility: BROWN TWP. W.W.T.P.
2. NPDES Permit Number: PA 0028088
3. Wastewater Treatment Plant (WWTP) Owner: B.T.M.A
4. WWTP Operator: BROWN TWP BOARD OF SUPERS.
5. Municipality in which plant is located: BROWN TWP (REEDSVILLE)
6. Name of Survey Respondent: GERALD MIDDLESWORTH
7. Title: OPERATOR
8. Plant Address: 68 WEST TOWN ST
   REEDSVILLE, PA. 17084

   Phone: (717) 667-6711 FAX: (717) 667-9472

   E-Mail Address: _____
9. Wastewater Treatment Plant Design Capacity: .6 mgd

   2005 Average Flow: .374 mgd

   Projected 2010 (5 year) Flow: .411 mgd

   Number of WWTP's in your system: 1
10. Municipalities that contribute wastewater to WWTP: BROWN TWP ~~TWP~~ (REEDSVILLE)
    ARMAGH TWP (MILROY)
11. 2005 Flow from each Municipality (mgd) _____
12. Do you accept septage? ☐ Yes ☒ No

    If yes, 2005 volumes accepted: _____
13. Do you accept other outside wastes? ☐ Yes ☒ No

    If yes, how much in 2005? _____
14. Do you have Pretreatment Program? ☐ Yes ☒ No

    If yes, 2005 flow from Industrial Sources: _____

15. Please complete the following for each unit process used at your WWTP.

a. Primary Clarification ☐ Yes ☒ No Number of Units: _____

Circular dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

b. Treatment Process

Conventional Activated Sludge ☐ Yes ☒ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Extended Aeration Activated Sludge ☒ Yes ☐ No Number of Reactors: 4

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: 56 (ft.) width: 22 (ft.) depth: 15 (ft.)

☐ Mechanical aeration ☒ Fine Bubble ☐ Course Bubble ☐ Other

Sequencing Batch Reactor ☐ Yes ☒ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Trickling Filters ☐ Yes ☒ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Rotating Biological Contactors ☐ Yes ☒ No Number of Reactors: _____

c. Secondary Clarification ☒ Yes ☐ No Number of Units: 5

(1) Circular reactor dimensions: diameter: 45 (ft.) depth: 16 (ft.)

(4) Rectangular reactor dimensions: length: 22 (ft.) width: 16 (ft.) depth: 15 (ft.)

d. Nutrient Removal ☐ Yes ☒ No

☐ Biological Nutrification ☐ Biological Denutrification ☐ Biological Phosphorus Removal

☐ Other _____

e. Disinfection

☒ Chemical (type) Cl_2 ☐ Ultraviolet (UV)

f. Solid Digestion/Stabilization

☒ Aerobic Digestion ☐ Anerobic Digestion ☐ Composting ☐ Lime

☐ Other _____

g. Solids Management

Thickening ☒ Yes ☐ No ☒ Gravity ☐ Mechanical ☐ Solids 2 %

☐ Other _____

Dewatering ☐ Yes ☒ No Number of Units _____ Size _____

☐ Belt Press ☐ Frame Press ☐ Centrifuge ☐ Vacuum Filter ☐ Drying Bed

Average percent solids achieved _____ %

Does the plant process biosolids from another plant? ☐ Yes ☒ No

h. Biosolids End Use

☐ Land Fill ☒ Land Application ☐ Composting ☐ Incineration

Does the plant send biosolids to another plant for processing? ☐ Yes ☒ No

i. Septage and Waste Receiving ☐ Yes ☒ No

How does Septage/waste enter the WWTP? ☐ Head of plant ☐ Digesters ☐ Other

If other, where? _____ Number of Permitted Haulers _____

j. Identify day-to-day operational issues that need to be addressed by Capital Improvements.

SLUDGE HANDLING (2006 CONTRACT)

HEAD WORKS (2006 CONTRACT)

BNR (2008?)

16. Plant Loading *(please provide data for the single plant identified by the NPDES permit number on line 1. You may receive separate surveys for other plants in your utility.*

Please identify the average influent concentration levels of conventional pollutants.

	2005	Design
a. BOD_5	220 mg/L	495 mg/L
b. TSS	200 mg/L	mg/L
c. Nitrogen	40 mg/L	— mg/L
d. Phosphorus	6 mg/L	— mg/L
Effluent quality:		
e. BOD_5	15 mg/L	40 mg/L
f. TSS	12 mg/L	45 mg/L
g. nitrogen	12 mg/L	— mg/L
h. phosphorus	2 mg/L	— mg/L

17. Does your WWTP consistency meet NPDES Permit Limitations? ☒ Yes ☐ No

If no, list reasons why not._____

18. Collection System *(Collection system may serve multiple plants, if so, please note).*

☒ Separate ☐ Combined

Has a Sanitary Sewer Evaluation Survey (SSES) been completed on the collection system within the last five years? ☐ Yes ☒ No

How many customers are served by the collection system? ABOUT 2100

Please rate your collection system with regard to Infiltration & Inflow (I&I).

☐ None ☐ Minor ☒ Moderate ☐ Significant ☐ Severe

Currently, are there any plans for extension of the collection network? ☐ Yes ☒ No

If yes, where?_____

19. Pump Stations *(List within your collection system)* Total Number 4

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years
322 P.S.	110	158,400	2	2.3	30
EDGEWOOD P.S.	110	158,400	2	1.8	21

(continued on next page)

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years
GUCK/MARKET P.S.	110	158,400	2	.3	16
QUEEN ST. P.S.	14	20,160	2	1.6	11

(continue on separate sheet if necessary)

How many pump stations listed above have grinders or grinder pumps? _____

20. **Biosolids Production and Quality**

Biosolids Production for 2005

If Liquid
- Total Gallons: 678,000 GALLONS
- Average % Total Solids: 1.6 %
- Average % Total Volatile Solids: 80%
- Total Dry Tons: 45.2

If Dewatered
- Total Wet Tons: _____
- Average % Total Solids: _____
- Average % Total Volatile Solids: _____
- Total Dry Tons: _____

Describe any seasonal variation in bioslolids production and include the maximum months of production: _____

21. Do you have liquid storage of biosolids at your WWTP? ☒ Yes ☐ No

If yes, how many months of storage? 4

22. Do you have dewatered storage of biosolids at your WWTP? ☒ Yes ☒ No

If yes, how many months of storage? 0

23. The method currently utilized for biosolids end use. Note: If more than one alternative is used, please provide percentage of material used in each method, and seasons used for each.

- ☐ _____ % Landfill _____ Season: _____
- ☐ _____ % Composting _____ Season: _____
- ☐ _____ % Incineration _____ Season: _____
- ☒ 100 % Land Application _____ Season: 11/1 – 10/31

- List your Biosolids General Permit Number: PAG - 08 - 3553

  Expiration Date: _____

- Please complete the following table for land application sites:

Land Application Site	Location	Acres
BROWN TWP. MUN. AUTH.	WATER LANE (BEHIND M.C. AIRPORT)	23.8

Attach additional sheets if necessary

- Please attach a copy of a topgraphic map(s) indicating the location of each site.

24. Do you analyze biosolids for pollutants (metals)? ☒ Yes ☐ No

    If yes, attach 3 most recent analysis. ?

25. Have you conducted a Form 43-TCLP analysis on biosolids? ☐ Yes ☒ No

    If yes, attach most recent analysis results.

26. Indicate which, if any, of the Vector Attraction Reduction Options listed in the Federal Part 503.33 or Pennsylvania Chapter 271.933 regulations is used at your WWTP to stabilize biosolids.

    OPTION 4 S.O.U.R. TESTS

27. Indicate which, if any, of the Pathogen Reduction Alternatives listed in the Federal Part 503.32 or Pennsylvania Chapter 271.932 regulations is used at your WWTP to stabilize biosolids.

    ALTERNATIVE 1 - AEROBIC DIGESTION

28. Have you conducted a fecal coliform analysis on your biosolids? ☒ Yes ☐ No

    If yes, attach most recent analysis results.

29. What are the most important factors in determining methods for biosolids end use? Rank in order from 1 – 6 with 1 being most important.

	WWTP Staff	Decision Makers
Cost	2	
Reliability	1	
Regulatory Complexity	4	
Environmental Stewardship	6	
Staff Limitations	3	
Public Acceptance	5	

30. Does your WWTP experience problems with processing odors? ☐ Yes ☒ No

Biosolids storage odors? ☐ Yes ☒ No

31. Does your biosolids program have more than one end use option? ☐ Yes ☒ No

32. How important is it for your WWTP to move toward Class A biosolids?

☐ Very ☐ Not Very ☐ Sometime in the future ☒ Never

33. How concerned are you with the following biosolids processing and end use options?

Public Acceptance	☐ Very	☒ Somewhat	☐ Not Very
Phosphorus limits on Class B Application	☒ Very	☐ Somewhat	☐ Not Very
Future of Class B Options	☒ Very	☐ Somewhat	☐ Not Very
Availability of landfill	☐ Very	☐ Somewhat	☒ Not Very

34 Would your municipality consider serving as a "regional biosolids processing" center?

☐ Yes ☒ No

35. Would your municipality consider investing in biosolids processing, storage, and end use options to develop a "regional biosolids processing" center?

☐ Yes ☒ No

36. Would your municipality consider sending solids to a "regional biosolids processing" center?

☐ Yes ☒ No

37. What would influence your decision to do so? SEE ABOVE!

☐ Cost ☐ Ease ☐ Reliability

38. Does your WWTP have capacity in the following unit processes to handle additional flows/ loads? YES

☒ Recycle Flows ☒ Digestion ☒ Thickening ☒ Dewatering ☒ Storage

Please return survey form to:
Material Matters, Inc.
P.O. Box 224
Elizabethtown, PA 17022

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey
May 9, 2006

1. Name of Facility: Burnham Borough WWTP
2. NPDES Permit Number: PA 0038920
3. Wastewater Treatment Plant (WWTP) Owner: Burnham Borough Authority
4. WWTP Operator: Borough of Burnham
5. Municipality in which plant is located: Burnham
6. Name of Survey Respondent: David Rhineheldet
7. Title: Plant Operator
8. Plant Address: mail : 200 First Ave., Burnham, PA 17009
   physical: 80 Railroad Street, Burnham, PA
   Phone: (717) 248-6351 FAX: (717) 248-2692
   E-Mail Address: N/A
9. Wastewater Treatment Plant Design Capacity: 0.640 mgd
   2005 Average Flow: 0.446 mgd
   Projected 2010 (5 year) Flow: 0.498 mgd
   Number of WWTP's in your system: 1
10. Municipalities that contribute wastewater to WWTP: Burnham Borough & parts of Derry Township
11. 2005 Flow from each Municipality (mgd) Burnham Borough 0.444 mgd
    Derry Township 0.002 mgd
12. Do you accept septage? ☐ Yes ☒ No
    If yes, 2005 volumes accepted:
13. Do you accept other outside wastes? ☐ Yes ☒ No
    If yes, how much in 2005?
14. Do you have Pretreatment Program? ☐ Yes ☒ No
    If yes, 2005 flow from Industrial Sources:

15. Please complete the following for each unit process used at your WWTP.

a. Primary Clarification ☒ Yes ☐ No Number of Units: 1

Circular dimensions: diameter: 40 (ft.) depth: 9.375 (ft.)

Rectangular dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

b. Treatment Process

Conventional Activated Sludge ☐ Yes ☒ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Extended Aeration Activated Sludge ☐ Yes ☒ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Sequencing Batch Reactor ☐ Yes ☒ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Trickling Filters ☒ Yes ☐ No Number of Reactors: 2

Circular reactor dimensions: diameter: (1) 58 (2) 30.6 (ft.) depth: (1) 6 (2) 6.92 (ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Rotating Biological Contactors ☐ Yes ☒ No Number of Reactors: _____

c. Secondary Clarification ☒ Yes ☐ No Number of Units: 2

Circular reactor dimensions: diameter: 35 (ft.) depth: 8.17 (ft.) (both clarifiers same dimensions)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

d. Nutrient Removal ☐ Yes ☒ No

☐ Biological Nutrification ☐ Biological Denutrification ☐ Biological Phosphorus Removal

☐ Other _____

e. Disinfection

☒ Chemical (type) Chlorine gas ☐ Ultraviolet (UV)

f. Solid Digestion/Stabilization

☐ Aerobic Digestion ☒ Anerobic Digestion ☐ Composting ☐ Lime

☐ Other _____

g. Solids Management

Thickening ☐ Yes ☒ No ☐ Gravity ☐ Mechanical ☐ Solids _____ %

☐ Other _____

Dewatering ☒ Yes ☐ No Number of Units 9 Size 543 ft² @

☐ Belt Press ☐ Frame Press ☐ Centrifuge ☐ Vacuum Filter ☒ Drying Bed

Average percent solids achieved 80 %

Does the plant process biosolids from another plant? ☐ Yes ☒ No

h. Biosolids End Use

☒ Land Fill ☐ Land Application ☐ Composting ☐ Incineration

Does the plant send biosolids to another plant for processing? ☐ Yes ☐ No

i. Septage and Waste Receiving ☐ Yes ☒ No

How does Septage/waste enter the WWTP? ☐ Head of plant ☐ Digesters ☐ Other

If other, where? _____ Number of Permitted Haulers _____

j. Identify day-to-day operational issues that need to be addressed by Capital Improvements.

Solids handling - needed upgrade to sludge digestion and storage

Hydraulic overloading - collection system infiltration needs addressed.

16. **Plant Loading** *(please provide data for the single plant identified by the NPDES permit number on line 1. You may receive separate surveys for other plants in your utility.*

Please identify the average influent concentration levels of conventional pollutants.

	2005	Design
a. BOD_5	188 mg/L	don't know mg/L
b. TSS	116 mg/L	don't know mg/L
c. Nitrogen	N/A mg/L	— mg/L
d. Phosphorus	N/A mg/L	— mg/L
Effluent quality:		
e. BOD_5	14 mg/L	don't know mg/L
f. TSS	15 mg/L	don't know mg/L
g. nitrogen	N/A mg/L	— mg/L
h. phosphorus	N/A mg/L	— mg/L

17. **Does your WWTP consistency meet NPDES Permit Limitations?** ☒ **Yes** ☐ **No**

If no, list reasons why not.

