Final Engineering Report
for

Tioga County Inter-Municipal Sewer Collaboration Committee
Tioga County, NY

Tioga County Sewer Collaboration Study

Revised February 2011

November 2010

HUNT 2639-001

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NOTE:

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Final Engineering Report
for

Tioga County Inter-Municipal Sewer Collaboration Committee
Tioga County, NY

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Committee Members

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Grace Thomas        Village of Owego Sewer Commissioner
Edward Arrington    Village of Owego Mayor
Barbara Crannell    Town of Nichols Board
James Branston      Town of Nichols Supervisor
Douglas Horton      Village of Nichols Mayor
Lee Ann Tinney      Village of Nichols Trustees Representative
Ronald Dougherty    REAP Board – Infrastructure
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I. Background & Purpose of Study

Tioga County and the communities of the Town of Nichols, the Village of Nichols, the Town of Owego, the Village of Owego and the Village of Waverly desire to achieve greater efficiencies or provide service to their communities in regards to wastewater collection and treatment. These communities have formed a committee and have retained HUNT to investigate and evaluate several scenarios that may help them to fulfill their goals.

A. Project Purpose

There is a widely recognized reality amongst Tioga County’s governmental leaders, as is clearly stated in this project’s work program description, contained within the project grant document:

“…the lack of municipal sewer is critical to the future development of Tioga County.”

The difficulties Tioga County’s municipalities will face in addressing this reality are further assessed with the statement that “potential environmental regulations will further stress municipal sewer infrastructure budgets, making expansion of services even more difficult.”

This reality is currently manifesting itself in the form of more stringent wastewater treatment performance standards (nitrogen and phosphorus removal) in the entire Susquehanna River Basin to improve conditions in the Chesapeake Bay, at additional operating costs to the existing Tioga County sewer service areas.

The specific purpose of this study is to identify and evaluate potential collaborative and shared services, which the municipalities might employ to achieve greater efficiencies in provision of sewer services. It is the intent that identified, applicable efficiencies be implemented to address deficiency problems and to provide services necessary for economic development.

The benefits sought from collaborative municipal efforts include:

- achievement of economies of scale and efficiencies in future wastewater treatment plant (WWTP) investments;
- expanded sewage coverage areas to include existing gaps in service areas and future growth areas;
- cost effective compliance with pending Chesapeake Bay total mass daily loadings (TMDL) regulations; and
- seek to establish the lowest rate possible for sewer services

B. Project Description

This project is undertaken with the assistance of a NYS Department of State Shared Municipal Services Incentive Grant. The project description summary statement, provided in the grant document, is as follows:

“The Town and Village of Nichols and the Town and Village of Owego will evaluate the conditions in each respective wastewater treatment plant (WWTP) such as age, capacity, service area, compliance with environmental regulations, chronic deficiencies (i.e. inflow and infiltration) and various plant strengths. The intent of the study is to identify efficiencies and cost savings realized through shared services and/or consolidation of services. Anticipated outcomes of the study may range from group purchasing, to shared operators, to coverage in currently unserved areas, or a shared compost facility.”
C. Background Information

Tioga County has four municipalities with residential/commercial/industrial development of sufficient magnitude and density to have caused these municipalities to construct community sewage collection and treatment facilities. These municipalities are situated along the Susquehanna River, and from east to west include the Town of Owego (which has two sewer districts), The Village of Owego (which is within the Town of Owego but has its own separate sewerage facilities), the Town of Nichols, and the Village of Waverly. There is additionally a widely recognized need to provide wastewater collection and treatment for the Village of Nichols (which is within the Town of Nichols but several miles from the Town sewerage facilities).

The Town of Owego maintains two sewer districts which are geographically separated. Sewer District No. 2 (SD2), also known as the Apalachin district, serves largely residential development with collection system spanning both the north and south side of the river at the eastern end of the Town. The notable development on the north side of the river within SD2 is called Crestview Heights. Sewer District No. 1 (SD1) is situated on the north side of the river, just east of the Village of Owego, and provides service to two significant industrial dischargers (Sanmina and Lockheed-Martin) as well as residential and commercial development. These Town districts each have their own treatment plant and are located approximately four miles apart “as the crow flies.” But they are over nine miles travel distance apart and are on opposite sides of the river, which is somewhat sinuous between the plants.

The Village of Owego is located within the Town of Owego, at the western end of the Town of Owego and predominantly on the north side of the river. The Village maintains its own wastewater collection system and sewage treatment plant. The collection system dates back to the time when combined stormwater and sanitary wastewater collection systems were utilized. The Village continues to strive to eliminate stormwater from the flow received at the treatment plant.

The Town of Nichols has a sewage treatment facility in the unincorporated area known as Lounsberry, which was built about eight years ago to accommodate a newly constructed warehouse type distribution center for Best Buy Corporation. To date Best Buy is the only facility served, with the only sewer being a direct line between Best Buy and the treatment plant with the exception of a lateral installed in 2009 for connection of a truck stop facility. The treatment plant experiences some operational problems due to its low influent flow rates compared to its design capacity.

The most concentrated residential development in the Town of Nichols is within the Village of Nichols, just less than four miles west of the treatment plant on East River Road. The Village of Nichols is located downstream of the Town of Nichols wastewater treatment plant, with both the treatment plant and the Village being on the south side of the river. The Village has approximately 204 residences and some commercial establishments on septic systems. Immediately west of the Village of Nichols are two other facilities which are in the planning and preliminary design phases of wastewater treatment projects. These projects will serve the NYSDOT Rest Stop on Route I-86 and the Tioga Downs racetrack/casino. Both are pursuing their own independent projects to treat and dispose of wastewater.

It was decided during project scope development that the Village of Waverly would not be included in the scope because of its distance from the aforementioned wastewater facilities and service areas. It was believed that the distance would be too limiting for potential collaboration and/or consolidation. The study committee subsequently decided that Waverly would be included in the analysis for potential collaborative efforts to implement shared sludge composting facility.
D. Approach to the Study:

After discussion with the committee members, this report deals with the following items that pertain to the goals and objectives listed in Section I (B):

1. Conduct interviews with the Town of Owego and the Village of Owego WWTP operators
2. Investigate the feasibility of combining the any or all of the Town of Owego and Village of Owego WWTPs
3. Investigate the feasibility of constructing a countywide, shared composting facility at the Village of Owego WWTP
4. Prepare a Preliminary Engineering Report that addresses the feasibility of constructing a new municipal wastewater collection system for the Village and Town of Nichols which will discharge to the Lounsberry WWTP.
6. Present information on alternative sources of funding.

II. Interviews with the Town of Owego and the Village of Owego WWTP operators

A. Interview with the Town of Owego WWTP Operator:

Town of Owego Sewer District No. 1

The existing Sewer District No. 1 WWTP serves the area east of the Village of Owego and north of the Susquehanna River, including two major industrial facilities and residential developments. The WWTP was constructed in 1999, and has a permitted monthly average flow limit of 0.848 MGD. It employs the “sequencing batch reactor” (SBR) variation of the activated sludge process for secondary treatment. The plant was designed to accommodate flows from the two industries, including a very significant ammonia loading from one of them, which has since been dramatically reduced by a manufacturing process change. This process change results in the plant being relatively lightly loaded in terms of being able to reduce the applied carbonaceous organic loading, organic nitrogen and ammonia nitrogen loading. Wet weather peak flows, however, require that the full plant (both of the two SBR basins) be kept on-line to accommodate the hydraulic loadings and suitable cycle parameters for the SBR basins.

