

2. Plan Summary

The Official Wastewater Facilities Plan for South Middleton Township is summarized in this chapter. The findings, conclusions and recommendations presented are based on all of the information that was studied.

Planning for municipal wastewater facilities is an increasingly difficult task, because of limited funding sources and the resultant enormous burden placed on the local population where municipal facilities may be so vitally needed. Therefore, it is very important for municipal officials and their agents to provide a valid and implementable wastewater facilities plan which provides for the existing needs of the community. Just as importantly, it must be an integral part of the Township's planning efforts for new development, such that wastewater disposal does not result in future problems.

The task faced by South Middleton Township is somewhat of a mixed bag. On one hand it must address provisions for an expanding municipal sanitary sewerage system. On the other hand it must make provisions for adequate long-term operation of on-lot wastewater treatment and subsurface disposal systems.

This plan designates potential service areas for future growth and provides appropriate service area and total population projections. It is fortunate that the township has an extensive municipal sanitary sewerage system. However, one challenge lies in providing sufficient conveyance and treatment capacities to provide for the anticipated growth at an affordable cost.

Another challenge for the township is in the form of providing the necessary municipal collection and conveyance facilities to serve areas that may experience inadequate performance of on-lot disposal systems and how to do it affordably. It is one thing for new development to privately construct sewerage facilities and incorporate them into the regional system. It is quite another challenge to sewer existing rural development as it involves involvement by the municipal authority and significantly increased governmental and financial demands.

A. Identification of proposed services areas and major problems evaluated in the plan.

There are four major sewer services areas within South Middleton Township. Area I is located in the Boiling Springs (Area I-A) and the area north of Boiling Springs along Forge Road east of Carlisle (Area I-B). This area drains to the South Middleton Township Municipal Authority's wastewater treatment plant. Area II is the area south and west of Carlisle and is broken into 10 subwatersheds (Area II-A through Area II-J). This area drains to the Borough of Carlisle wastewater treatment plant. Area III is the area within South Middleton Township that surrounding Mount Holly Springs and drains to their plant. Area IV is an area that was re-routed from the Mount Holly Springs area to the South Middleton Township Municipal Authority plant via a force main (see Previous Wastewater Planning below). The sewer service area map is provided in Appendix G.

The major problem evaluated in this plan is that the sewer service areas from 1992 are not consistent with the Township's current Comprehensive Plan and Zoning Ordinance. The sewer service areas from the 1992 Plan covered the areas that were typically served by public sewer (e.g. – higher density residential, commercial, and industrial users). However, there have been several revisions to the Comprehensive Plan and Zoning Ordinance since that time. As a result, there are several areas outside of the designated sewer service areas that are adjacent to areas with public sewer and zoned for uses typically served by public sewer. This plan will update the areas to be more consistent with the current Comprehensive Plan and Zoning Ordinance, as well as examine those areas in regards to available and future capacity available to service those needs. The analysis also will show that the plant should be utilized as a 1.5 million gallons per day facility and justify upgrades to the facility.

Beyond the bounds of the Sewer Service Areas, those areas served by on-lot systems continue to be under the jurisdiction of the Township's Sewage Management Program (see Appendix H). Documentation of the implementation and continued enforcement is contained herein.

At the sewage treatment plant, this report also outlines the South Middleton Township Municipal Authority's (SMTMA) compliance with their new NPDES permit which will require the removal of nutrients. Currently, only secondary treatment is required. A feasibility study is included as Volume 2 of this plan.

There is one area that is not presently sewered and should be considered for a future sewer expansion. This extension may be done in conjunction with an adjacent future development or it may occur independently.

Thus, the purpose of this report is to provide all necessary and available information in the form of a single document which can be used as the basis for sewage facilities planning for the South Middleton Township sewerage system, consistent with the current Comprehensive Plan and Zoning Ordinance, for now and the future.

B. Alternative(s) Chosen

The alternative chosen to address the inconsistency of the previously approved 1992 Plan with the current Comprehensive Plan is to evaluate those potential sewer service areas within and adjacent to existing sewer service areas. A projection of the possible sewer loading from each of those areas was evaluated, and a comprehensive approach was developed to ensure that those uses typically served by public sewer would be able to do so without and future problems.

In order to develop a solution to the compliance with the new NPDES permit, several alternatives were examined. A pilot study was completed, and a treatment alternative was selected. This analysis is contained with the study entitled "Enhanced Biological Nutrient Removal Wastewater Treatment Feasibility Study for South Middleton

Township Municipal Authority” dated June 2010 (Final). This is attached as Volume 2 of this plan.