18. **Collection System** *(Collection system may serve multiple plants, if so, please note).*

☐ Separate ☒ Combined

Has a Sanitary Sewer Evaluation Survey (SSES) been completed on the collection system within the last five years? ☐ Yes ☒ No

How many customers are served by the collection system? 990

Please rate your collection system with regard to Infiltration & Inflow (I&I).

☐ None ☐ Minor ☐ Moderate ☐ Significant ☒ Severe

Currently, are there any plans for extension of the collection network? ☐ Yes ☒ No

If yes, where?

19. **Pump Stations** *(List within your collection system)* **Total Number** 3

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years
Orchard Grove Rd.		21,600	2	1.4	16
Beech St.		21,600	2	1.3	16

(continued on next page)

Name	Capacity		Number	Run Time	Age
	gpm	Gal. Per day	of pumps	Daily (hrs.)	years
Logan Blvd.		21,600	2	2.6	16

(continue on separate sheet if necessary)

How many pump stations listed above have grinders or grinder pumps? all three (3)

20. **Biosolids Production and Quality**

Biosolids Production for 2005

If Liquid	Total Gallons	69,600
	Average % Total Solids	4%
	Average % Total Volatile Solids	~~12~~ 56%
	Total Dry Tons	12
If Dewatered	Total Wet Tons	5
	Average % Total Solids	80 %
	Average % Total Volatile Solids	48%
	Total Dry Tons	4

Describe any seasonal variation in biosolids production and include the maximum months of production: Sludge withdrawal from the digester is carried out from April through Oct. No sludge withdrawal was done in 2005 from Nov. - March. max. months June & July

21. **Do you have liquid storage of biosolids at your WWTP?** ☐ Yes ☒ No

If yes, how many months of storage? _____

22. **Do you have dewatered storage of biosolids at your WWTP?** ☐ Yes ☒ No

If yes, how many months of storage? _____

23. **The method currently utilized for biosolids end use. Note: If more than one alternative is used, please provide percentage of material used in each method, and seasons used for each.**

☒	100 %	Landfill	Season: Spring through Fall
☐	____ %	Composting	Season: ____
☐	____ %	Incineration	Season: ____
☐	____ %	Land Application	Season: ____

- List your Biosolids General Permit Number: _____

  Expiration Date: _____

- Please complete the following table for land application sites:

Land Application Site	Location	Acres

Attach additional sheets if necessary

- Please attach a copy of a topgraphic map(s) indicating the location of each site.

24. **Do you analyze biosolids for pollutants (metals)?** ☐ Yes ☒ No

If yes, attach 3 most recent analysis.

25. **Have you conducted a Form 43-TCLP analysis on biosolids?** ☒ Yes ☐ No

If yes, attach most recent analysis results.

26. **Indicate which, if any, of the Vector Attraction Reduction Options listed in the Federal Part 503.33 or Pennsylvania Chapter 271.933 regulations is used at your WWTP to stabilize biosolids.**

Dry for 90 days and greater than 75% total solids

27. **Indicate which, if any, of the Pathogen Reduction Alternatives listed in the Federal Part 503.32 or Pennsylvania Chapter 271.932 regulations is used at your WWTP to stabilize biosolids.**

Dry for 90 days and greater than 75% solids

28. **Have you conducted a fecal coliform analysis on your biosolids?** ☐ Yes ☒ No

If yes, attach most recent analysis results.

29. **What are the most important factors in determining methods for biosolids end use? Rank in order from 1 – 6 with 1 being most important.**

	WWTP Staff	Decision Makers
Cost	6	1
Reliability	2	4
Regulatory Complexity	4	2
Environmental Stewardship	3	5
Staff Limitations	1	6
Public Acceptance	5	3

30. Does your WWTP experience problems with processing odors? ☐ Yes ☒ No

Biosolids storage odors? ☐ Yes ☒ No

31. Does your biosolids program have more than one end use option? ☐ Yes ☒ No

32. How important is it for your WWTP to move toward Class A biosolids?

☐ Very ☒ Not Very ☐ Sometime in the future ☐ Never

33. How concerned are you with the following biosolids processing and end use options?

Public Acceptance	☐ Very	☒ Somewhat	☐ Not Very
Phosphorus limits on Class B Application	☐ Very	☒ Somewhat	☐ Not Very
Future of Class B Options	☐ Very	☒ Somewhat	☐ Not Very
Availability of landfill	☒ Very	☐ Somewhat	☐ Not Very

34 Would your municipality consider serving as a "regional biosolids processing" center?

☐ Yes ☒ No

35. Would your municipality consider investing in biosolids processing, storage, and end use options to develop a "regional biosolids processing" center?

☒ Yes ☐ No

36. Would your municipality consider sending solids to a "regional biosolids processing" center?

☒ Yes ☐ No

37. What would influence your decision to do so?

☒ Cost ☐ Ease ☐ Reliability

38. Does your WWTP have capacity in the following unit processes to handle additional flows/ loads? NO

☐ Recycle Flows ☐ Digestion ☐ Thickening ☐ Dewatering ☐ Storage

Please return survey form to:
Material Matters, Inc.
P.O. Box 224
Elizabethtown, PA 17022

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Microbac Laboratories, Inc.
CAMP HILL DIVISION
209 Senate Ave, Suite 105
Camp Hill, PA 17011
(717) 763-0582 Fax (717) 214-1269
Cherie Casari, Lab Director
www.microbac.com E-Mail: camphill@microbac.com

STATE CERT ID.
PA# 21-133
NY# 11650
EPA# PA00028

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CERTIFICATE OF ANALYSIS

BURNHAM BOROUGH WWTP
DAVE RHINEHELDER
200 FIRST AVE.
BURNHAM,PA 17009

Date Reported	7/12/2005
Date Received	6/22/2005
Sample ID	0506-01118
Invoice No.	49811
Cust #	004431
Cust P.O. #	
Cust Permit #	

Subject **SLUDGE DRYING BED 6/20/05**

Sampled By: DFR Date 6/20/2005 Time 14:55

Test	Result	Date	Time	Tech	Method
1 SLUDGE DRYING BED #5 RAW					
CB'S		7/8/2005		RWS	SW846 8082
ROCLOR 1016	<1240 ug/kg	7/8/2005		RWS	SW846 8082
ROCLOR 1221	<1240 ug/kg	7/8/2005		RWS	SW846 8082
ROCLOR 1232	<1240 ug/kg	7/8/2005		RWS	SW846 8082
ROCLOR 1242	<1240 ug/kg	7/8/2005		RWS	SW846 8082
ROCLOR 1248	<1240 ug/kg	7/8/2005		RWS	SW846 8082
ROCLOR 1254	<1240 ug/kg	7/8/2005		RWS	SW846 8082
ROCLOR 1260	<1240 ug/kg	7/8/2005		RWS	SW846 8082
ANIDE, REACTIVE	<0.12 mg/kg DRY	7/5/2005		KNT	SW-846 7.3.3
EE LIQUIDS	<1 %	6/23/2005		GLF	SW-846 9095A
NITABILITY	>80 DEGREE C	6/23/2005		TLS	SW-846 1010
	6.81 pH UNITS	6/23/2005	16:51	OB	SW-846 9045C
troleum Hydrocarbons	<62 mg/kg Dry	7/5/2005		RWS	EPA 1664A (M)
LIDS, TOTAL	81.0 % DRY WT.	6/23/2005		GLF	SM18TH 2540G
LIDS, VOLATILE	49.1 % DRY WT.	6/23/2005		GLF	SM18TH 2540G
LFIDE, REACTIVE	<12.4 mg/kg DRY	7/5/2005		KNT	SW-846 7.3.4
LP EXTRACTION	1	6/22/2005		GLF	
LP ZERO HEAD SPACE EXTRCT	1	6/22/2005		GLF	
TM METHOD A LEACHATE PROD	1	6/22/2005		GLF	
MP RECD	20 C	6/20/2005	14:55	EAP	
mple Properly Preserved?	NA	6/20/2005	14:55	EAP	

ere were no Free Liquids present in this sample.

SLUDGE DRYING BED #5 TCLP

P LEACHATE HERBICIDES		7/7/2005		SIM	SW-846 8151A
,5-TP SILVEX	<0.001 mg/L	7/7/2005		SIM	
-D	<0.001 mg/L	7/7/2005		SIM	

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209 Senate Ave, Suite 105
Camp Hill, PA 17011
(717) 763-0582 Fax (717) 214-1269
Cherie Casari, Lab Director
www.microbac.com E-Mail: camphill@microbac.com

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BURNHAM,PA 17009

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Subject SLUDGE DRYING BED 6/20/05

Sampled By: DFR Date 6/20/2005 Time 14:55

Test	Result	Date	Time	Tech	Method
2 **SLUDGE DRYING BED #5 TCLP** ....continued					
CLP BNA ORGANICS		7/8/2005		KNT	SW846 8270C
RIDINE	<0.04 mg/L	7/8/2005		KNT	
METHYLPHENOL	<0.04 mg/L	7/8/2005		KNT	
METHYLPHENOL	<0.04 mg/L	7/8/2005		KNT	
EXACHLOROETHANE	<0.04 mg/L	7/8/2005		KNT	
ITROBENZENE	<0.04 mg/L	7/8/2005		KNT	
EXACHLOROBUTADIENE	<0.04 mg/L	7/8/2005		KNT	
4,6-TRICHLOROPHENOL	<0.04 mg/L	7/8/2005		KNT	
4,5-TRICHLOROPHENOL	<0.04 mg/L	7/8/2005		KNT	
4-DINITROTOLUENE	<0.04 mg/L	7/8/2005		KNT	
EXACHLOROBENZENE	<0.04 mg/L	7/8/2005		KNT	
NTACHLOROPHENOL	<0.2 mg/L	7/8/2005		KNT	
LP LEACHATE PESTICIDES		7/1/2005		RWS	SW-846 8081A
LORDANE, TECHNICAL	<20 ug/L	7/1/2005		RWS	
IDRIN	<4.0 ug/L	7/1/2005		RWS	
mma-BHC (LINDANE)	<4.0 ug/L	7/1/2005		RWS	
PTACHLOR	<4.0 ug/L	7/1/2005		RWS	
PTACHLOR EPOXIDE	<4.0 ug/L	7/1/2005		RWS	
THOXYCHLOR	<4.0 ug/L	7/1/2005		RWS	
XAPHENE	<80 ug/L	7/1/2005		RWS	
SENIC, TOTAL	<0.1 mg/L	6/30/2005		KNT	EPA 200.7
RIUM, TOTAL ICP	0.25 mg/L	6/27/2005		TLS	EPA 200.7
DMIUM, TOTAL	<0.1 mg/L	6/29/2005		KNT	SM 18TH 3111B
ROMIUM, TOTAL ICP	<0.02 mg/L	6/27/2005		TLS	EPA 200.7
AD, TOTAL ICP	0.1 mg/L	6/27/2005		TLS	EPA 200.7
RCURY, TOTAL	<0.001 mg/L	6/29/2005		TLS	SM 18 3112B

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Camp Hill, PA 17011
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www.microbac.com E-Mail: camphill@microbac.com

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BURNHAM BOROUGH WWTP
DAVE RHINEHELDER
200 FIRST AVE.
BURNHAM,PA 17009

Date Reported	7/12/2005
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Cust Permit #	

Subject SLUDGE DRYING BED 6/20/05

Sampled By: DFR Date 6/20/2005 Time 14:55

Test	Result	Date	Time	Tech	Method
2 SLUDGE DRYING BED #5 TCLP					
.....continued					
ELENIUM, TOTAL ICP	<0.1 mg/L	6/30/2005		TLS	EPA 200.7
ILVER, TOTAL	<0.1 mg/L	6/29/2005		KNT	EPA 200.7
OPPER, TOTAL ICP	0.46 mg/L	6/27/2005		TLS	EPA 200.7
ICKEL, TOTAL ICP	0.09 mg/L	6/27/2005		TLS	EPA 200.7
NC, TOTAL FLAME	12.26 mg/L	6/28/2005		TLS	SM 18 3111B
P DIGESTION	1	6/27/2005		TLS	
AME DIGESTION	1	6/27/2005		TLS	
I, FINAL TCLP LEACHATE	5.29 pH UNITS	6/23/2005		GLF	SW-846 9040B
I, INITIAL TCLP LEACHATE	6.86 pH UNITS	6/22/2005		GLF	SW-846 9040B
SLUDGE DRYING BED #5 ASTM					
IMONIA NITROGEN	756 mg/L	6/27/2005		GLF	SM 19TH 4500D
EM. OXYGEN DEMAND	2400 mg/L	6/29/2005		GLF	SM 18TH 5220D
LIDS, TOTAL	6620 mg/L	6/30/2005	13:53	GLF	SM 18TH 2540B
H, LEACHATE	<5 mg/L	7/5/2005		RWS	EPA 1664A
SLUDGE DRYING BED #5 ZHS					
P VOLATILE ORGANICS		7/7/2005		RWS	SW846 8260
YL CHLORIDE	<0.04 mg/L	7/7/2005		RWS	
-DICHLOROETHENE	<0.1 mg/L	7/7/2005		RWS	
TONE	<1.0 mg/L	7/7/2005		RWS	
OROFORM	<0.1 mg/L	7/7/2005		RWS	
BON TETRACHLORIDE	<0.1 mg/L	7/7/2005		RWS	
ZENE	<0.1 mg/L	7/7/2005		RWS	

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Cust Permit #	

Subject SLUDGE DRYING BED 6/20/05

Sampled By: DFR Date 6/20/2005 Time 14:55

Test	Result	Date	Time	Tech	Method
004 **SLUDGE DRYING BED #5 ZHS** ....continued					
1,2-DICHLOROETHANE	<0.1 mg/L	7/7/2005		RWS	
2-BUTANONE (MEK)	<1.0 mg/L	7/7/2005		RWS	
TRICHLOROETHENE	<0.1 mg/L	7/7/2005		RWS	
TOLUENE	<0.1 mg/L	7/7/2005		RWS	
TETRACHLOROETHENE	<0.1 mg/L	7/7/2005		RWS	
CHLOROBENZENE	<0.1 mg/L	7/7/2005		RWS	
ETHYLBENZENE	<0.1 mg/L	7/7/2005		RWS	
TOTAL XYLENES	<0.1 mg/L	7/7/2005		RWS	
1,4-DICHLOROBENZENE	<0.1 mg/L	7/7/2005		RWS	

Silver, arsenic, cadmium, reactive cyanide and sulfide analyzed by Microbac Kentucky Division.