This plant has SBR process equipment and controls furnished by ABJ Group, with the process trade name ICEAS (Intermittent Cycle Extended Aeration System), and have two SBR basins. Oxygen is supplied into the SBR basins by way of diffused air, supplied from positive displacement blowers. The ICEAS process does not employ sludge recirculation pumps within the SBR basins, and does not employ any means of mixing other than the processed air, meaning that there is no mixing capability when the air is off. Both sludge recirculation and some anoxic mixing capability would very likely be enhancements to an SBR’s denitrification capability, but neither is available in this facility. Both basins receive influent all of the time, through all periods of every cycle.

Since this facility is approximately 11 years old, generally, it is in very good condition. The treatment plant was not designed to meet the anticipated Chesapeake Bay requirements and therefore, improvements to this facility will be required.
Town of Owego Sewer District No. 2 – Apalachin Plant

The existing WWTP #2 facilities serve the Apalachin area, the Tioga Terrace area, Crestview Heights, and portions of Campville. The WWTP was constructed in 1969, and has a permitted monthly average flow limit of 2.0 MGD. It employs the activated sludge process for secondary treatment, with the flexibility to operate in the plug flow, contact stabilization, and step feed modes.

The flood of 2006 damaged the WWTP No. 2 causing approximately $750,000 worth of repairs. The Apalachin wastewater treatment plant was rebuilt after the flood. This WWTP is in very good condition because of the 2006 reconstruction and replacement of equipment. However, this treatment plant was not designed to meet the anticipated Chesapeake Bay requirements and therefore, improvements to this facility will may be required depending upon the EPA’s discharge requirements.

B. Interview with the Village of Owego WWTP Operator:

The Village of Owego wastewater treatment plant was built in 1965 and received a major upgrade in 1983. It has a permitted monthly average flow limit of 1.0 MGD and an average daily flow rate is 0.465 MGD. The Village’s WWTP employs an Oxidation Tank process. The sludge belt press condition is a major concern to the plant operator. Also, the mixing unit for the sludge flocculation is also a concern. Both, the belt press and the sludge flocculation mixer will need to be replaced in the near future. The remainder of the equipment is performing well considering their age.

Significant inflow and infiltration to the wastewater treatment plant during rainfall events has caused concerns with the WWTP operator in regard to compliance with SPDES requirements. There are combined storm and sanitary sewers located in the Village of Owego. The Village is increasing their fees to provide funding for the removal/separation of the combine sewers.

A report was prepared for the Village of Owego that has recommendations on modifications to the wastewater treatment plant that would allow compliance with the anticipated Chesapeake Bay requirements.

The operator expressed interest in working with the Town of Owego to purchase supplies in an attempt to achieve some level of economy of scale.

III. Evaluation of Combining the Three WWTP near Owego

Currently, there are three wastewater treatment plants (WWTP) within 8 miles of each other (within 6.5 miles as “the crow flies”). These WWTPs are the Village of Owego WWTP located on the southside of the Susquehanna River, the Town of Owego WWTP No. 1 located approximately ¾ of a mile east of the Village of Owego on the north side of the Susquehanna River, and the Town of Owego WWTP No. 2 located near Apalachin on the south side of the River. The concept of reducing the number of wastewater treatment plants and having just one plant has some potential benefits including:

- There are efficiencies that are obtained by combining the treatment plants. Savings can be acquired through staffing consolidation and acquisition of assets with new financing.
- Any capital expansion or upgrade would involve only one plant instead of 3. The cost of any capital expansion would be spread out over a much larger user base.
- Provision of specialized staffing.
- Allow for better economic planning for capacity issues and the location of services in new areas.
A few drawbacks from combining plants include:
- The reduction in existing capacity unless there is a major expansion to one of the plants.
- The need to upsize receiving mains.
- At least one Susquehanna River crossing.
- The loss of capital investment of the other two plants.
- The expense of new transmission mains and new pump stations.
- The loss of experienced staff via reductions.
- The loss of redundancy if a plant failure occurs – currently, some waste could be trucked to another plant if there is one plant failure.

The Village of Owego WWTP is rated for 1 MGD discharge and their average daily flow is 0.465 MGD. According to their operator, they have flows that exceed 1.6 MGD during the wet season. The Town of Owego WWTP No. 1 has a permitted monthly average flow of 0.848 MGD. Plant No. 1 average daily flow is approximately 0.58 MGD with a maximum daily flow in March 2008 was 2.204 MGD. The Town of Owego WWTP No. 2 (Apalachin) has a permitted monthly average flow of 2.0 MGD. Plant No. 2 average daily flow is approximately 1.03 MGD with maximum daily flow in March 2008 was 3.88 MGD.

Currently, all three of Owego wastewater treatment plants are experiencing a large amount of infiltration flow during the wet months. As noted above, all three plants have experienced peak flows that are greater than their rated capacity. The Village of Owego has combined storm and sanitary sewers. The Town of Owego has conducted smoke tests and no connections with storm runoff were discovered. Until the Town and the Village greatly reduce the flows from infiltration and the Village from combine sewers and other sources of inflow, there will not be enough capacity in any of the treatment plant, which would allow the removal of another plant. Both the Town and the Village have or will start to slip-line or otherwise replace the sewer mains that are experiencing the most infiltration. The cost to slip-line or replacing the sewer mains is very expensive and significant reduction in infiltration will not be accomplished in a short period of time.

In addition to the infiltration into the sewer mains, there is probably infiltration coming in the sewer laterals. Besides infiltration, there could be homes/structures that have their roof drains and sump pumps connected to the sanitary sewer. Even fixing the mains will not eliminate the inflow from these taps which are in violations of the Town/Village Ordinance. There will need to be a community education/outreach program to have property owners convert their roof drains and sump pumps to surface runoff. Also, there needs to be more code enforcement to identify these taps. The Town of Owego has conducted smoke teats and all illegal taps which were identified, were disconnected.

There will be a significant cost associated with converting the combine sewers into separate systems within the Village. Unless there is outside funding available for this type of project, the elimination of combined flows is not anticipated in the near future. However, there may be funding from the Federal Government if there is an innovative or “green” approach to the project.

Once the infiltration and combine sewer flows are reduced to an acceptable level, then eliminating a wastewater treatment plant could be considered. Currently all three treatment plants are operating efficiently and there would not be a significant operational cost savings. Sewer lift stations (pump station) will be needed as well as new force mains installed. We have prepared 2 conceptual economic evaluations. The first evaluation consists of removing the Village of Owego WWTP and pumping the sewage to the Town of Owego WWTP No. 2. The second evaluation consists of eliminating all three WWTPs and constructing a new wastewater treatment plant to serve the Town of Owego and the Village of Owego.

For the first evaluation, we choose eliminating the Village of Owego WWTP, because it has the least amount of flows and would require the smallest pump station and force main. We evaluated
discharging into Plant No 2 because it would have capacity to accept the average daily flow from the Village Plant if the infiltration & inflow were removed from the flows to both plants. The combined average daily flow for both plants would be approximately 1.5 MGD vs. the permitted rate of 2.0 MGD.

