Town of Thompson's Station
Utility Board
Meeting Agenda
February 26, 2020 6:00 p.m.

Call Meeting To Order

1. Consideration Of The Minutes Of The January 15, 2020 Utility Board Meeting.

Documents:

ITEM 1 UB MINUTES 01_15_20.PDF

2. System Operator's Update:

3. I & I Update:

4. Hill Property Drip Field Construction Update:

5. Endorsement Of Barge Design Solutions Professional Service Agreement For The Regional Wastewater Treatment Plant, MBR (Membrane Bio-Reactor) Design Project And Upgrades:

Documents:

ITEM 5 - REGIONAL_WWTP_CONTRACT_COVER_LETTER.PDF
ITEM 5 - BARGE DESIGN PROFESSIONAL SERVICES AGREEMENT WWTP_DRAFT_CONTRACT_FEB2020.PDF

6. Endorsement Of An Ordinance 2020-XX: Wastewater Capacity Reservation System And An Ordinance Of The Town Of Thompson's Station, Tennessee To Amend Title 18 (Ordinance No. 10-XX Pursuant To Title 18, Chapter 1, Regarding Reservation Policy Wastewater Capacity):

Documents:

ITEM 6 - BARGE WASTEWATER CAPACITY RESERVATION SYSTEM MEMORANDUM.PDF

Adjourn

This meeting will be held at 6:00 p.m. at the Thompson's Station Community Center
1555 Thompson's Station Rd West

Town of Thompson's Station
Utility Board
Meeting Minutes
January 15, 2020 6:00 p.m.

Call to Order:
The meeting of the Utility Board of the Town of Thompson's Station was called to order at 6:00 p.m. on January 15, 2020 at the Thompson's Station Community Center with the required quorum. Members and staff in attendance were: Chairman Jeff Risden, Alderman Brian Stover, Bruce DiFrancisco, Joe Whitson, Skip Beasley, Brad Wilson, Town Administrator Ken McLawhon, Finance Director Steve Banks, Town Recorder/Clerk Regina Fowler and Town Attorneys Andrew Mills and Kirk Vandivort.

Minutes:
Consideration of the minutes of the December 18, 2019 regular meeting were presented.
Mr. Stover made a motion to approve the December 18, 2019 regular meeting minutes. The motion was seconded and carried unanimously.

1. **System Operators Update:**
   Town Administrator Ken McLawhon noted there were no major changes.

2. **Update on Cell 1:**
   Town Administrator Ken McLawhon noted there were no major changes.

3. **Hill Property Construction Update:**
   Matthew Johnson, Barge Design noted that half of the drip tubing footage has been installed. MTEMC met onsite and the acceptance of the easement on the portion of the access road where access has been cleared was completed. W & O has installed approximately 600' of the road and the first creek crossing has been completed. In the near future they will finish tubing, complete the access road for MTEMC and the continuation of the pipework and header pipe. The access road for MTEMC will be completed. According to W & O, inclement weather days in December has been an issue however, Barge will be addressing these issues with them. The completion date will change due to inclement weather days.

4. **Smoke Testing Results for Canterbury:**
   Matthew Johnson, Barge design reported that no main line defects were detected. Of the thirty eight defects found, thirty six of those may need replacement cleanout caps which is a cheap and easy fix. The other two defects may be related to sewer services which will warrant further investigation. Determination will need to be made as to whether it is from the private or public side. These issues may warrant closed circuit tv. As a result, the following recommendations may be applicable, if not cleanout cap related it won't be an easy fix. Discussion will need to take place to determine how to handle the situation. If it is determined the defect is from the public side, a different type of discussion will need to take place to determine how it needs

To be handled. As a last resort, additional pump station data will need to be examined for any anomalies. Barge is not currently contracted to analyze any new data. That would entail additional discussion.

5. **MTAS Rate Fee Study Results:**
   Ralph Cross with MTAS presented the following Wastewater Utility Revenue Sufficiency Study with consideration of Developer Contributions.

MTAS Mission:

- Update and expand the multi-year financial analysis of the wastewater utility from 2/18.
- Consider the financial impact of the updated capital improvement plan (CIP).
- Evaluate impact of new debt issued to fund the CIP.
- Evaluate the depreciation costs for the updated CIP.
- Recommend the amount of additional revenue required to comply with state mandates.