Herbicides analyzed by Microbac Sima Division.

Respectfully Submitted:

Microbac Laboratories, Inc.

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey
May 9, 2006

1. Name of Facility: Junction STRodes Mills
2. NPDES Permit Number: 0032051 & 0084778
3. Wastewater Treatment Plant (WWTP) Owner: Granville Township
4. WWTP Operator: Tim Tressler & Earl "Pete" Weaver
5. Municipality in which plant is located: Granville Township
6. Name of Survey Respondent: Larry Craig
7. Title: Sewer Manager
8. Plant Address: 100 Helen St.
   Lewistown Pa. 17044
   Phone (717) 242-1838 FAX (717) 242-2102
   E-Mail Address: Lcraig@granville-Twp.org
9. Wastewater Treatment Plant Design Capacity: 500,000 mgd avg 750,000 wet
   2005 Average Flow: 260,000 mgd
   Projected 2010 (5 year) Flow: 469,000 mgd
   Number of WWTP's in your system: 2
10. Municipalities that contribute wastewater to WWTP: Oliver Township
    Juniata Terrace
11. 2005 Flow from each Municipality (mgd) Oliver Twp. 15,400 gpd.
    Juniata Terrace 30,000 gpd

12. Do you accept septage? ☒ Yes ☐ No
    If yes, 2005 volumes accepted: 19,000 gal. Yearly
13. Do you accept other outside wastes? ☒ Yes ☐ No
    If yes, how much in 2005? 30,000 gal
14. Do you have Pretreatment Program? ☒ Yes ☐ No
    If yes, 2005 flow from Industrial Sources: 40,000 gpd.

15. Please complete the following for each unit process used at your WWTP.

a. Primary Clarification ☐ Yes ☒ No Number of Units: _____

Circular dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

b. Treatment Process

Conventional Activated Sludge ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Extended Aeration Activated Sludge ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Sequencing Batch Reactor ☒ Yes ☐ No Number of Reactors: 2

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: 320,000 gal Cap. length: 44 (ft.) width: 49 (ft.) depth: 20 (ft.)

☐ Mechanical aeration ☒ Fine Bubble ☐ Course Bubble ☐ Other

Trickling Filters ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Rotating Biological Contactors ☐ Yes ☐ No Number of Reactors: _____

c. Secondary Clarification ☐ Yes ☐ No Number of Units: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

d. Nutrient Removal ☐ Yes ☒ No

☐ Biological Nutrification ☐ Biological Denutrification ☐ Biological Phosphorus Removal

☐ Other _____

e. Disinfection

☒ Chemical (type) Chlorine ☒ Ultraviolet (UV) Design & Bid?

f. Solid Digestion/Stabilization

☒ Aerobic Digestion ☐ Anerobic Digestion ☒ Composting Vermi Composting ☐ Lime

☐ Other _____

g. Solids Management

Thickening ☐ Yes ☐ No ☐ Gravity ☐ Mechanical ☐ Solids _____ %

☐ Other _____

Dewatering ☒ Yes ☐ No Number of Units 1 Size .70 meter

☒ Belt Press ☐ Frame Press ☐ Centrifuge ☐ Vacuum Filter ☐ Drying Bed

Average percent solids achieved 15 %

Does the plant process biosolids from another plant? ☒ Yes ☐ No

h. Biosolids End Use

☐ Land Fill ☐ Land Application ☒ Vermi Composting ☐ Incineration

Does the plant send biosolids to another plant for processing? ☐ Yes ☒ No

i. Septage and Waste Receiving ☒ Yes ☐ No

How does Septage/waste enter the WWTP? ☒ Head of plant ☐ Digesters ☐ Other

If other, where? _____ Number of Permitted Haulers _____

j. Identify day-to-day operational issues that need to be addressed by Capital Improvements.

_____

_____

_____

_____

_____

16. Plant Loading *(please provide data for the single plant identified by the NPDES permit number on line 1. You may receive separate surveys for other plants in your utility.*

Please identify the average influent concentration levels of conventional pollutants.

	2005	Design
a. BOD_5	435 mg/L (lbs./per/day)	1300 mg/L (lbs/per day)
b. TSS	260 mg/L	365 mg/L
c. Nitrogen	____ mg/L	____ mg/L
d. Phosphorus	____ mg/L	____ mg/L
Effluent quality:		
e. BOD_5	6.5 mg/L	25 mg/L Permit
f. TSS	7.25 mg/L	30 mg/L Permit
g. nitrogen	____ mg/L	____ mg/L
h. phosphorus	____ mg/L	____ mg/L

17. Does your WWTP consistency meet NPDES Permit Limitations? ☒ Yes ☐ No

If no, list reasons why not.____

18. Collection System *(Collection system may serve multiple plants, if so, please note).*

☒ Separate ☐ Combined

Has a Sanitary Sewer Evaluation Survey (SSES) been completed on the collection system within the last five years? ☐ Yes ☐ No

How many customers are served by the collection system? 2,000

Please rate your collection system with regard to Infiltration & Inflow (I&I).

☐ None ☒ Minor ☐ Moderate ☐ Significant ☐ Severe

Currently, are there any plans for extension of the collection network? ☒ Yes ☐ No

If yes, where? Several areas thru out the System, NEW Development Project over Next Two Years.

19. Pump Stations *(List within your collection system)* Total Number 8

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years
#1 Industrial	.495	.010	2		35yr
#5 Round House	.1152	.038	2		15yr

(continued on next page)

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years
#6 Rose Tract	.0864	.010	2		15 yr.
#7 River Road	.1051	.080	2		15 yr.
#8 Barrel Springs	.265	.258	2		15 yr.
#9 Loop Road	.1364	.223	4		15 yr.
#10 River Rd.	.0317	.041	2		15 yr.

(continue on separate sheet if necessary)

How many pump stations listed above have grinders or grinder pumps? NONE

20. **Biosolids Production and Quality**

Biosolids Production for 2005

If Liquid
- Total Gallons _____
- Average % Total Solids _____
- Average % Total Volatile Solids _____
- Total Dry Tons _____

If Dewatered
- Total Wet Tons 196
- Average % Total Solids 15%
- Average % Total Volatile Solids 71%
- Total Dry Tons 35.6 total 22 Ton Gran. Verm (13.6) Land fill

Describe any seasonal variation in biosolids production and include the maximum months of production: Generate Higher Sludges in the Month of December Three February every Year

21. Do you have liquid storage of biosolids at your WWTP? ☒ Yes ☐ No

If yes, how many months of storage? 120 days or 4 month

22. Do you have dewatered storage of biosolids at your WWTP? ☒ Yes ☐ No

If yes, how many months of storage? 6 month

23. **The method currently utilized for biosolids end use. Note: If more than one alternative is used, please provide percentage of material used in each method, and seasons used for each.**

☐	____ % Landfill		Season:
☑	100 % Composting	Vermicomposting	Season: Spring & Fall
☐	____ % Incineration		Season:
☐	____ % Land Application		Season:

- List your Biosolids General Permit Number: _____

  Expiration Date: _____

- Please complete the following table for land application sites:

Land Application Site	Location	Acres

Attach additional sheets if necessary

- Please attach a copy of a topgraphic map(s) indicating the location of each site.

24. Do you analyze biosolids for pollutants (metals)? ☑ Yes ☐ No

If yes, attach 3 most recent analysis.

25. Have you conducted a Form 43-TCLP analysis on biosolids? ☑ Yes ☐ No

If yes, attach most recent analysis results.

26. Indicate which, if any, of the Vector Attraction Reduction Options listed in the Federal Part 503.33 or Pennsylvania Chapter 271.933 regulations is used at your WWTP to stabilize biosolids.

38% volatile Reduction

27. Indicate which, if any, of the Pathogen Reduction Alternatives listed in the Federal Part 503.32 or Pennsylvania Chapter 271.932 regulations is used at your WWTP to stabilize biosolids.

Alternative #4

28. Have you conducted a fecal coliform analysis on your biosolids? ☑ Yes ☐ No

If yes, attach most recent analysis results.

29. What are the most important factors in determining methods for biosolids end use? Rank in order from 1 – 6 with 1 being most important.

	WWTP Staff	Decision Makers
Cost	_____	_____
Reliability	_____	_____
Regulatory Complexity	_____	_____
Environmental Stewardship	_____	_____
Staff Limitations	_____	_____
Public Acceptance	_____	_____

30. Does your WWTP experience problems with processing odors? ☐ Yes ☐ No ? slightly

Biosolids storage odors? ☐ Yes ☒ No

31. Does your biosolids program have more than one end use option? ☒ Yes ☐ No

32. How important is it for your WWTP to move toward Class A biosolids?

☒ Very ☐ Not Very ☐ Sometime in the future ☐ Never

33. How concerned are you with the following biosolids processing and end use options?

Public Acceptance	☒ Very	☐ Somewhat	☐ Not Very
Phosphorus limits on Class B Application	☐ Very	☒ Somewhat	☐ Not Very
Future of Class B Options	☐ Very	☒ Somewhat	☐ Not Very
Availability of landfill	☒ Very	☐ Somewhat	☐ Not Very

34 Would your municipality consider serving as a "regional biosolids processing" center?

☒ Yes ☐ No

35. Would your municipality consider investing in biosolids processing, storage, and end use options to develop a "regional biosolids processing" center?

☒ Yes ☐ No

36. Would your municipality consider sending solids to a "regional biosolids processing" center?

☒ Yes ☐ No

37. What would influence your decision to do so? All Three

☒ Cost ☒ Ease ☒ Reliability

38. Does your WWTP have capacity in the following unit processes to handle additional flows/ loads? Depends on the Amount proposed?

☐ Recycle Flows ☐ Digestion ☐ Thickening ☐ Dewatering ☐ Storage

Please return survey form to:
Material Matters, Inc.
P.O. Box 224
Elizabethtown, PA 17022

Borough of Juniata Terrace

COMMUNITY BUILDING - 80 HUDSON AVENUE - LEWISTOWN, PA 17044 - (717) 248-4383 - Fax (717) 248-3537

TO: MATERIAL MATTERS, INC.

FROM: BOROUGH OF JUNIATA TERRACE

SUBJ: WASTEWATER TREATMENT SYSTEM SURVEY
MIFFLIN COUNTY PLANNING COMMISSION

DATE: MAY 24, 2006

****

(SURVEY ENCLOSED)

Municipality	NPDES Permit	Municipal Agency or Name	Address	City	State	Zip	Contact 1st Name	Contact last Name	Phone 717 area code
Brown Twp	PA0028088	Brown Twp Municipal Authority	7748 SR 655	Reedsville	PA	17084	Jerry	Middlesworth	667-6711
		Brown Twp			PA				
Burnham	PA0038920	Burnham Borough Authority	200 1st Avenue	Burnham	PA	17009	David Christian	Rhinehelder Hassinger	248-6351
		Burnham			PA				
Granville Twp	PA0032051, PA0084778		100 Helen Street	Lewistown	PA	17044	Larry	Craig	242-1838
		Granville Twp			PA				
Juniata Terrace	PA0022268	Juniata Terrace Borough	80 Hudson Avenue	Lewistown	PA	17044			248-4383
					PA				
Lewistown	PA0026280	Lewistown	2 East 3rd Street	Lewistown	PA	17044	Michael	Dippery	242-2823
					PA				
McVeytown	PA0028983	McVeytown Borough Authority	PO Box 321	McVeytown	PA	17051	Steven	Boozel	899-7436
					PA				
Union Twp	PA0024708	Union Twp Municipal Authority	PO Box 5625	Belleville	PA	17004	Alfred	Fultz	935-5202
					PA				
Wayne Twp	PA0083330	Wayne Twp Mifflin County	3055 Ferguson Valley Road	McVeytown	PA	17051	Rodney	Fleck	899-7430 or 814-542-9796
					PA				

Non Municipal Plants									
Beacon Lodge Camp							John	Suchan	814-842-2511
					PA				
Reeds Gap State Park							Steve	Wagner	667-3622
					PA				
Mifflin County School District							Earl	Weaver	242-0262
					PA				

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey

Rettew Associates
Material Matters, Inc.