**TABLE 1**

Tioga County Sewer Evaluation
Elimination of Village of Owego WWTP - Pump to Apalachin Plant
12/8/2009

**COSTS TO CONVEY THE FLOW FROM VILLAGE WWTP TO PLANT NO. 2**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNITS</th>
<th>UNIT COSTS</th>
<th>EXTENDED COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 inch PVC Force Main Installed</td>
<td>44350</td>
<td>Linear Feet</td>
<td>$45.00</td>
<td>$1,995,750.00</td>
</tr>
<tr>
<td>Surface Restoration</td>
<td>44350</td>
<td>Linear Feet</td>
<td>$15.00</td>
<td>$665,250.00</td>
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<tr>
<td>Easements</td>
<td>1</td>
<td>Lump Sum</td>
<td>$60,000.00</td>
<td>$60,000.00</td>
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<tr>
<td>Pump Station</td>
<td>1</td>
<td>Each</td>
<td>$350,000.00</td>
<td>$350,000.00</td>
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<tr>
<td>500,000 Gal. Underground Tank</td>
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<td>Each</td>
<td>$500,000.00</td>
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<tr>
<td>Air-Vac Stations</td>
<td>1</td>
<td>Lump Sum</td>
<td>$35,000.00</td>
<td>$35,000.00</td>
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<tr>
<td>Utility Conflicts</td>
<td>1</td>
<td>Lump Sum</td>
<td>$100,000.00</td>
<td>$100,000.00</td>
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<tr>
<td>Traffic Control</td>
<td>44350</td>
<td>Linear Feet</td>
<td>$3.00</td>
<td>$133,050.00</td>
</tr>
</tbody>
</table>

**Sub-Total** | 44350 | Linear Feet | $3,839,050.00

Plus 10% Construction Contingency | $383,905.00

Plus Design and Construction Engineering (12%) | $460,686.00

Plus Legal and Administration (6%) | $230,343.00

**Total Capital Cost** | $4,913,984.00

Debt Interest Rate (Percent) | 4.50

Years to Repay Debt | 30

Yearly Debt Service (4.5% for 30 years) | $301,677.06

**ANNUAL OPERATION AND MAINTENANCE COSTS**

Electricity | $30,000.00

Chemical Costs | $0.00

Replacement of Pipe (30 Years) | $66,525.00

Replacement of Pumps (12 Years) | $14,583.33

Laboratory Fees | $0.00

Administration Costs | $0.00

Operations Personnel | $15,000.00

Operations Office & Billing | $0.00

**Total O&M** | $126,108.33
TOTAL ANNUAL COSTS (O&M plus Debt) $427,785.39

EXPECTED SAVINGS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ESTIMATED COSTS</th>
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<tr>
<td>Personnel</td>
<td>$183,700.00</td>
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<tr>
<td>Employee Benefits</td>
<td>$90,070.00</td>
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<tr>
<td>Capital Reserve Fund for WWTP</td>
<td>$542,100.00</td>
</tr>
</tbody>
</table>

Total Expected Savings $815,870.00

Net Estimated Savings $388,084.61

The Economic Evaluation shown on Table 1 assumed the following:
1. All costs are estimated costs based on 2009 dollars.
2. The force main sized was determined from the average daily flow rate multiplied by a peaking factor. The size of the force main should be evaluated in more detail during preliminary and final engineering design.
3. The cost does not reflect directional drills under the Susquehanna River nor Interstate 86.
4. The size of the underground wet well was based on providing 24 hours of emergency storage capacity. This is conservative, however, should the force main break, the Town could shut off the pumps and have 24 hours to fix the problem. During the preliminary design phase, utilizing the tanks at the existing Village of Owego Plant should be evaluated as a possible cost savings.
5. The cost to remove the existing wastewater treatment plant was not included. Some of the buildings could be converted to other uses such as maintenance buildings for the Public Works Department.
6. The interest rate and term of the debt are estimated values and does not necessary reflect current market conditions.
7. The Estimated Savings Costs were obtained from the “Village of Owego Annual Update Document for the Fiscal Year Ending 2009.”
8. We assumed that the sludge disposal costs, chemical costs and other minor costs to operate the treatment plant would be transferred to the receiving plant and would not result in much of a net savings.

From Table 1, we estimate that the Estimated Annual Savings to be approximately $388,000 per year. The majority of the savings is from the capital reserves fund needed for the replacement of the existing WWTP including periodic replacement of all of its equipment. Depending on the actual construction and debt costs, the annual savings could varies from $360,000 to $465,000 assuming that the Village will fully fund their capital reserves based on their assets management plan. As previously mentioned, another benefit to eliminating a treatment plant is the cost for future capital improvements to the existing plant is “spread out” among many more users. One drawback is the elimination of capacity for future growth that both plants currently have.

Considering the Village is currently not fully funding the capital reserves, the net savings will not be a significant amount. However, if the existing treatment plant become dysfunctional or obsolete, the elimination of one WWTP could be more feasible.

We have not evaluated transferring the sewage from the Village of Owego WWTP to the Town of Owego Plant No.1 because Plant No. 1 does not have the capacity under their current permit to capture the entire average daily flow from the Village Plant. The combined average daily flow for both
plants would be approximately 1.04 MGD vs. the permitted rate of 0.848 MGD for the Town’s WWTP No. 1. The Town’s WWTP No. 1 could be expanded but the cost for the expansion would probably offset the savings.

We have not evaluated the elimination of the Town’s WWTP No. 1 and transferring the sewage to the Town’s WWTP No. 2. The combined average daily flow for both plants would be approximately 1.6 MGD vs. the permitted rate of 2.0 MGD at WWTP No. 2. While WWTP No. 1 is approximately 8300 feet closer to WWTP No. 2 than the Village of Owego WWTP, the size of the force main, pumps and wet well will be larger due to the higher flows and there would be a river crossing involved. We expect the total costs to be similar to the values in Table 1 however, the expected savings would be less. Currently, personnel are shared between the Town’s two WWTP and their costs would not be eliminated.

Combining all three plants would result in an average daily flow of approximately 2.07 MGD which is slightly higher than the permitted rate of 2.0 MGD at Plant No. 2. This would require an expansion to the existing WWTP No. 2 as well as constructing two pump stations and force mains. Another option is the construction of a more centrally located wastewater treatment plant. For the second evaluation, we assumed a new central wastewater treatment plant will be constructed on the south side of Susquehanna River. The existing three WWTPs will be decommissioned/converted to holding tanks and three pump stations will be constructed. The Town of Owego WWTP No. 2 is located up stream of the proposed centralized WWTP; however, a pump station and force main may be more economical than a large diameter gravity main. A large diameter gravity main would allow for future connections though, for the purpose of this study, costs associated with a pump station and a force main was used.