To summarize, the following alternatives were examined:

1. 4-Stage Bardenpho Process
2. 5-Stage Bardenpho Process
3. Modified Ludzack-Ettinger Process (MLE)
4. Wuhrman Process
5. Oxidation Ditch Process
6. Vertical Loop Reactor Process
7. 3-Stage Phoredox Process (A20 Process)
8. Modified University of Cape Town Process (MUCT)
9. Integrated Fixed Film Activated Sludge Process (IFAS)
10. Westbank Process
11. Sequential Batch Reactor Process (SBR)
12. Step Feed Process
13. Moving Bed Biofilm Reactor Process (MBBR)
14. Membrane Biological Reactor Process (MBR)
15. BioChem Technology

It was determined that Enhanced Biological Nutrient Removal technology should be used, and a five stage IFAS/MBBR process was selected as the preferred alternative.

In addition, the study examined the feasibility of the Authority using Nutrient Trading. It was not recommended to pursue purchasing credits as an alternative. However, it was recommended that the Authority investigate the possibility of selling excess credits for Phosphorus and Nitrogen once the upgrade is complete.

The study also recommends several preliminary and tertiary treatment alternatives, as well as investigates bio-solids handling and processing alternatives, to complement the upgraded plant.

For those areas outside of the sewer service areas, a Sewage Management Program was implemented and continues to be enforced.

As per regulations, preliminary hydrogeologic studies have been required for areas in the Township underlain by limestone geology and for those areas within ¼ mile of wells tested for high nitrates. A map showing those areas of the Township, based on well testing from both 2000/2001 and 2010, is shown in Appendix Z.

In addition, as per the approval of the 1992 Plan, certain areas of the Township have been restricted from development relying on on-lot system sewage disposal (See Appendix J). There should be no reason to lift this moratorium.

There is one area that is not presently sewered and should be considered for a future sewer expansion. This extension may be done in conjunction with an adjacent future

development or it may occur independently. The area in question contains twelve homes on the west side of Fairview Street south of Manhole CC-10 (see map in Appendix E). This would include an extension of approximately 1,150 feet of main and three manholes.

C. Costs

The cost of providing sanitary sewers in the areas designated as sewer service areas, but are not currently sewerred, will be provided by developers as the land is developed.

A detailed cost estimate for the upgrade to the existing South Middleton Township Municipal Authority plant is included in Attachment H of the feasibility study (attached as Volume 2 of this plan). The estimated cost of the plant upgrade and associated improvements is estimated to be \$12,551,000.

For the expansion of the sewer on Fairview Street, the cost is estimated to be \$150,000. The Authority will either draw the money from existing reserves or will borrow the money through a drawdown type bank loan.

D. Municipal Commitments

The South Middleton Township Municipal Authority (SMTMA) has applied for a H₂OPA WSSW grant for \$8.3 million dollars of the total estimated cost. If successful in being awarded the total requested grant amount, this will leave the municipal commitment of \$4,251,000. In the interim, the Authority will solicit proposals from local lending institutions in anticipation having to fund the entire \$12,551,000. The Township will need to guaranty the amount of the borrowing in order to secure the best possible interest rates.

For the estimated \$150,000 project on Fairview Street, the Authority will either draw the money from existing reserves or will borrow the money through a drawdown type bank loan. This is if the adjacent development does not complete the project.

E. Implementation Schedule

The schedule for implementing the plant upgrade and extension of sewer on Fairview Street is as follows:

ACTIVITY	PROJECTED DATE
Submit Act 537 and Special Study Update (Feasibility Study)	September 30, 2010
Submit WQM Part II Permit Application	September 30, 2011
Award First Contract for Phased Construction	September 30, 2012
Construction Progress Reports	Quarterly
Issue Certification of Substantial Completion (Plant Fully Operational)	September 30, 2014
Compliance with Effluent Limitations	September 30, 2015
Sewer homes on Fairview Street	2021

3. Municipal Adoption

See Appendix B

4. Planning Commission Comments

See Appendix C

5. Publication

See Appendix D

6. Comments and Responses

The only written comments we received on the draft plan were from the South Middleton Township Municipal Authority regarding the sewer extension on Fairview Street. The comment and response is included in Appendix E.

7. Implementation Schedule

See Section 2.E on previous page

8. Consistency Documentation

See Appendix F