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey
May 9, 2006

1. Name of Facility: Juniata Terrace Pump Station
2. NPDES Permit Number: N/A
3. Wastewater Treatment Plant (WWTP) Owner: Granville Township
4. WWTP Operator: N/A
5. Municipality in which plant is located: N/A
6. Name of Survey Respondent: Earl E. Weaver Jr.
7. Title: Granville Township Field Forman
8. ~~Plant~~ mailing Address: 160 Helen Street Lewistown PA 17044

   Phone: (717) 242-1835 FAX: (717) 242-2102

   E-Mail Address: _____

9. Wastewater Treatment Plant Design Capacity: N/A mgd

   2005 Average Flow: N/A mgd

   Projected 2010 (5 year) Flow: N/A mgd

   Number of WWTP's in your system: N/A

10 Municipalities that contribute wastewater to WWTP: N/A

11 2005 Flow from each Municipality (mgd) N/A

12. Do you accept septage? ☐ Yes ☒ No

    If yes, 2005 volumes accepted: _____

13. Do you accept other outside wastes? ☐ Yes ☒ No

    If yes, how much in 2005? _____

14. Do you have Pretreatment Program? ☐ Yes ☒ No

    If yes, 2005 flow from Industrial Sources: _____

15. Please complete the following for each unit process used at your WWTP.

a. Primary Clarification ☐ Yes ☐ No Number of Units: _____

Circular dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

b. Treatment Process

Conventional Activated Sludge ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Extended Aeration Activated Sludge ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Sequencing Batch Reactor ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Trickling Filters ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Rotating Biological Contactors ☐ Yes ☐ No Number of Reactors: _____

c. Secondary Clarification ☐ Yes ☐ No Number of Units: _____

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

d. Nutrient Removal ☐ Yes ☐ No

☐ Biological Nutrification ☐ Biological Denutrification ☐ Biological Phosphorus Removal

☐ Other _____

e. Disinfection

☐ Chemical (type) _____ ☐ Ultraviolet (UV)

f. Solid Digestion/Stabilization

☐ Aerobic Digestion ☐ Anerobic Digestion ☐ Composting ☐ Lime

☐ Other _____

g. Solids Management

Thickening ☐ Yes ☐ No ☐ Gravity ☐ Mechanical ☐ Solids _____ %

☐ Other _____

Dewatering ☐ Yes ☐ No Number of Units _____ Size _____

☐ Belt Press ☐ Frame Press ☐ Centrifuge ☐ Vacuum Filter ☐ Drying Bed

Average percent solids achieved _____ %

Does the plant process biosolids from another plant? ☐ Yes ☐ No

h. Biosolids End Use

☐ Land Fill ☐ Land Application ☐ Composting ☐ Incineration

Does the plant send biosolids to another plant for processing? ☐ Yes ☐ No

i. Septage and Waste Receiving ☐ Yes ☐ No

How does Septage/waste enter the WWTP? ☐ Head of plant ☐ Digesters ☐ Other

If other, where? _____ Number of Permitted Haulers _____

j. Identify day-to-day operational issues that need to be addressed by Capital Improvements.

_____

_____

_____

_____

_____

16. **Plant Loading** *(please provide data for the single plant identified by the NPDES permit number on line 1. You may receive separate surveys for other plants in your utility.*

Please identify the average influent concentration levels of conventional pollutants.

	2005	Design
a. BOD_5	_____ mg/L	_____ mg/L
b. TSS	_____ mg/L	_____ mg/L
c. Nitrogen	_____ mg/L	_____ mg/L
d. Phosphorus	_____ mg/L	_____ mg/L
Effluent quality:		
e. BOD_5	_____ mg/L	_____ mg/L
f. TSS	_____ mg/L	_____ mg/L
g. nitrogen	_____ mg/L	_____ mg/L
h. phosphorus	_____ mg/L	_____ mg/L

17. **Does your WWTP consistency meet NPDES Permit Limitations?** ☐ Yes ☐ No

If no, list reasons why not:_____

_____

18. **Collection System** *(Collection system may serve multiple plants, if so, please note).* Just Serves Juvenile Terrace B020

☒ Separate ☐ Combined

Has a Sanitary Sewer Evaluation Survey (SSES) been completed on the collection system within the last five years? ☒ Yes ☐ No

How many customers are served by the collection system? Approx

Please rate your collection system with regard to Infiltration & Inflow (I&I).

☐ None ☐ Minor ☒ Moderate ☐ Significant ☐ Severe

Currently, are there any plans for extension of the collection network? ☒ Yes ☐ No

If yes, where?_____

_____

19. **Pump Stations** *(List within your collection system)* **Total Number** 1

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years
Juvenile Terrace	205	30,000	2	approx 4 hrs	60

(continued on next page)

Name	Capacity		Number	Run Time	Age
	gpm	Gal. Per day	of pumps	Daily (hrs.)	years

(continue on separate sheet if necessary)

How many pump stations listed above have grinders or grinder pumps? NONE

20. **Biosolids Production and Quality**

Biosolids Production for 2005

If Liquid
- Total Gallons _____
- Average % Total Solids _____
- Average % Total Volatile Solids _____
- Total Dry Tons _____

If Dewatered
- Total Wet Tons _____
- Average % Total Solids _____
- Average % Total Volatile Solids _____
- Total Dry Tons _____

Describe any seasonal variation in bioslolids production and include the maximum months of production: _____

21. **Do you have liquid storage of biosolids at your WWTP?** ☐ Yes ☐ No

If yes, how many months of storage? _____

22. **Do you have dewatered storage of biosolids at your WWTP?** ☐ Yes ☐ No

If yes, how many months of storage? _____

23. **The method currently utilized for biosolids end use. Note: If more than one alternative is used, please provide percentage of material used in each method, and seasons used for each.**

☐ _____ % Landfill _____ Season: _____

☐ _____ % Composting _____ Season: _____

☐ _____ % Incineration _____ Season: _____

☐ _____ % Land Application _____ Season: _____

- List your Biosolids General Permit Number: _____

  Expiration Date: _____

- Please complete the following table for land application sites:

Land Application Site	Location	Acres

Attach additional sheets if necessary

- Please attach a copy of a topgraphic map(s) indicating the location of each site.

24. Do you analyze biosolids for pollutants (metals)? ☐ Yes ☐ No

    If yes, attach 3 most recent analysis.

25. Have you conducted a Form 43-TCLP analysis on biosolids? ☐ Yes ☐ No

    If yes, attach most recent analysis results.

26. Indicate which, if any, of the Vector Attraction Reduction Options listed in the Federal Part 503.33 or Pennsylvania Chapter 271.933 regulations is used at your WWTP to stabilize biosolids.

    _____

27. Indicate which, if any, of the Pathogen Reduction Alternatives listed in the Federal Part 503.32 or Pennsylvania Chapter 271.932 regulations is used at your WWTP to stabilize biosolids.

    _____

28. Have you conducted a fecal coliform analysis on your biosolids? ☐ Yes ☐ No

    If yes, attach most recent analysis results.

29. What are the most important factors in determining methods for biosolids end use? Rank in order from 1 – 6 with 1 being most important.

	WWTP Staff	Decision Makers
Cost	_____	_____
Reliability	_____	_____
Regulatory Complexity	_____	_____
Environmental Stewardship	_____	_____
Staff Limitations	_____	_____
Public Acceptance	_____	_____

30. Does your WWTP experience problems with processing odors? ☐ Yes ☐ No

Biosolids storage odors? ☐ Yes ☐ No

31. Does your biosolids program have more than one end use option? ☐ Yes ☐ No

32. How important is it for your WWTP to move toward Class A biosolids?

☐ Very ☐ Not Very ☐ Sometime in the future ☐ Never

33. How concerned are you with the following biosolids processing and end use options?

Public Acceptance	☐ Very	☐ Somewhat	☐ Not Very
Phosphorus limits on Class B Application	☐ Very	☐ Somewhat	☐ Not Very
Future of Class B Options	☐ Very	☐ Somewhat	☐ Not Very
Availability of landfill	☐ Very	☐ Somewhat	☐ Not Very

34 Would your municipality consider serving as a "regional biosolids processing" center?

☐ Yes ☐ No

35. Would your municipality consider investing in biosolids processing, storage, and end use options to develop a "regional biosolids processing" center?

☐ Yes ☐ No

36. Would your municipality consider sending solids to a "regional biosolids processing" center?

☐ Yes ☐ No

37. What would influence your decision to do so?

☐ Cost ☐ Ease ☐ Reliability

38. Does your WWTP have capacity in the following unit processes to handle additional flows/ loads?

☐ Recycle Flows ☐ Digestion ☐ Thickening ☐ Dewatering ☐ Storage

Please return survey form to:
Material Matters, Inc.
P.O. Box 224
Elizabethtown, PA 17022

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey
May 9, 2006

1. Name of Facility: LEWISTOWN WASTEWATER TREATMENT PLANT
2. NPDES Permit Number: 0026280
3. Wastewater Treatment Plant (WWTP) Owner: BOROUGH OF LEWISTOWN
4. WWTP Operator: BOROUGH OF LEWISTOWN
5. Municipality in which plant is located: LEWISTOWN
6. Name of Survey Respondent: MICHAEL J. DIPPERY
7. Title: SUPT. OF WASTEWATER
8. Plant Address: WASHINGTON AVE. EXTENDED
   LEWISTOWN, PA 17044

   Phone: 717-242-2823 FAX: 717-248-0794

   E-Mail Address: ltnwwtwwc@acsworld.net
9. Wastewater Treatment Plant Design Capacity: 2.82 mgd

   2005 Average Flow: 1.69 mgd

   Projected 2010 (5 year) Flow: 2.045 mgd

   Number of WWTP's in your system: 1
10. Municipalities that contribute wastewater to WWTP: BOROUGH OF LEWISTOWN, GRANVILLE TWSP. & DERRY TWSP.
11. 2005 Flow from each Municipality (mgd) FLOWS ARE ESTIMATED BASED ON EDUs.
    LEWISTOWN - 1.03 MGD GRANVILLE - 0.02 MGD DERRY - 0.64 MGD

12. Do you accept septage? ☑ Yes ☐ No

    If yes, 2005 volumes accepted: 0 GALLONS
13. Do you accept other outside wastes? ☐ Yes ☑ No

    If yes, how much in 2005? _____
14. Do you have Pretreatment Program? ☐ Yes ☑ No

    If yes, 2005 flow from Industrial Sources: _____

15. Please complete the following for each unit process used at your WWTP.

a. Primary Clarification ☑ Yes ☐ No Number of Units: 2

Circular dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular dimensions: length: 65 (ft.) width: 14 (ft.) depth: 10 (ft.)

b. Treatment Process

Conventional Activated Sludge ☑ Yes ☐ No Number of Reactors: 4

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: 60 (ft.) width: 30 (ft.) depth: 15 (ft.)

☐ Mechanical aeration ☐ Fine Bubble ☑ Course Bubble ☐ Other

Extended Aeration Activated Sludge ☐ Yes ☑ No Number of Reactors: _____

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Sequencing Batch Reactor ☐ Yes ☑ No Number of Reactors: _____

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Trickling Filters ☐ Yes ☑ No Number of Reactors: _____

Circular reactor dimensions: diameter:_____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Rotating Biological Contactors ☐ Yes ☑ No Number of Reactors: _____

c. Secondary Clarification ☑ Yes ☐ No Number of Units: 2

Circular reactor dimensions: diameter: 60 (ft.) depth: 12 (ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

d. Nutrient Removal ☐ Yes ☑ No

☐ Biological Nutrification ☐ Biological Denutrification ☐ Biological Phosphorus Removal

☐ Other NOTE: WE ARE IN THE PROCESS OF SAMPLING MONITORING & REPORTING TN & TP TO PA DEP

e. Disinfection NOTE: WE HAVE OUR OWN ON-SITE SODIUM HYPO GENERATION UNIT.

☑ Chemical (type) Sodium Hypochlorite ☐ Ultraviolet (UV)

f. Solid Digestion/Stabilization

☐ Aerobic Digestion ☑ Anerobic Digestion ☐ Composting ☐ Lime

☐ Other _____

g. Solids Management

Thickening ☐ Yes ☑ No ☐ Gravity ☐ Mechanical ☐ Solids _____ %

☐ Other _____

Dewatering ☑ Yes ☐ No Number of Units 2 Size 1 METER PRESS (2)

☑ Belt Press ☐ Frame Press ☐ Centrifuge ☐ Vacuum Filter ☐ Drying Bed

Average percent solids achieved 19 %

Does the plant process biosolids from another plant? ☐ Yes ☑ No

h. Biosolids End Use

☑ Land Fill ☐ Land Application ☐ Composting ☐ Incineration

Does the plant send biosolids to another plant for processing? ☐ Yes ☑ No

i. Septage and Waste Receiving ☑ Yes ☐ No

How does Septage/waste enter the WWTP? ☑ Head of plant ☐ Digesters ☐ Other

If other, where? _____ Number of Permitted Haulers _____

j. Identify day-to-day operational issues that need to be addressed by Capital Improvements.

WE ARE IN THE PROCESS OF UPGRADING THE ENTIRE ANEROBIC DIGESTION SYSTEM. THE MAIN FUTURE CAPITAL IMPROVEMENT PROJECT WOULD BE FOR THE CHESAPEAKE BAY PROGRAM. AREAS AFFECTED BY THIS WOULD BE: AERATION SYSTEM, FINAL CLARIFICATION, PRIMARY CLARIFICATION & SLUDGE PROCESSING/DISPOSAL.

16. **Plant Loading** *(please provide data for the single plant identified by the NPDES permit number on line 1. You may receive separate surveys for other plants in your utility.*

Please identify the average influent concentration levels of conventional pollutants.

	2005	Design
a. BOD_5	224 mg/L	____ mg/L
b. TSS	248 mg/L	____ mg/L
c. Nitrogen	N/A mg/L	N/A mg/L
d. Phosphorus	N/A mg/L	N/A mg/L
Effluent quality:		
e. BOD_5	4 mg/L	25 mg/L
f. TSS	13 mg/L	30 mg/L
g. nitrogen	N/A mg/L	N/A mg/L
h. phosphorus	N/A mg/L	N/A mg/L

17. **Does your WWTP consistency meet NPDES Permit Limitations?** ☑ Yes ☐ No

If no, list reasons why not._____

18. **Collection System** *(Collection system may serve multiple plants, if so, please note).*

☑ Separate ☐ Combined

Has a Sanitary Sewer Evaluation Survey (SSES) been completed on the collection system within the last five years? ☐ Yes ☑ No

How many customers are served by the collection system?_____

Please rate your collection system with regard to Infiltration & Inflow (I&I).