TABLE 2
Tioga County Sewer Evaluation
Elimination of all 3 WWTP and constructing a new WWTP
11/15/2010

COST TO CONSTRUCT NEW WWTP - 4.0 MGD

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Units</th>
<th>Costs</th>
<th>Extended Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Acquisition</td>
<td>10</td>
<td>Acre</td>
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<td>4.0 MGD Plant Complete</td>
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<td>Misc. Construction and Utility installation</td>
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<td><strong>Sub-Total</strong></td>
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<td></td>
<td><strong>$20,400,000.00</strong></td>
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</table>
### COSTS TO CONVEY THE FLOW FROM VILLAGE WWTP TO PLANT NO. 2

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit</th>
<th>Costs</th>
<th>Extended Costs</th>
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<tbody>
<tr>
<td>14 inch PVC Force Main Installed</td>
<td>48550</td>
<td>Linear Feet</td>
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<td>$2,184,750.00</td>
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<tr>
<td>Surface Restoration</td>
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<td>Directional Drill</td>
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<td>Pump Station</td>
<td>3</td>
<td>Each</td>
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<tr>
<td>Conversion and Demo of Existing WWTP</td>
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<td>Traffic Control</td>
<td>47850</td>
<td>Linear Feet</td>
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</table>

**Sub-Total**  
$9,929,550.00

**Total WWTP and Conveyance**  
$30,329,550.00

- Plus 25% Construction Contingency: $7,582,387.50
- Plus Design and Construction Engineering (12%): $3,639,546.00
- Plus Legal and Administration (6%): $1,819,773.00

**Total Capital Cost**  
$43,371,256.50

- Debt Interest Rate (Percent): 4.50
- Years to Repay Debt: 30
- Yearly Debt Service (4.5% for 30 years): $2,662,628.35

**Annual Operation and Maintenance Costs**

<table>
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<tr>
<th>Item</th>
<th>Costs</th>
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<td>Electricity</td>
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<td>Replacement of Force Maine (30 Years)</td>
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<tr>
<td>Replacement of Pumps (12 Years)</td>
<td>$43,750.00</td>
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<td>Capital Reserve Fund for WWTP</td>
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<tr>
<td>Laboratory Fees</td>
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</tr>
<tr>
<td>Administration Costs</td>
<td>$0.00</td>
</tr>
<tr>
<td>Operations Personnel</td>
<td>$45,000.00</td>
</tr>
<tr>
<td>Operations Office &amp; Billing</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

**Total O&M**  
$959,875.00

**TOTAL ANNUAL COSTS (O&M plus Debt)**  
$3,622,503.35
EXPECTED SAVINGS

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel</td>
<td>$183,700.00</td>
</tr>
<tr>
<td>Employee Benefits</td>
<td>$90,070.00</td>
</tr>
<tr>
<td>Capital Reserve Fund for WWTPs</td>
<td>$1,247,990.00</td>
</tr>
</tbody>
</table>

**Total Expected Savings** $1,521,760.00

**Net Estimated Savings** -$2,100,743.35

Again, after the infiltration & inflow (I & I) problems have been taken care of and the existing WWTPs become outdated or undersized due to growth in the area, the combination of several plants could be economical.

All three wastewater treatment plants are required to meet the new Chesapeake Bay standards which will result in having large capital outlays to each of the plants. The conceptual cost estimate for providing these upgrade ranges from approximately $5,000,000 to almost $12,000,000. The total cost for all three plants is estimated to be approximately $23,500,000. The estimated cost for upsizing the Village of Owego WWTP is approximately 6.7 million which would completely offset the costs of eliminating the treatment plant. However, we don’t expect the Inflow & Infiltration (I & I) problems to be resolved in time to allow the combining of the WWTP to save the upgrade costs unless there are outside funding sources.

The goal to combine the three WWTPs into one, while not currently feasible, could be adopted by the Village and the Town of Owego. Staff from both entities should come together and develop a plan to eliminate one or two of the plants. The plan should have realistic milestones for the entities to strive for. These milestones should include the completion of the slip-lining, replacement of the older sewer mains, the elimination of the combined sewer flows, and the upsizing of the receiving mains to handle anticipated flows. Plans for upgrading the capacity of a treatment plant or constructing a new treatment plant should also be included. Each entity should pay their cost to slip-line/replace the existing mains and the separation of the combined sewers where applicable. However, there could be a savings if both entities came together and issue one bid for slip-lining/replacement. The cost to upgrade the existing mains and treatment plant could be paid for by both entities.

IV. Shared Compost Facility

**Existing Conditions:**

Sanitary sewage sludge is a byproduct of wastewater treatment facilities. The sludge is usually pressed to remove excess moisture, hauled to a receiving site where it is spread on the ground surface. The sludge is rich in nutrients and is tilled into the soil. The result is a soil that is very organic and conducive to non-edible plant growth.

Currently, the Village of Owego, the Town of Owego and the Village of Waverly haul their sludge and pay a fee to a property owner who accepts the sludge. The farther away the disposal property is, the more expensive it is to haul the sludge. There are a limited amount of property owners who are willing to accept the sludge. The Town and the two villages are at the mercy of the property owner who can raise their fees or even refuse to accept any sludge. Also, the federal EPA may be developing more restrictive guidelines for land application of sludge.
The following table summarized the current amount of sludge and the estimated disposal costs for each of the municipalities: *(Revised February 2011)*

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Average Annual Amount of Sludge* in Tons</th>
<th>Total Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town of Owego (Both WWTPs)</td>
<td>900</td>
<td>$43,200.00</td>
</tr>
<tr>
<td>Village of Owego</td>
<td>550</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>Village of Waverly</td>
<td>1080</td>
<td>$51,840.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2530</strong></td>
<td><strong>$105,040.00</strong></td>
</tr>
</tbody>
</table>

*The amount of sludge varies from month to month therefore an estimated annual average was used. Combining the four wastewater treatment plants, approximately $121,000.00 is spent each year in disposing of the sludge.*

**Composting:**

Composting is the biological breakdown of organic waste under controlled conditions. Control conditions differs from natural rotting and decomposition that takes place in sanitary landfill, manure heaps or in an open field. Composting systems can be classified as three general types; oxygen utilization, temperature, and technology. Oxygen utilization is divided into two sub groups, aerobic and anaerobic. Aerobic composting is usually associated with higher temperatures and little or no foul odors. Anaerobic composting is associated with lower temperatures, slower decomposing rates and the production of odorous products. Temperature is divided into mesophilic and thermophilic, while technology is divided into static (pile) or mechanical or "enclosed" (bioreactor) composting. Composting sewage sludge is divided into four basic methods, aerated static pile, windrow, aerated windrow, and in vessel.

The windrow process is the least capital intensive but requires the largest amount of land. The sludge is mixed with bulking agents such as wood chips and is stacked in long parallel rows or windrows. Air movement within the windrows is essential for providing oxygen for the aerobic composting. The aerobic reaction creates heat which in turns cause the air in the windrow to rise and produces a “chimney” effect where air is pulled in the sides. Aerated windrow consists of turning the windrows which will also introduce air and oxygen to the aerobic microorganisms. The equipment needed for windrow process and the aerated windrow process are screens for screening the end product, a front end loader and a grader.

The aerated static pile is similar to the aerated windrow except a larger pile of composting material consisting of sludge and bulking agents is stack in a pile over a system of air pipes. The air pipes are perforated and connected to exhaust fans. These exhaust fans pull air out of the composting pile which facilitates air entering the compost pile from the sides and top. This method provides for more flexible operation and composting times tend to be shorter. The equipment needed in the aerated static pile method is perforated air pipes, exhaust fans, screens for screening the end product and front end loader.