The Town of Thompson's Station is responsible for essential, complex, costly and highly regulated assets - EPA - TDEC - WWFB

Customer base is growing.

Where to Start

- Review the state requirements for the financial operation of public utilities.
- Focus
    - Bonded Debt
    - Total Net Position
    - Change in Net Position

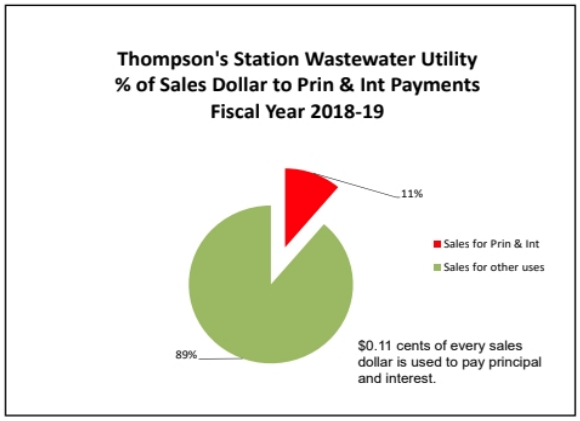
Proprietary Fund

State Funding Requirements

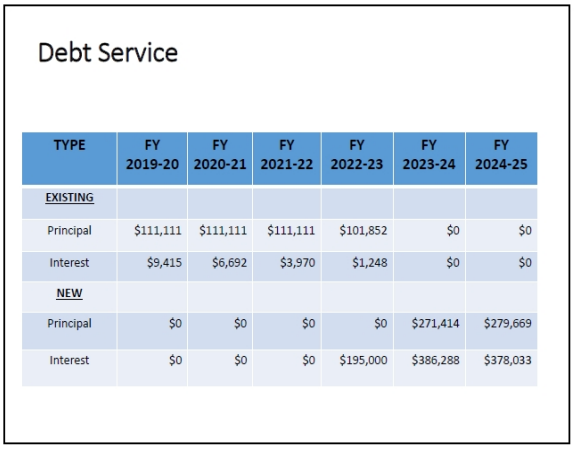
- Wastewater Facilities Act of 1987
    - Created a Board to oversee financially distressed water/wastewater systems
    - Financial Distress:
        - Default on debt
        - Deficit in total net position
        - 2 consecutive years of negative change to net position
- Utilities under Board's oversight must submit a plan to eliminate losses or cure the default.

Debt/Debt Service

Existing Debt Service
Amortized principal and interest payments on outstanding debt.
Future Debt Service
Additional principal and interest payments projected on debt to be issued in the amount of $13 million planned for Fiscal Year 2022-23.