☐ None ☐ Minor ☐ Moderate ☑ Significant ☐ Severe

Currently, are there any plans for extension of the collection network? ☐ Yes ☑ No

If yes, where?_____

19. **Pump Stations** *(List within your collection system)* **Total Number** 0

Name	Capacity		Number	Run Time	Age
	gpm	Gal. Per day	of pumps	Daily (hrs.)	years

(continued on next page)

Name	Capacity		Number	Run Time	Age
	gpm	Gal. Per day	of pumps	Daily (hrs.)	years

(continue on separate sheet if necessary)

How many pump stations listed above have grinders or grinder pumps? _____

20. **Biosolids Production and Quality**

Biosolids Production for 2005

If Liquid
- Total Gallons _____
- Average % Total Solids _____
- Average % Total Volatile Solids _____
- Total Dry Tons _____

If Dewatered
- Total Wet Tons 806
- Average % Total Solids 19% (Bfp) 88% (Dry Beds)
- Average % Total Volatile Solids _____
- Total Dry Tons 207

Describe any seasonal variation in biosolids production and include the maximum months of production: _____

21. **Do you have liquid storage of biosolids at your WWTP?** ☐ Yes ☑ No

If yes, how many months of storage? _____

22. **Do you have dewatered storage of biosolids at your WWTP?** ☐ Yes ☑ No

If yes, how many months of storage? _____

23. **The method currently utilized for biosolids end use. Note: If more than one alternative is used, please provide percentage of material used in each method, and seasons used for each.**

- ☑ 100 % Landfill _____ Season: _____
- ☐ _____ % Composting _____ Season: _____
- ☐ _____ % Incineration _____ Season: _____
- ☐ _____ % Land Application _____ Season: _____

- List your Biosolids General Permit Number: _____

  Expiration Date: _____

- Please complete the following table for land application sites:

Land Application Site	Location	Acres

Attach additional sheets if necessary

- Please attach a copy of a topgraphic map(s) indicating the location of each site.

24. Do you analyze biosolids for pollutants (metals)? ☐ Yes ☑ No

If yes, attach 3 most recent analysis.

25. Have you conducted a Form 43-TCLP analysis on biosolids? ☑ Yes ☐ No

If yes, attach most recent analysis results.

26. Indicate which, if any, of the Vector Attraction Reduction Options listed in the Federal Part 503.33 or Pennsylvania Chapter 271.933 regulations is used at your WWTP to stabilize biosolids.

ANEROBIC DIGESTION

27. Indicate which, if any, of the Pathogen Reduction Alternatives listed in the Federal Part 503.32 or Pennsylvania Chapter 271.932 regulations is used at your WWTP to stabilize biosolids.

ANEROBIC DIGESTION

28. Have you conducted a fecal coliform analysis on your biosolids? ☐ Yes ☑ No

If yes, attach most recent analysis results.

29. What are the most important factors in determining methods for biosolids end use? Rank in order from 1 – 6 with 1 being most important.

	WWTP Staff	Decision Makers
Cost	2	1
Reliability	1	6
Regulatory Complexity	4	3
Environmental Stewardship	3	5
Staff Limitations	5	4
Public Acceptance	6	2

30. Does your WWTP experience problems with processing odors? ☐ Yes ☑ No

Biosolids storage odors? ☐ Yes ☐ No N/A

31. Does your biosolids program have more than one end use option? ☐ Yes ☑ No

32. How important is it for your WWTP to move toward Class A biosolids?

☐ Very ☑ Not Very ☐ Sometime in the future ☐ Never

33. How concerned are you with the following biosolids processing and end use options?

Public Acceptance	☑ Very	☐ Somewhat	☐ Not Very
Phosphorus limits on Class B Application	☑ Very	☐ Somewhat	☐ Not Very
Future of Class B Options	☑ Very	☐ Somewhat	☐ Not Very
Availability of landfill	☑ Very	☐ Somewhat	☐ Not Very

34 Would your municipality consider serving as a "regional biosolids processing" center?

☐ Yes ☑ No

35. Would your municipality consider investing in biosolids processing, storage, and end use options to develop a "regional biosolids processing" center?

☑ Yes ☐ No

36. Would your municipality consider sending solids to a "regional biosolids processing" center?

☑ Yes ☐ No

37. What would influence your decision to do so?

☑ Cost ☑ Ease ☑ Reliability

38. Does your WWTP have capacity in the following unit processes to handle additional flows/ loads?

☐ Recycle Flows ☐ Digestion ☐ Thickening ☐ Dewatering ☐ Storage

Please return survey form to:
Material Matters, Inc.
P.O. Box 224
Elizabethtown, PA 17022

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34 Dogwood Lane - Middletown, PA 17057 Phone: 717-944-5541 Fax: 717-944-1430

Certificate of Analysis

April 11, 2006

Michael Dippery
Borough of Lewistown
2 East Third Street
Lewistown, PA 17044

Lab ID#: 9643499

Project Name: **FORM 43 ANALYSIS**
Workorder ID: **Sludge Cake,BFP Discharge**

PO#: 13670

This report relates only to the sample(s) as received by the laboratory. Laboratory reports may not be reproduced, except in full, without the written approval of the Laboratory.

ALSI is a NELAC accredited laboratory. ALSI certifies that all applicable test results meet the requirements of NELAC. All drinking water and wastewater analyses comply with the methodology requirements of 40 CFR Parts 141 and 136 respectively. For an inventory of our NELAC accreditations and Scope of Work, please visit our website at www.analyticallab.com or contact your ALSI project coordinator for a complete listing. If you have any questions in reference to this laboratory report, please contact your ALSI project coordinator or the laboratory manager listed at the bottom of this report at 717-944-5541.

Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis. Samples collected by ALSI personnel are done so in accordance with the procedures set forth in the ALSI Field Sampling Plan.

A result of ND indicates that the analyte was Not Detected at the Reporting Detection Limit (RDL). The RDL, by default, is equivalent to the Practical Quantitation Limit (PQL) or may be equivalent to the Method Detection Limit (MDL), if specifically requested by the customer.

Qualifier Flags - These flags may follow individual results for a specific analyte
- U - Indicates that the analyte was not detected
- J - Indicates an estimated value between the MDL and PQL

Note: This cover letter and the attached Chain-of-Custody document is included as part of the Analytical Report and must be retained as a permanent record thereof.

Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

April 11, 2006

Michael Dippery
Borough of Lewistown
2 East Third Street
Lewistown, PA 17044

Lab ID #: **9643499001**
Received: 03/24/06 17:00
Discard: 04/25/06

Project Name: **FORM 43 ANALYSIS**
Workorder ID: **Sludge Cake,BFP Discharge**
PO#: 13670
COC Number:

Sample ID: **Sludge Cake, BFP Discharge**
Matrix: Solid
Date Collected: 03/23/06 16:30
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
TCLP VOLATILE ORGANICS								
Benzene	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
2-Butanone (MEK)	ND	ug/L	200	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
Carbon Tetrachloride	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
Chlorobenzene	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
Chloroform	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
1,2-Dichloroethane	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
1,1-Dichloroethene	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
Tetrachloroethene	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
Trichloroethene	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
Vinyl Chloride	ND	ug/L	20.0	SW846 8260B	04/07/06 08:13	04/07/06	KLM	
PCB'S								
Aroclor-1016	ND	mg/kg	1.59	SW846 8082	04/07/06 07:10	03/30/06	JJH	A
Aroclor-1221	ND	mg/kg	1.59	SW846 8082	04/07/06 07:10	03/30/06	JJH	A
Aroclor-1232	ND	mg/kg	1.59	SW846 8082	04/07/06 07:10	03/30/06	JJH	A
Aroclor-1242	ND	mg/kg	1.59	SW846 8082	04/07/06 07:10	03/30/06	JJH	A
Aroclor-1248	ND	mg/kg	1.59	SW846 8082	04/07/06 07:10	03/30/06	JJH	A
Aroclor-1254	ND	mg/kg	1.59	SW846 8082	04/07/06 07:10	03/30/06	JJH	A
Aroclor-1260	ND	mg/kg	1.59	SW846 8082	04/07/06 07:10	03/30/06	JJH	A

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Certificate of Analysis

April 11, 2006

Michael Dippery
Borough of Lewistown
2 East Third Street
Lewistown, PA 17044

Lab ID #: **9643499001**
Received: 03/24/06 17:00
Discard: 04/25/06

Project Name: **FORM 43 ANALYSIS**
Workorder ID: **Sludge Cake,BFP Discharge**

PO#: 13670
COC Number:

Sample ID: **Sludge Cake, BFP Discharge**
Date Collected: 03/23/06 16:30

Matrix: Solid
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
WET CHEMISTRY								
Cyanide, Reactive	ND	mg/kg	10.0	SW-846 7.3CN	03/07/06 13:38	03/25/06	SLP	A
Cyanide, Total	1.26	mg/kg	1.26	SW846 9012A	03/30/06 15:16	03/30/06	SLP	A
Free Liquids	Negative			SW846 9095	04/04/06 06:40	04/04/06	SDL	A
Ignitability [1]	See comment			SW846 1030	03/27/06 08:00	03/27/06	JTR	A
Moisture	80.2	%	0.1	SM20-2540 G	03/26/06 13:15	03/26/06	MBW	A
pH [2,3]	7.62	pH_Units		SW846 9045C	03/25/06 02:30	03/25/06	JJS	A
Solids, Total Volatile	65.2	%	1.0	SM20-2540 G	03/26/06 13:15	03/26/06	MBW	A
Sulfide, Reactive	8.40	mg/kg	6.25	SW846 7.3	03/27/06 11:00	03/25/06	JTR	A
Total Petroleum HC's(NonPolar)	2500	mg/kg	1010	EPA 418.1	03/29/06 13:20	03/29/06	CJP	A
Total Solids	19.8	%	0.1	SM20-2540 G	03/26/06 13:15	03/26/06	MBW	A
TCLP METALS								
Arsenic, Total	ND	mg/L	0.220	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Barium, Total	ND	mg/L	0.560	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Cadmium, Total	ND	mg/L	0.110	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Chromium, Total	ND	mg/L	0.110	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Copper, Total	ND	mg/L	0.010	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Lead, Total	ND	mg/L	0.110	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Mercury, Total	ND	mg/L	0.002	SW846 7470A	03/30/06 14:12	03/29/06	NAH	A

- According to Pa/USEPA regulations, this sample is not considered to be ignitable. (Ref 40 CFR 261.21)
- The solid pH measured in water was 7.615 at 22.4 degrees C.
- This sample was received at the laboratory after the holding time for pH had expired.

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Certificate of Analysis

April 11, 2006

Michael Dippery
Borough of Lewistown
2 East Third Street
Lewistown, PA 17044

Lab ID #: 9643499001
Received: 03/24/06 17:00
Discard: 04/25/06

PO#: 13670
COC Number:

Project Name: FORM 43 ANALYSIS
Workorder ID: Sludge Cake,BFP Discharge

Sample ID: Sludge Cake, BFP Discharge
Matrix: Solid
Date Collected: 03/23/06 16:30
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
TCLP METALS (continued)								
Nickel, Total	0.06	mg/L	0.02	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Selenium, Total	ND	mg/L	0.22	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Silver, Total	ND	mg/L	0.110	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
Zinc, Total	1.91	mg/L	0.33	SW846 6010B	04/10/06 23:22	04/06/06	DXK	A
TCLP SEMI-VOLATILES								
m/p-Cresol	ND	ug/L	400	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
o-Cresol (2-Methylphenol)	ND	ug/L	200	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
1,4-Dichlorobenzene	ND	ug/L	100	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
2,4-Dinitrotoluene	ND	ug/L	40	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
Hexachlorobenzene	ND	ug/L	40	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
Hexachlorobutadiene	ND	ug/L	100	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
Hexachloroethane	ND	ug/L	100	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
Nitrobenzene	ND	ug/L	60	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
Pentachlorophenol	ND	ug/L	500	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
Pyridine	ND	ug/L	200	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
2,4,5-Trichlorophenol	ND	ug/L	200	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A
2,4,6-Trichlorophenol	ND	ug/L	200	SW846 8270C	03/31/06 17:50	03/28/06	TTR	A

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Certificate of Analysis

April 11, 2006

Michael Dippery
Borough of Lewistown
2 East Third Street
Lewistown, PA 17044

Lab ID #: **9643499001**
Received: 03/24/06 17:00
Discard: 04/25/06

Project Name: **FORM 43 ANALYSIS**
Workorder ID: **Sludge Cake,BFP Discharge**

PO#: 13670
COC Number:

Sample ID: **Sludge Cake, BFP Discharge**
Date Collected: 03/23/06 16:30

Matrix: Solid
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
TCLP PESTICIDES								
gamma-BHC (Lindane)	ND	ug/L	1.00	SW846 8081A	03/30/06 20:11	03/29/06	KJH	A
Chlordane	ND	ug/L	20.0	SW846 8081A	03/30/06 20:11	03/29/06	KJH	A
Endrin	ND	ug/L	1.00	SW846 8081A	03/30/06 20:11	03/29/06	KJH	A
Heptachlor	ND	ug/L	1.00	SW846 8081A	03/30/06 20:11	03/29/06	KJH	A
Heptachlor Epoxide	ND	ug/L	1.00	SW846 8081A	03/30/06 20:11	03/29/06	KJH	A
Methoxychlor	ND	ug/L	1.00	SW846 8081A	03/30/06 20:11	03/29/06	KJH	A
Toxaphene	ND	ug/L	40.0	SW846 8081A	03/30/06 20:11	03/29/06	KJH	A
TCLP HERBICIDES								
2,4-D	ND	ug/L	4.0	SW846 8151A	04/03/06 12:04	03/30/06	KJH	A
2,4,5-TP (Silvex)	ND	ug/L	4.0	SW846 8151A	04/03/06 12:04	03/30/06	KJH	A
ASTM LEACHATE								
Ammonia, Free (Non-Distilled)	26.5	mg/L	0.10	SM20-4500F	04/05/06 15:15	04/05/06	NJW	A
Chemical Oxygen Demand (COD)	261	mg/L	15	EPA 410.4	04/03/06 11:00	04/03/06	JTR	A
Total Petroleum HC's(NonPolar)	3.7	mg/L	0.7	EPA 418.1	04/03/06 13:30	04/03/06	CJP	A
Total Solids	483	mg/L	5	SM20-2540	04/03/06 13:30	03/27/06	KMW	A

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Project Name: **FORM 43 ANALYSIS**
Workorder ID: **Sludge Cake,BFP Discharge**

PO#: 13670
COC Number:

Sample ID: **Sludge Cake, BFP Discharge**
Date Collected: 03/23/06 16:30

Matrix: Solid
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
ASTM LEACHATE PREP								
Final pH	6.96	pH_Units		D3987-85	03/27/06 13:45	03/27/06	SDL	A
TCLP LEACHATE								
Extraction Fluid Used	1			SW846 1311	03/27/06 14:00	03/27/06	SDL	A
Final pH	5.23	pH_Units		SW846 1311	03/27/06 14:00	03/27/06	SDL	A
Preliminary pH after DI water	8.43	pH_Units		SW846 1311	03/27/06 14:00	03/27/06	SDL	A
Preliminary pH after HCl	1.73	pH_Units		SW846 1311	03/27/06 14:00	03/27/06	SDL	A

Surrogates	Result	Units	Recovery	Limits
2,4,6-Tribromophenol	1240	ug/L	61.8%	(26 - 135)
1,2-Dichloroethane-d4	506	ug/L	84.3%	(50 - 152)
Dibromofluoromethane	506	ug/L	84.4%	(63 - 137)
2,4-Dichlorophenylacetic acid	111	ug/L	111.0%	(62 - 176)
Toluene-d8	588	ug/L	98.0%	(80 - 128)
Decachlorobiphenyl	.044	mg/kg	56.0%	(30 - 138)
Decachlorobiphenyl	38.8	ug/L	77.6%	(30 - 150)
2-Fluorobiphenyl	685	ug/L	68.5%	(31 - 110)
2-Fluorophenol	863	ug/L	43.1%	(7 - 84)
Nitrobenzene-d5	725	ug/L	72.5%	(34 - 128)
Phenol-d5	579	ug/L	29.0%	(5 - 64)

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Lab ID #: 9643499001
Received: 03/24/06 17:00
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Page: 7 Of 7

Project Name: FORM 43 ANALYSIS
Workorder ID: Sludge Cake,BFP Discharge

PO#: 13670
COC Number:

Sample ID: Sludge Cake, BFP Discharge
Date Collected: 03/23/06 16:30

Matrix: Solid
Collected by: Collected by Customer

Surrogates (continued)	Result	Units	Recovery	Limits
4-Bromofluorobenzene	480	ug/L	80.1%	(76 - 125)
Tetrachloro-m-xylene	.089	mg/kg	112.0%	(30 - 136)
Tetrachloro-m-xylene	38	ug/L	75.9%	(32 - 112)
Terphenyl-d14	754	ug/L	75.4%	(44 - 129)

Comments:

The ASTM leachate was filtered through a 0.6 to 0.8 micron pore size filter after rotation.
This sample was analyzed at a dilution in the 8082 PCB analysis due to sample matrix interference. Reporting limits were adjusted accordingly. JJH 4/7/06

Alan J. Lopez
Laboratory Manager

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey
May 9, 2006

1. Name of Facility: McVeytown WWTP
2. NPDES Permit Number: _____
3. Wastewater Treatment Plant (WWTP) Owner: McVeytown Boro Authority
4. WWTP Operator: Randy Stone / John Mumper
5. Municipality in which plant is located: McVeytown Boro
6. Name of Survey Respondent: Randy & John
7. Title: Operator
8. Plant Address: 28- South Main ST
   McVeytown PA 17051
   Phone: 717 899 2263 FAX: 717-899-6422
   E-Mail Address: -
9. Wastewater Treatment Plant Design Capacity: .085 mgd
   2005 Average Flow: .037 mgd
   Projected 2010 (5 year) Flow: .062 mgd
   Number of WWTP's in your system: 1
10. Municipalities that contribute wastewater to WWTP: McVeytown Boro
11. 2005 Flow from each Municipality (mgd) .04
12. Do you accept septage? ☐ Yes ☒ No
    If yes, 2005 volumes accepted: _____
13. Do you accept other outside wastes? ☐ Yes ☒ No
    If yes, how much in 2005? _____
14. Do you have Pretreatment Program? ☐ Yes ☒ No
    If yes, 2005 flow from Industrial Sources: _____

15. Please complete the following for each unit process used at your WWTP.

a. Primary Clarification ☐ Yes ☐ No Number of Units: _____

Circular dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

b. Treatment Process

Conventional Activated Sludge ☒ Yes ☐ No Number of Reactors: 1

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: 15 (ft.) width: 15 (ft.) depth: 15 (ft.)

☒ Mechanical aeration ☐ Fine Bubble ☒ Course Bubble ☐ Other

Extended Aeration Activated Sludge ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Sequencing Batch Reactor ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Trickling Filters ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Rotating Biological Contactors ☐ Yes ☐ No Number of Reactors: _____

c. Secondary Clarification ☒ Yes ☐ No Number of Units: 2

Circular reactor dimensions: diameter: 12.6 (ft.) depth: 11 (ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

d. Nutrient Removal ☐ Yes ☐ No

☒ Biological Nutrification ☐ Biological Denutrification ☐ Biological Phosphorus Removal

☐ Other _____

e. Disinfection

☑ Chemical (type) Cl_2 ☐ Ultraviolet (UV)

f. Solid Digestion/Stabilization

☒ Aerobic Digestion ☐ Anerobic Digestion ☐ Composting ☐ Lime

☐ Other _____

g. Solids Management

Thickening ☐ Yes ☐ No ☒ Gravity ☐ Mechanical ☐ Solids _____ %

☐ Other _____

Dewatering ☐ Yes ☐ No Number of Units _____ Size _____

☐ Belt Press ☐ Frame Press ☐ Centrifuge ☐ Vacuum Filter ☒ Drying Bed

Average percent solids achieved _____ %

Does the plant process biosolids from another plant? ☐ Yes ☑ No

h. Biosolids End Use

☐ Land Fill ☒ Land Application ☐ Composting ☐ Incineration

Does the plant send biosolids to another plant for processing? ☐ Yes ☐ No

i. Septage and Waste Receiving ☐ Yes ☒ No

How does Septage/waste enter the WWTP? ☒ Head of plant ☐ Digesters ☐ Other

If other, where? _____ Number of Permitted Haulers _____

j. Identify day-to-day operational issues that need to be addressed by Capital Improvements.

Cl_2 System

16. Plant Loading *(please provide data for the single plant identified by the NPDES permit number on line 1. You may receive separate surveys for other plants in your utility.*

Please identify the average influent concentration levels of conventional pollutants.

	2005	Design
a. BOD_5	48.9 mg/L	_____ mg/L 118/161 lb/day
b. TSS	139.5 mg/L	141 ~~mg/L~~ lb/day
c. Nitrogen	NA mg/L	_____ mg/L
d. Phosphorus	NA mg/L	_____ mg/L
Effluent quality:		
e. BOD_5	2.3 mg/L	50 mg/L
f. TSS	11.6 mg/L	60 mg/L
g. nitrogen	NA mg/L	39 mg/L } 2006
h. phosphorus	NA mg/L	50 mg/L } 2006

17. Does your WWTP consistency meet NPDES Permit Limitations? ☒ Yes ☐ No

If no, list reasons why not._____

18. Collection System *(Collection system may serve multiple plants, if so, please note).*

☒ Separate ☐ Combined

Has a Sanitary Sewer Evaluation Survey (SSES) been completed on the collection system within the last five years? ☐ Yes ☒ No

How many customers are served by the collection system? 4165

Please rate your collection system with regard to Infiltration & Inflow (I&I).

☐ None ☐ Minor ☒ Moderate ☐ Significant ☐ Severe

Currently, are there any plans for extension of the collection network? ☒ Yes ☐ No

If yes, where? Olive Twp

19. Pump Stations *(List within your collection system)* Total Number 2

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years
WRAY	140	100800	2	3.0	10
Town Run	Injection station				32

(continued on next page)

Name	Capacity		Number	Run Time	Age
	gpm	Gal. Per day	of pumps	Daily (hrs.)	years

(continue on separate sheet if necessary)

How many pump stations listed above have grinders or grinder pumps? 1

20. Biosolids Production and Quality

Biosolids Production for 2005

If Liquid

Total Gallons 40,000

Average % Total Solids .83

Average % Total Volatile Solids 75%

Total Dry Tons 3.0

If Dewatered

Total Wet Tons

Average % Total Solids

Average % Total Volatile Solids

Total Dry Tons

Describe any seasonal variation in bioslolids production and include the maximum months of production:

21. Do you have liquid storage of biosolids at your WWTP? ☐ Yes ☑ No

If yes, how many months of storage?

22. Do you have dewatered storage of biosolids at your WWTP? ☐ Yes ☑ No

If yes, how many months of storage?

23. The method currently utilized for biosolids end use. Note: If more than one alternative is used, please provide percentage of material used in each method, and seasons used for each.

☐ ____ % Landfill ____ Season: ____

☐ ____ % Composting ____ Season: ____

☐ ____ % Incineration ____ Season: ____

☑ 100 % Land Application ____ Season: Spring Summ Fall

- List your Biosolids General Permit Number: PAG-08 603338
  Expiration Date: _____
- Please complete the following table for land application sites:

Land Application Site	Location	Acres
Plank Farm	Bratton Twp	35.8

Attach additional sheets if necessary

- Please attach a copy of a topgraphic map(s) indicating the location of each site.

24. Do you analyze biosolids for pollutants (metals)? ☑ Yes ☐ No

If yes, attach 3 most recent analysis.

25. Have you conducted a Form 43-TCLP analysis on biosolids? ☐ Yes ☐ No

If yes, attach most recent analysis results.

26. Indicate which, if any, of the Vector Attraction Reduction Options listed in the Federal Part 503.33 or Pennsylvania Chapter 271.933 regulations is used at your WWTP to stabilize biosolids.

Lime Stabilization

27. Indicate which, if any, of the Pathogen Reduction Alternatives listed in the Federal Part 503.32 or Pennsylvania Chapter 271.932 regulations is used at your WWTP to stabilize biosolids.

Lime Stabilization

28. Have you conducted a fecal coliform analysis on your biosolids? ☑ Yes ☐ No

If yes, attach most recent analysis results.

29. What are the most important factors in determining methods for biosolids end use? Rank in order from 1 – 6 with 1 being most important.

	WWTP Staff	Decision Makers
Cost	6	1
Reliability	2	3
Regulatory Complexity	1	3
Environmental Stewardship	3	3
Staff Limitations	4	2
Public Acceptance	1	1

30. Does your WWTP experience problems with processing odors? ☐ Yes ☑ No

Biosolids storage odors? ☐ Yes ☑ No

31. Does your biosolids program have more than one end use option? ☐ Yes ☑ No

32. How important is it for your WWTP to move toward Class A biosolids?

☐ Very ☐ Not Very ☑ Sometime in the future ☐ Never

33. How concerned are you with the following biosolids processing and end use options?

Public Acceptance	☑ Very	☐ Somewhat	☐ Not Very
Phosphorus limits on Class B Application	☐ Very	☑ Somewhat	☐ Not Very
Future of Class B Options	☐ Very	☑ Somewhat	☐ Not Very
Availability of landfill	☑ Very	☐ Somewhat	☐ Not Very

34 Would your municipality consider serving as a "regional biosolids processing" center?

☐ Yes ☑ No

35. Would your municipality consider investing in biosolids processing, storage, and end use options to develop a "regional biosolids processing" center?

☐ Yes ☑ No

36. Would your municipality consider sending solids to a "regional biosolids processing" center?

☑ Yes ☐ No

37. What would influence your decision to do so?

☑ Cost ☐ Ease ☐ Reliability

38. Does your WWTP have capacity in the following unit processes to handle additional flows/ loads?

☑ Recycle Flows ☑ Digestion ☐ Thickening ☐ Dewatering ☐ Storage

Please return survey form to:
Material Matters, Inc.
P.O. Box 224
Elizabethtown, PA 17022

FAIRWAY LABORATORIES, INC.

2019 Ninth Avenue
P.O. Box 1925
Altoona, Pennsylvania 16603
www.fairwaylaboratories.com
(814) 946-4306 FAX: (814) 946-8791

McVeytown Water Authority c/o Steven M Boozel	Project:	General	
Box 321	Project Number:	[none]	Reported:
McVeytown PA, 17051	Collector:	SB	11/07/05 11:50
Project Manager: Steve	Number of Containers:	7	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SLUDGE FECAL/DIGESTER 01	5J31022-01	Water	10/27/05 12:25	10/27/05 17:10
SLUDGE FECAL/DIGESTER 02	5J31022-02	Water	10/27/05 12:27	10/27/05 17:10
SLUDGE FECAL/DIGESTER 03	5J31022-03	Water	10/27/05 12:29	10/27/05 17:10
SLUDGE FECAL/DIGESTER 04	5J31022-04	Water	10/27/05 12:31	10/27/05 17:10
SLUDGE FECAL/DIGESTER 05	5J31022-05	Water	10/27/05 12:33	10/27/05 17:10
SLUDGE FECAL/DIGESTER 06	5J31022-06	Water	10/27/05 12:35	10/27/05 17:10
SLUDGE FECAL/DIGESTER 07	5J31022-07	Water	10/27/05 12:37	10/27/05 17:10

Fairway Laboratories, Inc.