There are numerous mechanical or vessel composting systems. They basically consist of mixing a bulk agent with the sludge and accelerating the composting time by mechanically adding air. There are higher capital and operational costs associated with this type of composting.
Proposed Shared Composting Facility at Village of Owego

The Village of Owego is considering constructing a composting facility near their Wastewater Treatment Plant (WWTP). The site that is being considered is the 6 acres, more or less, located south of Interstate Highway 86 and east of the service road that provide access to their WWTP. The Village of Owego has retained the service of a professional engineer to prepare a Preliminary Engineering Report that includes the construction of the composting facility. It is not our intent to deprecate their effort, therefore, our discussion will be limited to the projected operational costs and the potential savings to each of the municipalities.

The Village of Owego intends to utilize an aerated pile composting method. The village will have to install air pipes, exhaust fans and screens to screen the final product. A supply of bulking agent such as wood chips will have to be found and stored onsite. The compost will be removed and used in flower beds and gardens. It will probably take one person full time to receive the sludge, mix the sludge with the bulking agent, pile the composting material, remove the compost and stockpile the material and load the compost on trucks to be hauled away. The equipment needed consist of a front end loader. The following is a breakdown of the operational costs:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Time Operator including Benefits</td>
<td>$57,000.00</td>
</tr>
<tr>
<td>Fuel and Maintenance of a Front End Loader</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>Electricity</td>
<td>$10,000.00</td>
</tr>
<tr>
<td><strong>Total Operational Costs:</strong></td>
<td><strong>$87,000.00</strong></td>
</tr>
</tbody>
</table>

*We assumed the Village will be able to obtain a source of bulking agent at a very low cost or free.

Base on approximately 2530 tons of sludge, the operational costs per ton to compost will be $34.39 per ton. In addition to the above estimated operational costs, there will be transportation costs associated with the transporting the sludge from the Town of Owego facilities and from the Village of Waverly facility.

There will be a net increase in costs for the Village of Owego while probably a slight decrease in the net cost for the Town of Owego and the Village of Waverly. Except for the cover building, the capital cost will be small and the Village of Owego should be able to recover the capital cost with a very small surcharge.

Currently, the Village of Owego spends approximately $10,000 per year to land apply their sludge. Their average costs are considerably lower than the other two municipalities. It is not feasible for the Village to construct the compost facility considering their current disposal site however, this could change in the future. The land application site could refuse to accept their sludge and the Village’s average cost could be similar to the other two municipalities. At that point, a shared compost facility will be more feasible.

In light of anticipated future costs, the Village of Owego is currently pursuing the land acquisition for the shared composting facility. As a part of this study, draft versions of the Inter-municipal Agreement between the Village of Owego and both the Town of Owego and the Village of Waverly have been completed. Copies of the draft for the Inter-municipal Agreement are located in Appendix B. The attorneys for the Village of Waverly and the Town of Owego have reviewed and approved the draft IMAs for future use. Prior to finalizing the IMAs, the Village of Owego fees for composting must be financially favorable to the Village of Waverly and the Town of Owego.
V. Preliminary Engineering Report for the Village and the Town of Nichols

A Preliminary Engineering Report has been prepared which evaluated three different options for providing sanitary sewer for the Village of Nichols and the surrounding area within the Town of Nichols. A copy of the Preliminary Engineering Report is located in Appendix C. The following are excerpts from the Preliminary Engineering Report.

1) Base Study Area

The base study area for the Village of Nichols includes the main Village area including portions of Bliven Street, Cady Avenue, Dean Street, Howell Street, Johnson Street, Kirby Street, North Main Street, South Main Street, Platt Street, East River Road, Roki Blvd., Taylor Street and Walnut Street plus the extension of service to the existing homes located in the Town of Nichols on Main Street and Roki Blvd. south of the Village limits. The study area also includes the residences located along River Road in the Town of Nichols between the Village of Nichols and the Lounsberry wastewater treatment plant. Refer to Figure 1 in the Preliminary Engineering Report for the approximate location of the study areas.

2) Current Development within Study Area.

Within the Village of Nichols, there are 204 residential homes, an apartment complex, 29 businesses, 4 churches, 2 Town Facilities and a Post Office. Within the study area that is outside of the Village of Nichols, there are several agricultural businesses and 103 homes.

As of the 2000 census, there were 574 people residing in the Village of Nichols. The estimated population in 2008 is 534. As of the 2000 census, there were 2,584 people residing in the Town of Nichols. The Town's estimated population in 2008 is 2,492.

U.S. Census Bureau 2000 statistics identify the Village median household income as $41,667 (corrected to 1999 dollars). The Village’s median household income is approximately 4% lower than the New York State median income ($43,393) and about the same as the U.S. median household income of $41,994. The Town’s median household income is $37,372. The Town’s median household income is approximately 14% lower than the New York State and about 11% below the U.S. median household income.

We estimate there are 396.1 equivalent dwelling units (EDUs) within the Village and the Town of Nichols study area.

3) Alternatives Considered

As a part of this study, we have considered providing a wastewater collection for all areas within the Study area. There were three alternatives that were considered. The first alternative is the installation of gravity sewer mains within the Village area with a sewage pump station to pump the flows to the Lounsberry treatment plant. The second alternative considered the replacement of the existing septic tanks with grinder pumps and pump pits, installing smaller force mains and the installation of a sewage pump station to pump the flows to the Lounsberry treatment plant. The third alternative considered leaving the individual septic tanks in place and installing ejector pumps, force mains and the sewage pump station to pump the flows to the Lounsberry treatment plant. All alternatives assumed that the Lounsberry wastewater treatment facility will require upgrades to be able to treat the sewage from the study area.

The Lounsberry wastewater treatment plant has a capacity of 40,000 gallons per day. Currently, during the fall months, the average peak flow into the wastewater treatment plant is approximately 2,800 gallons per day. The Truck Stop at the Lounsberry exit is being connected to the system. Their projected flow is approximately 1000 gallons per day. The anticipated average peak daily flow without the study area is 3,800 gallons per day. The estimate daily flow from the study area is approximately 115,000 gallons per day.
Selection of an Alternative
As the following table illustrates, the gravity option has the most capital cost but the least O & M costs. The projected monthly user fees for all three alternatives are within the margin of error for our evaluation. Therefore, all three alternatives are equivalently the same monthly cost.

### Village of Nichols - Summary Table

<table>
<thead>
<tr>
<th></th>
<th>Expanded Area with Gravity</th>
<th>Expanded Area with Grinder Pumps on River Road</th>
<th>Expanded Area with Effluent Pumps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Capital Cost</strong></td>
<td>$10,395,645.00</td>
<td>$9,986,860.00</td>
<td>$9,503,260.00</td>
</tr>
<tr>
<td><strong>Yearly Debt Service (2.5% for 38 years)</strong></td>
<td>$575,936.32</td>
<td>$553,288.94</td>
<td>$526,496.68</td>
</tr>
<tr>
<td><strong>Total Annual O &amp; M</strong></td>
<td>$212,000.00</td>
<td>$243,270.83</td>
<td>$256,861.67</td>
</tr>
<tr>
<td><strong>Total Annual Debt Service and O &amp; M</strong></td>
<td>$787,936.32</td>
<td>$796,559.78</td>
<td>$783,358.35</td>
</tr>
<tr>
<td><strong>Number of EDUs</strong></td>
<td>396.1</td>
<td>396.1</td>
<td>396.1</td>
</tr>
<tr>
<td><strong>Annual Cost per EDUs</strong></td>
<td><strong>$1,989.24</strong></td>
<td><strong>$2,011.01</strong></td>
<td><strong>$1,977.68</strong></td>
</tr>
<tr>
<td><strong>Estimated Monthly User Fees</strong></td>
<td>$165.77</td>
<td>$167.58</td>
<td>$164.81</td>
</tr>
</tbody>
</table>

4) **Formation of a District**
We recommend the formation of a district to be in charge of running the operation of the pump station and wastewater treatment plant. There are several ways to form a Sewer District that will provide service to the residents of both the Village of Nichols and the Town of Nichols. Both, the Village and the Town could form separate districts and the districts could work together thru an Inter-Municipal Agreements (IMA). Or both municipalities could form a Special Sewer District that is administered by a Sewer Board. The latter is our recommendation.