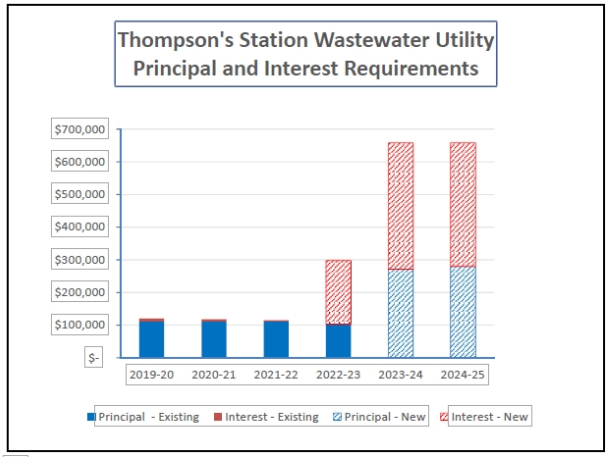


8



Debt Service

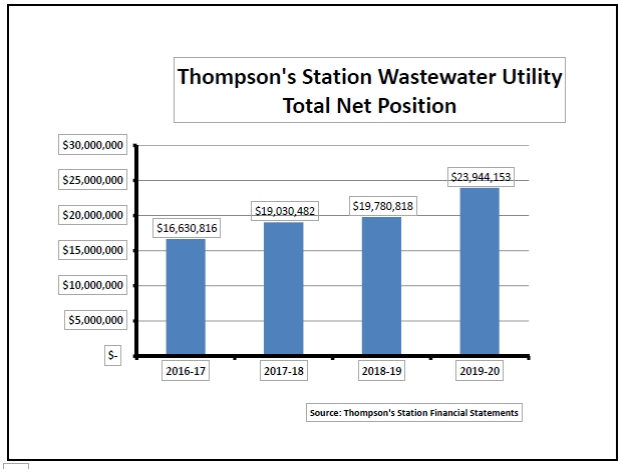
TYPE	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
EXISTING						
Principal	$111,111	$111,111	$111,111	$101,852	$0	$0
Interest	$9,415	$6,692	$3,970	$1,248	$0	$0
NEW						
Principal	$0	$0	$0	$0	$271,414	$279,669
Interest	$0	$0	$0	$195,000	$386,288	$378,033



Total Net Position

Review of Total Net Position

"Total Net Position" has experienced growth for the past three fiscal years and is expected to increase again in FY 2019-2020.



Changes in Net Position/Review of "Changes in Net Position"

The Governmental Account Standards Board (GASB) and the State of Tennessee have different definitions for the term "Changes in Net Position".

GASB Definition of Change in Net Position

- **Items that have a positive effect on net position**
  - **Positive income from operations**
  - **Positive nonoperating revenue (interest earnings)**
  - **Grants**
  - **Contributions**
  - **Items that have a negative effect on net position:**
  - **Negative income from operations**
  - **Nonoperating expenses (interest payments)**
  - **Transfers out**

Town of Thompson's Station
Wastewater Utility Financial Review

	FY 2016-17	FY 2017-18	FY 2018-19
Operating Revenue	$873,635	$972,721	$1,140,000
Operating Expenses	$1,105,810	$988,163	$898,274
Operating Income(Loss)	($232,175)	($15,442)	$241,726
Nonoperating Rev (Exp)	($10,942)	$22,126	$6,110
Income (Loss) Before Contr	($243,117)	$6,684	$247,836
Capital Contributions	$2,750,000	$1,861,468	$0
Capital Contr – Tap Fees	$849,914	$531,514	$502,500
Changes in Net Position *	$3,356,797	$2,399,666	$750,336

**Change in Net Position as defined by the Governmental Accounting Standards Board*

Financial information from Town of Thompson's Station Audited Financial Reports

State of Tennessee Definition of Change in Net Position

- Items that have a positive effect on net position:
  - Positive income from operations
  - Positive nonoperating revenue (interest earnings)
  - Grants
  - Contributions
- Items that have a negative effect on net position:
  - Negative income from operations
  - Nonoperating expenses (interest payments)
  - Transfers out

Town of Thompson's Station
Wastewater Utility Financial Review

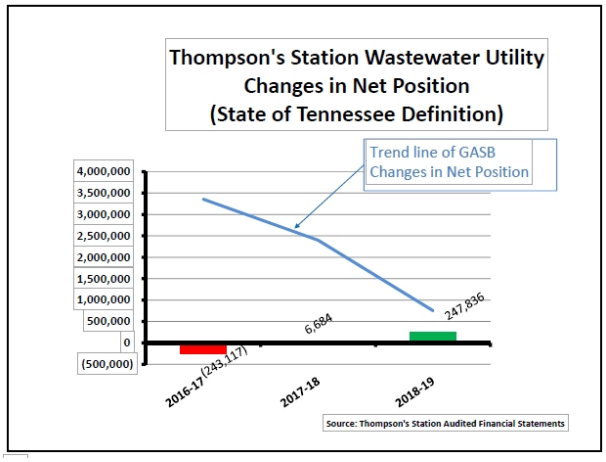
	FY 2016-17	FY 2017-18	FY 2018-19
Operating Revenue	$873,635	$972,721	$1,140,000
Operating Expenses	$1,105,810	$988,163	$898,274
Operating Income(Loss)	($232,175)	($15,442)	$241,726
Nonoperating Rev (Exp)	($10,942)	$22,126	$6,110
Income (Loss) Before Contr	($243,117)	$6,684	$247,836
Capital Contributions	$2,750,000	$1,861,468	$0
Capital Contr – Tap Fees	$849,914	$531,514	$502,500
Changes in Net Position *	$3,356,797	$2,399,666	$750,336

*Change in Net Position as defined by the State of Tennessee

Financial information from Town of Thompson's Station Audited Financial Reports

Comparison of the Difference in Definitions of Change in Net Position

	FY 2016-17 Audit	FY 2017-18 Audit	FY 2018-19 Audit
State of TN	($243,117)	$6,684	$247,836
GASB	$3,356,797	$2,399,666	$750,336



OBSERVATION

Thompson's Station Wastewater Utility has experienced an upward trend in income while changes in net position, as defined by GASB, show a significant decline for the last two fiscal years.