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Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

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McVeytown Water Authority c/o Steven M Boozel	Project:	General	
Box 321	Project Number:	[none]	**Reported:**
McVeytown PA, 17051	Collector:	SB	11/07/05 11:50
Project Manager: Steve	Number of Containers:	7	

Client Sample ID: SLUDGE FECAL/DIGESTER 01 **Date/Time Sampled:** 10/27/05 12:25

Laboratory Sample ID: 5J31022-01 (Water)

Analyte	Result	Laboratory Reporting Limit	Units	Date / Time Analyzed	Method	Analyst
Microbiological Parameters by APHA Standard Methods						
Fecal Coliforms	<69900	69900	CFU/g	10/27/05 17:19	SM 9222D	je

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McVeytown Water Authority c/o Steven M Boozel	Project:	General	
Box 321	Project Number:	[none]	**Reported:**
McVeytown PA, 17051	Collector:	SB	11/07/05 11:50
Project Manager: Steve	Number of Containers:	7	

Client Sample ID: SLUDGE FECAL/DIGESTER 02 **Date/Time Sampled:** 10/27/05 12:27

Laboratory Sample ID: 5J31022-02 (Water)

Analyte	Result	Laboratory Reporting Limit	Units	Date / Time Analyzed	Method	Analyst
Microbiological Parameters by APHA Standard Methods						
Fecal Coliforms	<54100	54100	CFU/g	10/27/05 17:19	SM 9222D	je

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McVeytown Water Authority c/o Steven M Boozel	Project:	General	
Box 321	Project Number:	[none]	**Reported:**
McVeytown PA, 17051	Collector:	SB	11/07/05 11:50
Project Manager: Steve	Number of Containers:	7	

Client Sample ID: SLUDGE FECAL/DIGESTER 03 **Date/Time Sampled:** 10/27/05 12:29

Laboratory Sample ID: 5J31022-03 (Water)

Analyte	Result	Laboratory Reporting Limit	Units	Date / Time Analyzed	Method	Analyst
Microbiological Parameters by APHA Standard Methods						
Fecal Coliforms	<53800	53800	CFU/g	10/27/05 17:19	SM 9222D	je

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McVeytown Water Authority c/o Steven M Boozel	Project:	General	
Box 321	Project Number:	[none]	Reported:
McVeytown PA. 17051	Collector:	SB	11/07/05 11:50
Project Manager: Steve	Number of Containers:	7	

Client Sample ID: SLUDGE FECAL/DIGESTER 04 **Date/Time Sampled:** 10/27/05 12:31

Laboratory Sample ID: 5J31022-04 (Water)

Analyte	Result	Laboratory Reporting Limit	Units	Date / Time Analyzed	Method	Analyst
Microbiological Parameters by APHA Standard Methods						
Fecal Coliforms	54100	54100	CFU/g	10/27/05 17:19	SM 9222D	je

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McVeytown Water Authority c/o Steven M Boozel	Project:	General	
Box 321	Project Number:	[none]	Reported:
McVeytown PA, 17051	Collector:	SB	11/07/05 11:50
Project Manager: Steve	Number of Containers:	7	

Client Sample ID: SLUDGE FECAL/DIGESTER 05 **Date/Time Sampled:** 10/27/05 12:33

Laboratory Sample ID: 5J31022-05 (Water)

Analyte	Result	Laboratory Reporting Limit	Units	Date / Time Analyzed	Method	Analyst
Microbiological Parameters by APHA Standard Methods						
Fecal Coliforms	53800	53800	CFU/g	10/27/05 17:19	SM 9222D	je

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McVeytown Water Authority c/o Steven M Boozel	Project:	General	
Box 321	Project Number:	[none]	Reported:
McVeytown PA, 17051	Collector:	SB	11/07/05 11:50
Project Manager: Steve	Number of Containers:	7	

Client Sample ID: SLUDGE FECAL/DIGESTER 06 **Date/Time Sampled:** 10/27/05 12:35

Laboratory Sample ID: 5J31022-06 (Water)

Analyte	Result	Laboratory Reporting Limit	Units	Date / Time Analyzed	Method	Analyst
Microbiological Parameters by APHA Standard Methods						
Fecal Coliforms	<53800	53800	CFU/g	10/27/05 17:19	SM 9222D	je

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McVeytown Water Authority c/o Steven M Boozel	Project:	General	
Box 321	Project Number:	[none]	Reported:
McVeytown PA, 17051	Collector:	SB	11/07/05 11:50
Project Manager: Steve	Number of Containers:	7	

Client Sample ID: SLUDGE FECAL/DIGESTER 07 **Date/Time Sampled:** 10/27/05 12:37

Laboratory Sample ID: 5J31022-07 (Water)

Analyte	Result	Laboratory Reporting Limit	Units	Date / Time Analyzed	Method	Analyst
Microbiological Parameters by APHA Standard Methods						
Fecal Coliforms	<54300	54300	CFU/g	10/27/05 17:19	SM 9222D	je

Fairway Laboratories, Inc.

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Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

PENNSTATE

(814) 863-0841 Fax (814) 863-4540

Agricultural Analytical Services Laboratory
The Pennsylvania State University
University Park PA 16802

Analysis Report for Use of Biosolids on Cropland

October 31, 2005

Steven Boozel
McVeytown Borough
P O Box 321
McVeytown PA 17051

Lab Sample ID: E8330
Date Received: October 17, 2005
Date Sampled: 10/17/05
County: Mifflin
Customer Sample ID:

RESULTS

pH	Solids	Volatile	Tot-N	Org-N	NH_4N	P	K	Mg	Ca	Na	Fe	Al
	%					% (dry weight basis)						
7.1	1.77	70.01	6.53	6.50	0.02	2.17	0.41	0.39	3.93	0.58	0.67	0.78

Mn	As	Cd	Cr	Cu	Pb	Hg	Mo	Ni	Se	Zn	PCB	Reactive CN
	Arsenic	Cadmium			Lead	mg/kg (dry weight basis)						
329.4	2.34	< 2.77	23.5	787.8	64.1	0.38	7.4	18.2	5.26	773.0	< 1.5	NR

NR-Not Requested One dry ton of this material is equivalent to 13579 gallons of wet material or 56.6 tons of wet material

PRIMARY NUTRIENT CONTENT

	% (dry wt basis)		
Total N	6.53	0.77	dry tons of this biosolid will supply 100 lbs of total N.
P_2O_5	4.96	2.31	dry tons of this biosolid will supply 100 lbs of P
K_2O	0.50		

ANALYSIS INFORMATION FOR EPA 503 POLLUTANTS

Analyte	EPA SW-846 Method*	Analyst	Date	Time
Cd,Cu,Mo,Pb,Ni,Zn	3051 + 6010	Wenrick	10/24/05	1:15:00 PM
As	3051 + 7060	Kline	10/24/05	12:59:06 PM
Se	3051 + 7740	Kline	10/24/05	12:59:06 PM
Hg	7470	Kline	10/18/05	10:15:59 AM
PCBs**	8082			

* QC procedures specified in each SW-846 method are followed. **Subcontracted to Fairway Laboratories, Inc., Altoona, PA

RAW LABORATORY BENCH DATA FOR EPA 503 POLLUTANTS

	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
Wet Wt. aliquot (g)	20.442	20.442	20.442	5.426	20.442	20.442	20.442	20.442	20.442
Analyte conc. in digest (mg/L except Hg)	0.008	0.006	2.84	0.37 ug/L	0.03	0.07	0.23	0.02	2.79
Instrument detection limit (mg/L except Hg)	0.003	0.01	0.003	0.04 ug/L	0.005	0.005	0.02	0.005	0.005

Optional Analyses: Results (except soluble salts) on dry weight basis

Nitrate-N (mg/kg)	Total Carbon (%)	CCE Calcium Carbonate Equivalent (%)	Soluble Salts (mmhos/cm)	Other:

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey
May 9, 2006

1. Name of Facility: MUNICIPAL AUTHORITY OF THE TOWNSHIP OF UNION
2. NPDES Permit Number: PA 0024708
3. Wastewater Treatment Plant (WWTP) Owner: (SAME AS ABOVE)
4. WWTP Operator: ALFRED T. FULTZ JR
5. Municipality in which plant is located: UNION TOWNSHIP.
6. Name of Survey Respondent: ALFRED T. FULTZ JR.
7. Title: AUTHORITY MANAGER
8. Plant Address: 101 COLDWATER LANE PO BOX 5625
   BELLEVILLE PA 17004
   Phone: (717) 935-5202 FAX: (717) 935-2200
   E-Mail Address: N/A
9. Wastewater Treatment Plant Design Capacity: .490 mgd
   2005 Average Flow: .269 mgd
   Projected 2010 (5 year) Flow: .311 mgd
   Number of WWTP's in your system: 1
10. Municipalities that contribute wastewater to WWTP: NONE
11. 2005 Flow from each Municipality (mgd) NONE
12. Do you accept septage? ☑ Yes ☐ No
    If yes, 2005 volumes accepted: 4,337 GALLONS.
13. Do you accept other outside wastes? ☐ Yes ☑ No
    If yes, how much in 2005?
14. Do you have Pretreatment Program? ☑ Yes ☐ No
    If yes, 2005 flow from Industrial Sources: FAIRMONT PRODUCTS - .075 mgd
    CNH AMERICA, LLC - .015 mgd

15. Please complete the following for each unit process used at your WWTP.

a. Primary Clarification ☐ Yes ☑ No Number of Units: _____

Circular dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

b. Treatment Process

Conventional Activated Sludge ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Extended Aeration Activated Sludge ☑ Yes ☐ No Number of Reactors: (8)
TOTAL CAPACITY IN AERATION - 614,518 GALLONS.

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☑ Fine Bubble ☐ Course Bubble ☐ Other

Sequencing Batch Reactor ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Trickling Filters ☐ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Rotating Biological Contactors ☐ Yes ☐ No Number of Reactors: _____

c. Secondary Clarification ☑ Yes ☐ No Number of Units: (3)
TOTAL CLARIFIER CAPACITY 160,000 GALLONS.

Circular reactor dimensions: diameter: _____(ft.) depth: _____(ft.)

Rectangular reactor dimensions: length: _____(ft.) width: _____(ft.) depth: _____(ft.)

d. Nutrient Removal ☐ Yes ☑ No

☐ Biological Nutrification ☐ Biological Denutrification ☐ Biological Phosphorus Removal

☐ Other _____

e. Disinfection

☑ Chemical (type) CHLORINATION ☐ Ultraviolet (UV)

f. Solid Digestion/Stabilization

☑ Aerobic Digestion ☐ Anerobic Digestion ☐ Composting ☐ Lime

☐ Other _____

g. Solids Management

Thickening ☑ Yes ☐ No ☐ Gravity ☐ Mechanical ☐ Solids _____ %

☐ Other REED BEDS

Dewatering ☑ Yes ☐ No Number of Units 9 Size 50' x 50'

☐ Belt Press ☐ Frame Press ☐ Centrifuge ☐ Vacuum Filter ☐ Drying Bed

Average percent solids achieved _____ %

Does the plant process biosolids from another plant? ☐ Yes ☑ No

h. Biosolids End Use

☑ Land Fill ☐ Land Application ☐ Composting ☐ Incineration

Does the plant send biosolids to another plant for processing? ☐ Yes ☑ No

i. Septage and Waste Receiving ☑ Yes ☐ No

How does Septage/waste enter the WWTP? ☐ Head of plant ☐ Digesters ☑ Other

If other, where? UTMA CAN PUT SEPTAGE IN DIGESTER OR TO HEAD OF PLANT. Number of Permitted Haulers (2)

* TO DATE UTMA ONLY DISCHARGES SEPTAGE DIRECTLY TO DIGESTOR.

j. Identify day-to-day operational issues that need to be addressed by Capital Improvements.

IF UTMA RECIEVES FINAL LIMITS FOR NUTRIENT REDUCTION FROM DEP. UTMA EXPECTS TO NEED AN UPGRADE.

16. **Plant Loading** *(please provide data for the single plant identified by the NPDES permit number on line 1. You may receive separate surveys for other plants in your utility.*

Please identify the average influent concentration levels of conventional pollutants.

	2005	Design	MAX MONTHLY ANN. AVG.
a. BOD_5	236 mg/L	245 mg/L	270
b. TSS	251 mg/L	236 mg/L	294
c. Nitrogen (TN)	36.6 mg/L	N/A mg/L	
d. Phosphorus (TP)	22.8 mg/L	N/A mg/L	
Effluent quality:			
e. CBOD BOD_5	5.8 mg/L	28 mg/L	
f. TSS	10.3 mg/L	33 mg/L	
g. nitrogen	18.2 mg/L	N/A mg/L	
h. phosphorus	20.0 mg/L	N/A mg/L	

17. **Does your WWTP consistency meet NPDES Permit Limitations?** ☑ Yes ☐ No

If no, list reasons why not._____

18. **Collection System** *(Collection system may serve multiple plants, if so, please note).*

☑ Separate ☐ Combined

Has a Sanitary Sewer Evaluation Survey (SSES) been completed on the collection system within the last five years? ☑ Yes ☐ No

CLEANED AND TV ENTIRE SYSTEM IN

How many customers are served by the collection system?_____

Please rate your collection system with regard to Infiltration & Inflow (I&I).

☐ None ☑ Minor ☐ Moderate ☐ Significant ☐ Severe

Currently, are there any plans for extension of the collection network? ☐ Yes ☑ No

If yes, where?_____

19. **Pump Stations** *(List within your collection system)* **Total Number** 0

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years

(continued on next page)

Name	Capacity		Number	Run Time	Age
	gpm	Gal. Per day	of pumps	Daily (hrs.)	years

(continue on separate sheet if necessary)

How many pump stations listed above have grinders or grinder pumps? _____

20. **Biosolids Production and Quality**

Biosolids Production for 2005

If Liquid
- Total Gallons: 867,800
- Average % Total Solids: 1.2%
- Average % Total Volatile Solids: 79%
- Total Dry Tons: 43.39

If Dewatered
- Total Wet Tons: _____
- Average % Total Solids: _____
- Average % Total Volatile Solids: _____
- Total Dry Tons: _____

Describe any seasonal variation in bioslolids production and include the maximum months of production: _____

21. Do you have liquid storage of biosolids at your WWTP? ☑ Yes ☐ No

If yes, how many months of storage? 100 days.

22. Do you have dewatered storage of biosolids at your WWTP? ☑ Yes ☐ No

If yes, how many months of storage? 10 YEARS

23. The method currently utilized for biosolids end use. Note: If more than one alternative is used, please provide percentage of material used in each method, and seasons used for each.

* UTMA HAS REED BEDS – * ANNUAL SLUDGE REPORT ATTACHED.