5) **Decision by the Town of Nichols and the Village of Nichols**
The Preliminary Engineering Report was presented to the Town of Nichols Town Board and the Village of Nichols Village Board at a joint meeting held on May 21, 2010. The mutual decision was the projected end user costs without grants were not economically viable for their constituency. Substantial grants will be needed before the boards will consider the project.

VI. **Assets Management Plan for the Town of Nichols, Town of Owego and Village of Owego WWTP**

The Town of Nichols, the Town of Owego and the Village of Owego provided lists of their current equipment used in their wastewater treatment plant and their total length of sanitary sewer mains. Assets Management Plans has been completed for these municipalities using Microsoft Office Excel 2007 format and they are located in Appendix D, E and F respectfully. One very important item that is associated with an assets management plan that is not reflected in the spread sheets is knowledgeable personnel. There are estimates that over 1/3 of all operators in New York will retire in the next 5 to 8 years. The demands for qualified operators will be high. The Towns and the Village should consider training a replacement for their operators. The following are our findings from the Assets Management Plans that we prepared.
Town of Nichols Lounsberry WWTP

The Lounsberry WWTP was constructed in 2002 to provide service to the Best Buy Distribution Warehouse Center as well as future development in the area. Due to economic conditions, the anticipated future development has not materialized to date. However, a potential training/educational user is currently developing plans to construct a facility approximately 1000 feet northeast of the Best Buy Distribution Warehouse Center. Currently, the Best Buy Distribution Warehouse Center is the only service on the sanitary system. The Best Buy Distribution Warehouse Center has both full time and seasonal employment.

The Lounsberry WWTP has a design capacity of 40,000 gallons per day. However, the amount of flow to the WWTP varies from approximately 1,200 gallons to 2,800 gallons per day depending on the number of seasonal employees. Precise information on a potential new user to the northeast of the Best Buy Distribution Warehouse Center is not available to us at this time however, based on the limit information, the user will generate approximately 10,000 gallons per month in sewage. This equates to approximately 330 gallons per day. The existing truck stop located to the west of the Best Buy Distribution Warehouse Center has a sanitary sewer stubbed to their site. However, the truck stop is not currently connected to the sewer system. They are utilizing an onsite septic disposal system. From a water meter located on their well, the truck stop uses approximately 1000 gallons of water per day. In the near future, the Lounsberry WWTP could have average daily flows approaching 2,500 gallons per day to 4,100 gallons per day. Even with a flow rate of 4,100 gallons per day, the equipment at the treatment plant is not being utilized to its fullest. The flow into the plant is very small compare to the plant’s capacity causing the operator to have problems with freezing and ice damaging the equipment.

The assets management plan for the Lounsberry’s wastewater treatment plant is presented in Appendix D. The estimated annual funding required for capital reserve is $302,778.00. This amount is based on the EPA recommended useful life for the equipment. Since the WWTP is not operating near capacity, the actual life of the equipment will be longer and the required capital reserve fund amount will be less.

An immediate concern for the Town of Nichols is the funding of the normal operational costs for the wastewater treatment plant. Currently, the operational cost for the treatment plant is approximately $53,000.00 per year. According to the agreement between Best Buy and the Tioga County IDA, Best Buy will pay a flat fee to the Town until 2012. The fee that Best Buy is paying is covering the annual operational costs for the wastewater treatment plant. However, starting in 2012, the Town of Nichols will need to assess user fees to pay for the operational and maintenance costs. To assess one user $53,000 per year for operational costs and $302,778.00 per year for maintenance costs is not economically feasible. Even assessing one user $53,000 per year to cover the operational costs is not economically feasible. Best Buy could construct an onsite disposal system (septic system) for approximately the cost of one year fee.

Assuming the truck stop and the user to the northeast of the Best Buy Distribution Warehouse Center connects to the sanitary sewer, the total anticipated annual flow would be approximately 1,067,000 gallons. The operation costs per gallon will be approximately $ 0.05 (5 cents). The Best But Distribution Warehouse Center sewer bills for the slower months would be approximately $1,800.00 per month and approximately $4,200.00 for the seasonal months. The existing truck stop sewer bill would be approximately $1,520.00 per month while new user to the northeast of the Best Buy Distribution Warehouse Center would pay $500.00 per month. These projected fees are very high. Below is a table comparing the projected monthly fees with the fees in the Town of Owego, Village of Waverly and the Village of Owego.
Estimated Monthly Sewer Fees Comparison – Revised Feb. 2011

<table>
<thead>
<tr>
<th>Sewer System</th>
<th>Location</th>
<th>Best Buy - Low</th>
<th>Best Buy - High</th>
<th>Truck Stop</th>
<th>New User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town of Nichols</td>
<td>In Dist.</td>
<td>$1,800.00</td>
<td>$4,200.00</td>
<td>$1,520.00</td>
<td>$500.00</td>
</tr>
<tr>
<td>Town of Owego</td>
<td>Consolidated</td>
<td>$149.20</td>
<td>$339.00</td>
<td>$125.48</td>
<td>$46.00</td>
</tr>
<tr>
<td></td>
<td>Route 36</td>
<td>$421.63</td>
<td>$981.29</td>
<td>$352.29</td>
<td>$117.31</td>
</tr>
<tr>
<td>Village of Waverly</td>
<td>Waverly</td>
<td>$93.40</td>
<td>$217.00</td>
<td>$77.95</td>
<td>$26.19</td>
</tr>
<tr>
<td>Village of Owego</td>
<td>In Town</td>
<td>$277.72</td>
<td>$644.62</td>
<td>$231.85</td>
<td>$78.21</td>
</tr>
<tr>
<td></td>
<td>Outside</td>
<td>$335.17</td>
<td>$730.70</td>
<td>$285.73</td>
<td>$120.10</td>
</tr>
</tbody>
</table>

The Town of Nichols will have to make a very difficult decision in the near future. They do have several choices. They can impose a fee on the current and any future users based on their operation costs divided by the average monthly flows. This could result in Best Buy developing their own system and requesting to drop out of the Sanitary Sewer District. It could result in making the surrounding area undevelopable and resulting to the eventual closure of the WWTP. The Tioga County Industrial Development Agency as well as the Town of Nichols own developable land within the service area of the WWTP. If the WWTP is closed, it will be detrimental to the development of these parcels. These parcels would be greatly devalued and the possibility of future development would be nullified.

The Town of Nichols could seek a greater number of users to share the costs. The national economic outlook does not look bright. Except for the new user located northeast of the Best Buy Distribution Warehouse Center, it is not likely additional industrial users will be located in the service area in the immediate future. The Preliminary Engineering Report for the Village of Nichols indicates the user costs is high enough to be unfeasible. However, it might be feasible to install a low pressure force main system along a portion of River Road in order to include more users. These potential users along River Road would be residential customers.