Looking to the future/Capital improvements needed for the wastewater system prioritized.

Town of Thompson's Station
Wastewater Utility Capital Projects

DESCRIPTION	PROJ COST FY 2019-20	PROJ COST FY 2020-21	PROJ COST FY 2021-22	PROJ COST FY 2022-23	PROJ COST FY 2023-24
1) Plant	$3,101,500	$4,000,000	$4,000,000	$13,000,000	$0
3) Equipment					
- 20 year life	$0	$0	$0	$0	$0
- 10 year life	$566,435	$0	$50,000	$0	$50,000

Depreciation Projections

TYPE	Fiscal Year 2020-21	Fiscal Year 2021-22	Fiscal Year 2022-23	Fiscal Year 2023-24	Fiscal Year 2024-25
Existing	$450,000	$450,000	$450,000	$450,000	$450,000
Improvements	$134,181	$136,681	$139,181	$666,681	$669,181
TOTAL	$584,181	$586,681	$589,181	$1,116,681	$1,119,181

Depreciation is forecast based on the Capital Improvement Program.

CASE STUDY 1
Five Year Financial Forecast
Without Consideration of Rate Adjustments

Revenue Assumptions-Case 1

- **8.5% annual growth in customer base**
- **No appreciable decline in sewer usage**
- **No rate increases**
- **Developers make significant contributions**

FY 2019-20	FY 2020-21
$3,400,000	$3,200,000

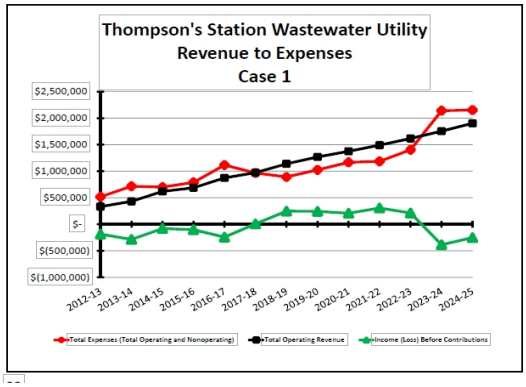
Expense Assumptions – Case 1

- Capital projects move forward as proposed (increasing depreciation expense)
- Additional debt issued in FY 2022-23
- Administration overhead expenses are applied
- Annual growth in expenses projected as follows:
  - Salaries 3%
  - Benefits 8%
  - Utilities 5%
  - Business Insurance 4%
  - Other 3%

Financial Review – Case 1

1. The wastewater utility has experienced significant annual growth in the customer base over the past few fiscal years.
2. The utility experienced a loss in FY 2016-17, but rebounded in FY 2017-18 and FY 2018-19, recovering from the loss and realizing positive income.
3. Expenses are projected to rise due to additional depreciation and demands for service.

4. Projections indicate, due to the steady growth in customers, that operating revenues will continue to exceed expenses until FY 2023-24.
5. At that time, the aggressive increase in depreciation expense (which must be funded as additions to the plant go online) and interest expense (due to the issuance of additional debt to fund the CIP) cause expenses to far exceed revenue.