- ☐ _____ % Landfill _____ Season: _____
- ☐ _____ % Composting _____ Season: _____
- ☐ _____ % Incineration _____ Season: _____
- ☐ _____ % Land Application _____ Season: _____

MUNICIPAL AUTHORITY OF UNION TOWNSHIP
P.O. BOX 5625
BELLEVILLE, PA. 17004

TELEPHONE: (717) 935-5202
FAX: (717) 935-2200

SLUDGE DMR (3WP52)
USEPA – REGION III
1650 ARCH STREET
PHILADELPIA, PA 19103-2029

January 18, 2006

Re: PAL024708

Dear Norma Green,

The Authority is attaching a description of the current status of the Authority's sludge operations. The Authority went through an upgrade to the existing WWTP in 1996 and 2000 which included Sludge Reed Bed Technology. The Sludge Reed Beds are composed of 22,500 square feet of reed bed space, consisting of 7,500 square feet of existing gravity sludge drying beds that have been converted to reed beds and 15,000 square feet of newly constructed reed beds. The reed beds are anticipated to dewater 934,000 gallons of sludge per year at 2.25% solids. During 2005 the Authority dewatered 867,800 gallons at 1.2% solids in the 9 reed beds. The Authority retains a twelve bag sludge bagger to use as a backup sludge removal system. Therefore, with the use of the Reed Bed technology the Authority does not look to be hauling sludge off-site for at least three years.

If you have any questions feel free to call us at (717)935-5202.

Sincerely Yours,

Fred Fultz
Authority Manager

MITTEE NAME/ADDRESS *(Include Facility Name/Location if Different)*
ME UNION TOWNSHIP MUN. AUTH
RESS P. O. BOX 5625
5 KISHACOQUILLAS STREET
BELLEVILLE PA 17004
LITY
ATION PA
TN: FRED FULTZ, AUTHORITY MANAGER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM *(NPDES)*
DISCHARGE MONITORING REPORT *(DMR)*

PERMIT NUMBER	DISCHARGE NUMBER
PA0024708	SLD P

MINOR

F - FINAL
PRODUCTION

*** NO DISCHARGE [ ] ***

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	05	01	01	TO	05	12	31

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
N. ANT SLUDGE DISP ED BY OTHER METHOD	SAMPLE MEASUREMENT	******	0	(4A)	******	******	******				
017 + 0 0 DOE	PERMIT REQUIREMENT			ETRIC TON/YR				**** ****			
UAL AMT OF SLUDGE CINERATED	SAMPLE MEASUREMENT	******	0	(4A)	******	******	******				
018 + 0 0 DOE	PERMIT REQUIREMENT			ETRIC TON/YR				**** ****			
UAL SLUDGE PRODUC SN. TOTAL	SAMPLE MEASUREMENT	******	39.05	(4A)	******	******	******				
019 + 0 0 DOE	PERMIT REQUIREMENT			ETRIC TON/YR				**** ****			
UAL AMOUNT OF SL E LAND APPLIED	SAMPLE MEASUREMENT	******	0	(4A)	******	******	******				
020 + 0 0 DOE	PERMIT REQUIREMENT			ETRIC TON/YR				**** ****			
UAL ANT. SLUDGE I OSED SURFACE UNIT	SAMPLE MEASUREMENT	******	0	(4A)	******	******	******				
021 + 0 0 DOE	PERMIT REQUIREMENT			ETRIC TON/YR				**** ****			
UAL ANT. SLUDGE D GED IN LANDFILL	SAMPLE MEASUREMENT	******	0	(4A)	******	******	******				
022 + 0 0 DOE	PERMIT REQUIREMENT			ETRIC TON/YR				**** ****			
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

E/TITLE PRINCIPAL EXECUTIVE OFFICER
RED T. FULTZ JR
RITY MANAGER
TYPED OR PRINTED

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Clifford Fultz Jr
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
717	935-5202	06	1	19
AREA CODE	NUMBER	YEAR	MO	DAY

IENTS AND EXPLANATION OF ANY VIOLATIONS *(Reference all attachments here)*

- List your Biosolids General Permit Number: _____

  Expiration Date: _____

- Please complete the following table for land application sites:

Land Application Site	Location	Acres

Attach additional sheets if necessary

- Please attach a copy of a topgraphic map(s) indicating the location of each site.

24. **Do you analyze biosolids for pollutants (metals)?** ☐ Yes ☑ No

If yes, attach 3 most recent analysis.

25. **Have you conducted a Form 43-TCLP analysis on biosolids?** ☐ Yes ☑ No

If yes, attach most recent analysis results.

26. **Indicate which, if any, of the Vector Attraction Reduction Options listed in the Federal Part 503.33 or Pennsylvania Chapter 271.933 regulations is used at your WWTP to stabilize biosolids.**

N/A

27. **Indicate which, if any, of the Pathogen Reduction Alternatives listed in the Federal Part 503.32 or Pennsylvania Chapter 271.932 regulations is used at your WWTP to stabilize biosolids.**

N/A

28. **Have you conducted a fecal coliform analysis on your biosolids?** ☐ Yes ☑ No

If yes, attach most recent analysis results.

29. **What are the most important factors in determining methods for biosolids end use? Rank in order from 1 – 6 with 1 being most important.**

	WWTP Staff	Decision Makers
Cost	_____	_____
Reliability	_____	_____
Regulatory Complexity	_____	_____
Environmental Stewardship	_____	_____
Staff Limitations	_____	_____
Public Acceptance	_____	_____

30. Does your WWTP experience problems with processing odors? ☐ Yes ☑ No

Biosolids storage odors? ☐ Yes ☑ No

31. Does your biosolids program have more than one end use option? ☑ Yes ☐ No

32. How important is it for your WWTP to move toward Class A biosolids?

☐ Very ☐ Not Very ☑ Sometime in the future ☐ Never

33. How concerned are you with the following biosolids processing and end use options?

Public Acceptance	☑ Very	☐ Somewhat	☐ Not Very
Phosphorus limits on Class B Application	☑ Very	☐ Somewhat	☐ Not Very
Future of Class B Options	☑ Very	☐ Somewhat	☐ Not Very
Availability of landfill	☑ Very	☐ Somewhat	☐ Not Very

34 Would your municipality consider serving as a "regional biosolids processing" center?

☐ Yes ☐ No X PROBABLY NOT

35. Would your municipality consider investing in biosolids processing, storage, and end use options to develop a "regional biosolids processing" center?

☐ Yes ☐ No X WOULD NEED TO SPEAK W/ AUTHORITY BOARD.

36. Would your municipality consider sending solids to a "regional biosolids processing" center?

☐ Yes ☐ No X SAME AS ABOVE.

37. What would influence your decision to do so?

☑ Cost ☑ Ease ☑ Reliability

38. Does your WWTP have capacity in the following unit processes to handle additional flows/ loads?

☐ Recycle Flows ☐ Digestion ☐ Thickening ☐ Dewatering ☐ Storage

Please return survey form to:
Material Matters, Inc.
P.O. Box 224
Elizabethtown, PA 17022

Mifflin County
Public Sewer Plan
Biosolids Management and Wastewater Treatment System Survey
May 9, 2006

1. Name of Facility: Wayne TWP
2. NPDES Permit Number: PA 0083330
3. Wastewater Treatment Plant (WWTP) Owner: Wayne TWP
4. WWTP Operator: Rodney Fleck
5. Municipality in which plant is located: Wayne
6. Name of Survey Respondent: Dwight Aurand
7. Title: Supervisor
8. Plant Address: 3055 Ferguson Valley Rd.
   McVeytown PA 17051
   Phone: 717-899-7430 FAX: 717-899-0921
   E-Mail Address: WayneTWP@ACSworld.com
9. Wastewater Treatment Plant Design Capacity: .012 mgd
   2005 Average Flow: .0050 mgd
   Projected 2010 (5 year) Flow: .0050 mgd
   Number of WWTP's in your system: 1
10. Municipalities that contribute wastewater to WWTP: Wayne
11. 2005 Flow from each Municipality (mgd) .0050
12. Do you accept septage? ☐ Yes ☑ No
    If yes, 2005 volumes accepted: _____
13. Do you accept other outside wastes? ☐ Yes ☑ No
    If yes, how much in 2005? _____
14. Do you have Pretreatment Program? ☐ Yes ☑ No
    If yes, 2005 flow from Industrial Sources: _____

15. Please complete the following for each unit process used at your WWTP.

a. Primary Clarification ☑ Yes ☐ No Number of Units: _____

Circular dimensions: diameter: _____ (ft.) depth: _____ (ft.)

Rectangular dimensions: length: 15 (ft.) width: 6 (ft.) depth: 10 (ft.)

b. Treatment Process

Conventional Activated Sludge ☑ Yes ☐ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____ (ft.) depth: _____ (ft.)

Rectangular reactor dimensions: length: 15' (ft.) width: 6 (ft.) depth: 10 (ft.)

☐ Mechanical aeration ☐ Fine Bubble ☑ Course Bubble ☐ Other

Extended Aeration Activated Sludge ☐ Yes ☑ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____ (ft.) depth: _____ (ft.)

Rectangular reactor dimensions: length: _____ (ft.) width: _____ (ft.) depth: _____ (ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Sequencing Batch Reactor ☐ Yes ☑ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____ (ft.) depth: _____ (ft.)

Rectangular reactor dimensions: length: _____ (ft.) width: _____ (ft.) depth: _____ (ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Trickling Filters ☐ Yes ☑ No Number of Reactors: _____

Circular reactor dimensions: diameter: _____ (ft.) depth: _____ (ft.)

Rectangular reactor dimensions: length: _____ (ft.) width: _____ (ft.) depth: _____ (ft.)

☐ Mechanical aeration ☐ Fine Bubble ☐ Course Bubble ☐ Other

Rotating Biological Contactors ☐ Yes ☑ No Number of Reactors: _____

c. Secondary Clarification ☐ Yes ☑ No Number of Units: _____

Circular reactor dimensions: diameter: _____ (ft.) depth: _____ (ft.)

Rectangular reactor dimensions: length: _____ (ft.) width: _____ (ft.) depth: _____ (ft.)

d. Nutrient Removal ☐ Yes ☐ No

☑ Biological Nutrification ☐ Biological Denutrification ☐ Biological Phosphorus Removal

☐ Other _____

e. Disinfection

☐ Chemical (type) Cl_2 ☐ Ultraviolet (UV)

f. Solid Digestion/Stabilization

☑ Aerobic Digestion ☐ Anerobic Digestion ☐ Composting ☐ Lime

☐ Other _____

g. Solids Management

Thickening ☑ Yes ☐ No ☐ Gravity ☐ Mechanical ☐ Solids 3 %

☐ Other _____

Dewatering ☑ Yes ☐ No Number of Units _____ Size _____

☐ Belt Press ☐ Frame Press ☐ Centrifuge ☐ Vacuum Filter ☐ Drying Bed

Average percent solids achieved 5 %

Does the plant process biosolids from another plant? ☐ Yes ☑ No

h. Biosolids End Use

☐ Land Fill ☐ Land Application ☐ Composting ☐ Incineration

Does the plant send biosolids to another plant for processing? ☑ Yes ☐ No

i. Septage and Waste Receiving ☐ Yes ☐ No

How does Septage/waste enter the WWTP? ☑ Head of plant ☐ Digesters ☐ Other

If other, where? _____ Number of Permitted Haulers _____

j. Identify day-to-day operational issues that need to be addressed by Capital Improvements.

_____

_____

_____

_____

_____

16. **Plant Loading** *(please provide data for the single plant identified by the NPDES permit number on line 1. You may receive separate surveys for other plants in your utility.*

Please identify the average influent concentration levels of conventional pollutants.

	2005	Design
a. BOD_5	272 mg/L	10 mg/L
b. TSS	— mg/L	10 mg/L
c. Nitrogen	— mg/L	3/9 mg/L
d. Phosphorus	— mg/L	— mg/L
Effluent quality:		
e. BOD_5	3.0 mg/L	10 mg/L
f. TSS	5.5 mg/L	10 mg/L
g. nitrogen	0.2 mg/L	3/9 mg/L
h. phosphorus	— mg/L	— mg/L

17. **Does your WWTP consistency meet NPDES Permit Limitations?** ☑ Yes ☐ No

If no, list reasons why not._____

18. **Collection System** *(Collection system may serve multiple plants, if so, please note).*

☐ Separate ☑ Combined

Has a Sanitary Sewer Evaluation Survey (SSES) been completed on the collection system within the last five years? ☐ Yes ☑ No

How many customers are served by the collection system? 48

Please rate your collection system with regard to Infiltration & Inflow (I&I).

☐ None ☐ Minor ☑ Moderate ☐ Significant ☐ Severe

Currently, are there any plans for extension of the collection network? ☐ Yes ☑ No

If yes, where? This STP will be closed in 2009 Sewage going To Mount UNION PLANT

19. **Pump Stations** *(List within your collection system)* **Total Number** 0

Name	Capacity gpm	Capacity Gal. Per day	Number of pumps	Run Time Daily (hrs.)	Age years

(continued on next page)

Name	Capacity		Number	Run Time	Age
	gpm	Gal. Per day	of pumps	Daily (hrs.)	years

(continue on separate sheet if necessary)

How many pump stations listed above have grinders or grinder pumps? —

20. **Biosolids Production and Quality**

Biosolids Production for 2005

If Liquid
- Total Gallons: 4000
- Average % Total Solids: 1.38
- Average % Total Volatile Solids: _____
- Total Dry Tons: .23

If Dewatered
- Total Wet Tons: _____
- Average % Total Solids: _____
- Average % Total Volatile Solids: _____
- Total Dry Tons: _____

Describe any seasonal variation in bioslolids production and include the maximum months of production: _____

21. **Do you have liquid storage of biosolids at your WWTP?** ☑ Yes ☐ No

If yes, how many months of storage? _____

22. **Do you have dewatered storage of biosolids at your WWTP?** ☑ Yes ☐ No

If yes, how many months of storage? 6

23. **The method currently utilized for biosolids end use. Note: If more than one alternative is used, please provide percentage of material used in each method, and seasons used for each.**

- ☐ _____ % Landfill _____ Season: _____
- ☐ _____ % Composting _____ Season: _____
- ☐ _____ % Incineration _____ Season: _____
- ☐ _____ % Land Application _____ Season: _____

other Shade Gap STP

- List your Biosolids General Permit Number: 603 446

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