**Village of Owego WWTP**

The Village of Owego wastewater treatment plant last major upgrade was in 1983. The majority of the equipment that was purchased in 1983 is still operating. Most of the equipment has an expected useful life between 10 to 15 years. The fact that most of the equipment has lasted 27 years is an indication that the staff has taken care of the equipment and has save the community funds to replace the equipment. However, the Village needs to plan for a major upgrade to the treatment plant.

Modifications to the wastewater treatment plant are necessary to meet the Chesapeake Bay requirements. The Village should plan on a major upgrade to the treatment plant at the same time the Chesapeake Bay modifications are made. There should be significant savings by combining both, the upgrade and the modifications under one contract.

The Village of Owego has approximately 18 miles of aging sanitary sewer mains. A good portion of the pipe is clay pipe with the remainder being concrete and PVC pipe. While clay pipe is more inert than the other pipe material, it typically does not last as long. Clay pipe joints trend to decay over time allowing both infiltration and exfiltration. Clay pipe can develop cracks over time which could also lead to infiltration as well as structural failure. The Village should start planning on funding the slip-lining or replacement of all of the clay pipes. The concrete and PVC pipes should last longer than clay pipe depending of soil conditions. However, the EPA’s expected life for all sewer pipe is between 35 to 40 years. The Village should start funding the future replacement of all of the sewer mains.
Between the necessary upgrade to the WWTP, not including the Chesapeake Bay required upgrades, and the replacement of the sewer mains, we estimate that the Village will have to place approximately $2,170,000 into a sinking fund each year. While this amount of funding is not feasible for a community the size of Owego, the value shows that the WWTP modifications will need to be funded with grants and/or loans. The funding for the replacement of pipe and equipment should be from other sources including user fees. Currently, the Village of Owego has sewage fee lower than the New York State maximum rate guidelines.

Town of Owego WWTPs

The equipment at the Town of Owego wastewater treatment plants is not very old. Other than an update to meet the Chesapeake Bay requirements, a major plant update should not be necessary for either WWTP within the next few years. Currently, the Town of Owego has a capital reserved fund for the some of the equipment. This fund could be expanded to include funding the replacement of all of the equipment.

The Town of Owego has approximately 40 miles of aging sanitary sewer mains. As mentioned previously, these mains have an expected life between 35 to 40 years. The Town should plan on replacing or slip-lining the existing sanitary sewer mains and should create a capital reserve accordingly. One issue with the replacement of the sanitary sewer mains is its impact to the surface and associated restoration. Most of the sanitary sewers are located beneath streets. Replacing the sewers will require patching the existing pavement or reconstruction of the street. The cost for street reconstruction will have a significant impact on the capital reserve for the sanitary sewer mains. The Town may consider having the cost for street reconstruction within the Public Works budget and having the Sanitary Sewer budget for only the costs associated with replacing the mains.

Not including the necessary upgrade to the WWTP to meet the Chesapeake Bay requirements, the sinking fund to cover the replacement costs for the current equipment and the replacement of the sewer mains is estimated to be approximately $3,323,905 each year for the next 40 years. This amount of annual funding will need to be from other sources including user fees. Currently, the Town of Owego has a sewage fee lower than the New York State maximum rate guidelines. There is some room to adjust the fees to partially fund the capital reserve fund.

A secondary issue is the cost for repairing the sanitary sewer laterals. The sanitary laterals could be a major source of infiltration. The replacement of the laterals within private property is usually the responsibility of the property owner. However, most property owners are not interested in replacing something that they don’t see and many homeowners are not financially capable to pay for the replacement costs. The Town will need to develop an affordable mechanism where damaged laterals are replaced at the same time the sanitary mains are replaced.

VII. Alternative Sources of Funding

A very important factor for these communities is being able to acquire affordable sources of funding for their wastewater projects. For larger projects, communities will need to look at different combination of funding and grants. A project may be eligible for a Community Development Grant to pay for a portion of the project and the remainder is finance as a loan from NYSEFC or self-finance. The following are possible sources for funding wastewater projects:
**Municipal Funding:**

**Issuing Bonds** – The municipal government can issue tax exempt bonds that are secured by several mechanisms including mil levy, general revenue and specific revenue sources like sewer department revenue from user fees and tap fees. The municipality could impose tap fees on new construction to help cover the cost of the infrastructure. Typically, the cost of a wastewater treatment plant is divided by the number of taps or anticipated number of taps to arrive at a tap fee. The disadvantage with tap fees is that it can discourage development within the municipality.

**Tax Credit Bonds** – The Federal Government is allowing municipal government to issue tax credit bonds instead of tax exempt bonds. Instead of paying interest that is exempt from income tax, the bond would issue a tax credit that the holder could use to reduce their taxes. This will result in a zero interest rate for the municipality issuing the bonds.

**Federal Funding:**

**EPA/New York State Environmental Facilities Corporation** – The EPA issues loans and grants through the NYS EFC for wastewater projects including biosolids (sludge) composting facilities. The funding for the composting facilities could either be a part of a larger construction project or a “stand alone” project.

NYSEFC offers long term financing up to 30 years and depending on their program, they can offer a subsidized interest rate of 50% of the AAA bond interest. Financially disadvantaged communities could receive a reduced interest rate as low as 0%.

In addition to the above listed programs, EFC has “Green Innovation Grant Programs” that will fund 50 percent of the design and 90 percent of the construction cost up to $750,000. Disconnection of downspouts from combine sewers are eligible however, an innovated process needs to be a part of the scope. For instance, the downspout is connected to a bio-treatment facility that removes pollutants. Innovated improvements to wastewater treatment plants could also be eligible.

**USDA-Rural Development** – The USDA issues loans and grants to municipalities with population less than 10,000. One important issue with USDA – RD funding is their policy on their grants. USDA-RD determines the amount of grants a project should receive and they will subtract other state and federal grants that have been obtained by the municipality for that project. For instance, if USDA-RD offers a village $500,000 in a form of a grant and the remainder in a loan and the village is able to obtain an ARC grant for $150,000, USDA will reduce their grant to $350,000.

Rural Development loans can have a term of 38 years. There is a 3 tier interest rate depending on the Medium Household Income for the service area. Their interest rates are:
- Market Rate
- Intermediate Rate (80% of market rate)
- Poverty Rate (60% of market rate)

More detailed information on USDA-Rural Development grants and loans are located in Appendix G.

**Other Sources of Funding:**

**Appalachian Regional Commission (ARC)** – offers matching grants up to $150,000 for wastewater projects. The municipality must raise or obtain a loan for at least $150,000 to match the grant.
**New York State Division of Housing & Community Renewal (Small Cities)** – With the Community Development Block Grant (CDBG) Program, towns and villages are eligible to receive up to $600,000 for Public Infrastructure (sewer) projects. Towns and villages must have a population under 50,000. Counties with unincorporated population under 200,000 are eligible to receive up to $750,000 for Public Infrastructure. At least 51% of the persons benefiting from the project must qualify as low- and moderate-income, as determined by the U.S. Census or an income survey.

**The New York State Energy Research and Development Authority (NYSERDA)** – The Existing Facilities Program offers up to $30,000 in incentives to replace older equipment with more energy efficient equipment. NYSERDA also offers up to $1,000,000 in financial incentives in their Anaerobic Digester Gas-to-Electricity Program.