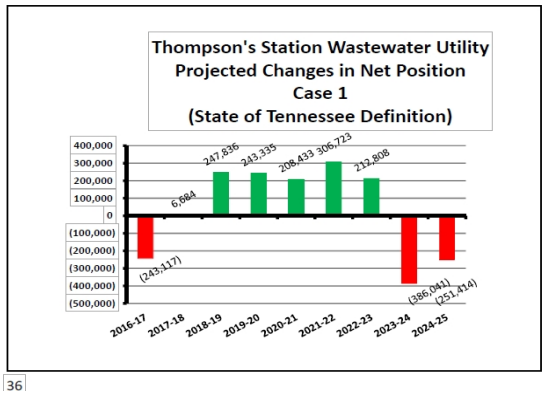


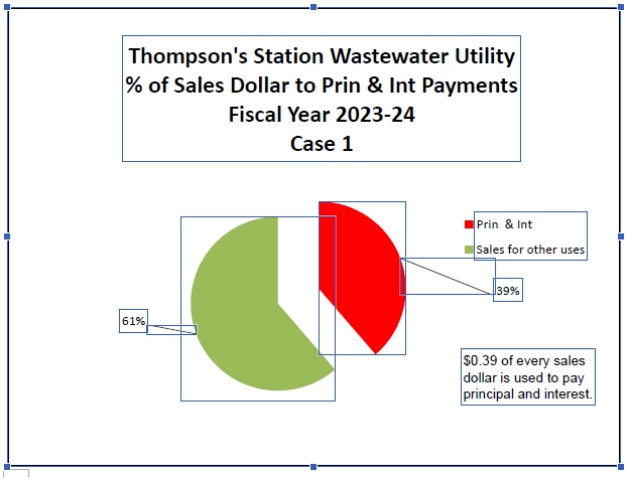
Observations for Funding Requirements of Case 1

1. The State of Tennessee's *new definition* of Change in Net Position requires the Town to address the financial condition of the Wastewater Utility without consideration of grants or contributions.
2. Projections indicate an inconsistent trend to Changes in Net Position until FY 2023-24 when the full impact of the rising costs of depreciation and interest expenses are realized.

Observations for Funding Requirements of Case 1

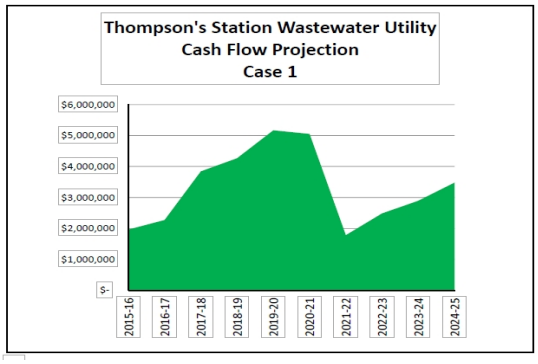
3. Higher levels of expenses for depreciation and interest will result in a significant negative change to net position beginning in FY 2023-24.
4. MTAS recommends the Town be sensitive to negative changes to net position throughout the study period. Two consecutive years of negative change to net position will trigger compliance issues for the utility with the Wastewater Facilities Act of 1987.





Cash Flow Observations for Case 1

1. If the developer contributions are received as expected and $13 million of additional debt is issued in FY 2022-23, the cash balance is projected to remain positive throughout the study period.
2. Aggressive spending on the CIP plan will deplete the developer's capital contributions by the end of FY 2021-22.



CASE STUDY 2

Five Year Financial Forecast with Consideration of Rate Adjustments

Revenue Assumptions – Case 2

- 8.5% growth in customer base
- No appreciable decline in sewer usage
- Developers make significant contributions

FY 2019-20	FY 2020-20
$3,400,000	$3,200,000

- Revenue increases are applied as follows:

Annual Wastewater Revenue Increases:

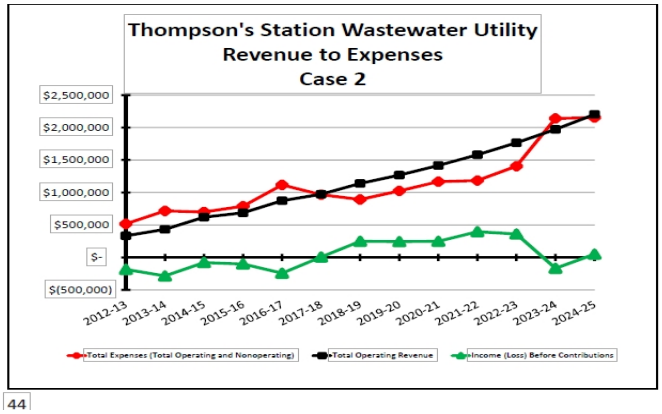
07/01/20	07/01/21	07/01/22	07/01/23	07/01/24
3%	3%	3%	3%	3%