**NYSDEC Municipal Waste Reduction and Recycling Program (MWR&R)** – Offers grants up to 50 percent of the costs associated with Recycling Centers and Composting Facilities.

**Banks** – The community can apply at commercial banks for loans. The interest rates could be higher than other programs.

**Conclusions and Recommendations**

**Conclusions:**

Combining wastewater treatment plants in the Owego area is currently not feasible due to the large amount of infiltration that each of the treatment plants are experiencing. Once the infiltration problem has been resolved, then combining the treatment plants could be feasible if one of the plants is requiring a major upgrade or rehabilitation.

Constructing a shared biosolids composting facility could be feasible depending on the capital cost to construct it. There are grants available that will pay up to 50 percent of the capital cost of a composting facility. The Village of Owego has indicated that they are willing to construct the shared composting facility if they could recover some of their operational costs. Both the Town of Owego and the Village of Waverly have indicated their willingness to pay the Village of Owego to compost their sludge depending on their fees (see letters of support located in Appendix B). As future regulations on land application of sludge are imposed, the cost of land application will increase making composting even more feasible.

The Village of Owego has contracted with an appraiser to obtain the fair market value of the property at the proposed location of the shared compost facility. When the appraisal is complete, the Village intends to enter into negotiations with the owner for the purchase of the property. The Village would like to construct a composting facility similar to the Madison County’s composting facility except the Village is planning on constructing one building instead of three.

Utilizing the Lounsberry wastewater treatment plant to provide service to the Village of Nichols and the surrounding area is not feasible without grant money. Currently, there are not grants large enough to make this option feasible. Federal funding of wastewater projects changes from year to year. Should large grants become available, the Village/Town of Nichols should consider the proposed project. Continuing to operate the Lounsberry wastewater treatment plant is not economically viable unless additional customers are added.

The Village of Owego wastewater treatment plant is functioning, however, most of its equipment is past its expected life. The Village is planning for a major upgrade or reconditioning to their wastewater plant. The Town of Owego WWTPs are functioning with equipment that is within their...
expected life. The Town of Nichols’ Lounsberry WWTP is functioning very inefficiently with minimal flow and may need to be reconfigured in the near future for cost efficiencies.

Recommendations:

Combining the wastewater treatment plants in the Owego area should be a goal of the Town and Village of Owego. The first step is for each municipality to invest in solving their infiltration problems. The Village of Owego also needs to eliminate their combined sanitary/storm sewers. This task will require a major investment and will probably result in higher user fees or a mil levy on the property tax. Once the plans for reducing infiltration and combined sewer problems are formulated, the municipalities can start discussing the combining of the treatment plants.

Several of the operators have mentioned that communications between operators have been very good. There is a potential for cost savings if they could buy their supplies in bulk. To continue the communications, an informal meeting could occur at least quarterly if not monthly, where all of the operators within the county can meet to discuss their problems. At these meetings, they could discuss their supplies and how they could save money. They could also use the meeting to discuss equipment needs and selling of used equipment.

On a more formal basis, the wastewater treatment operators should form a technical committee to review future wastewater treatment facilities including pump stations within the county. The Tioga County Planning and Health Departments could require a proposed wastewater facility to be reviewed by the committee. The committee could discuss a treatment facility versus a pump station connection to an existing facility and make recommendations to the departments. As the development occurs, having such a committee in place would reduce the number of future treatment facilities and make sure existing WWTPs are utilized efficiently.

The leaders of the communities could come together to discuss the forming of a sewer authority/commission to deal with the sewer issues on a regional basis. Commissions and authorities require significant time and financing to create and, usually, they do not use the full powers granted to a commission or authority. Typically, an authority or commission is established through home rule request by the county to its delegation in the State Legislature. The general consensus has been that efforts of the legislature would be better put to use in finding monies necessary to complete smaller projects within the county than the effort that it would take to pursue the formation of a commission or an authority. If the formation of a commission or an authority is pursued, there is no guarantee that it will be successful. Consequently, such an endeavor could be potentially costly if the push for the creation of such an entity is not successful.

In lieu of the potential hurdles associated with the forming of an authority, the communities should develop an inter-municipal sewer district. Inter-municipal sewer districts are the most common method of administering centralized controlled sewer infrastructure. Inter-municipal sewer districts will take advantage of economies of scale by removing redundant tasks currently completed by the individual municipalities, provide a centralized staff, and potentially provide better financing abilities (higher bond ratings) while being able to protect the region’s largest resource.

The centralized controlling body of inter-municipal sewer district can provide the potential for more efficient use of resources; however, each community would lose control of their sewer system including all maintenance, staffing, and improvements associated with it. Although, a centralized controlling body of the sewer infrastructure may not be desirable, inter-municipal sewer districts offer substantial benefits that warrant a deeper investigation into the applicability of this administrative structure in conjunction with the cooperative efforts.
An inter-municipal sewer district can be accomplished by first strategically identifying an area where property owners would be in favor of an inter-municipal district as the creation of an inter-municipal district may be subject to a referendum. This small district would simply act as a forum for thoughtful county-wide discussions with minimal costs. Once formed, the district could take on additional costs as warranted. The inter-municipal sewer district will have a governing board consisting of the leaders in the communities that is being served. The surrounding municipalities could retain control and autonomy over their respective systems with the newly created inter-municipal district through the use of inter-municipal agreements.

This will lay the groundwork for the creation of a complete inter-municipal sewer district, which will allow the established district to take control of the municipal systems when it is economically warranted. The inter-municipal sewer district can take over the municipal systems in the long run when combining resources and sharing significant upgrade costs becomes economically feasible rather than continuing to duplicate efforts.

A difficult item that the inter-municipal sewer district will have to deal with is the user fees. Currently, the average sewer fees for the Town of Owego are considerably lower than the Village of Owego. A sewer district typically charges the same rates for residents within the district boundaries. If the proposed inter-municipal sewer district rates are higher than the Town of Owego rates, it could be a deterrent to the Town inclusion in the district.

The Village of Owego is interested in constructing a shared composting facility near their wastewater treatment plant. The Village should seek grants from MWR&R as well as funding from the EPA/NYSEFC for their project.

The Town of Nichols, the Town of Owego and the Village of Owego should either create or increase their capital reserves to fund their wastewater assets replacements. Funding the capital reserves will need to come from different sources including increases in the user fees and mil levy. A properly functioning community wastewater system adds value to a property including vacant land. Several communities in the State of New York were contacted regarding their sewer rates. A summary table is located in Appendix H. Based on an average yearly usage of 65,700 gallons (180 gallons per day) for a residential user, the calculated average user fee for the Town of Owego Districts 1 thru 5 is $325.35 per year. While this value is higher than some of the surrounding cities, it is lower than some of the cities and villages in the finger lake region. The Town could adjust their fees modestly over several years to increase their capital reserve funds.
APPENDIX A

LOCATION MAPS
APPENDIX D
TOWN OF NICHOLS ASSETS MANAGEMENT
APPENDIX G

DETAIL FUNDING INFORMATION
APPENDIX H

SEWER RATES
APPENDIX I

PUBLIC MEETING NOTES & REVISED TABLES
APPENDIX J

ADOPTED MUNICIPAL RESOLUTIONS