Expense Assumptions – Case 2

- Capital projects move forward as proposed (increasing depreciation expense)
- Additional debt is issued in FY 2022-23
- Administration overhead expenses are applied
- Annual growth in expenses projected as follows:
  - Salaries 3%
  - Benefits 8%
  - Utilities 5%
  - Business Insurance 4%
  - Other 3%

Financial Review – Case 2

1. The same financial conditions hold as previously described for Case 1.
2. The implementation of annual adjustments to revenue provides for a gradual improvement of revenue performance over expenses during the study period.
3. Given the annual adjustments to revenue, the aggressive rise in expenses in FY 2023-24 is much more manageable.



44

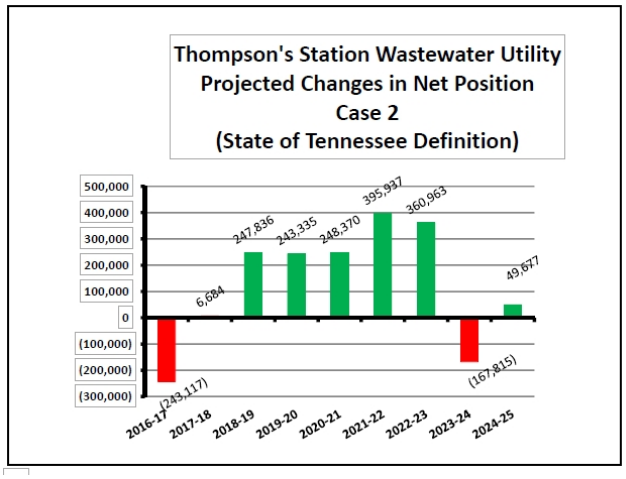
Observations for Funding Requirements for Case 2

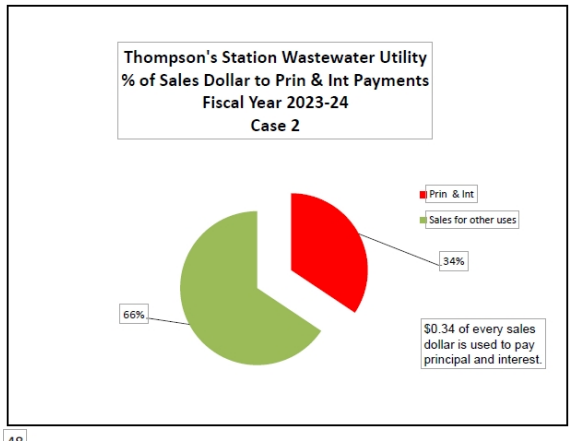
1. Projections indicate the application of annual revenue adjustments moderates the inconsistent trend to Changes in Net Position during the study period.
2. MTAS recommends the Town monitor the financial performance of the Wastewater Utility in FY 2022-23 in an attempt to achieve a positive change in net position.

Municipal Technical Advisory Service
INSTITUTE for PUBLIC SERVICE

Observations for Funding Requirements for Case 2

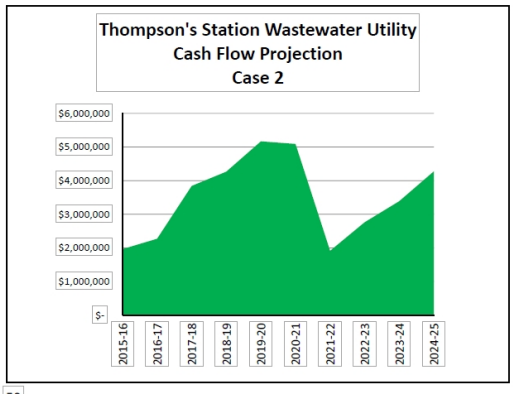
3. When the full impact of the rising costs of depreciation and interest expenses are realized in FY 2023-24, a negative change in net position is all but unavoidable.
4. If both FY 2022-23 and FY 2023-24 both have negative changes to net position, this would trigger compliance issues with the Wastewater Facilities Act of 1987.
5. MTAS recommends the Town attempt to avoid this situation.





Cash Flow Observations for Case 2

1. If the developer contributions are received as expected and $13 million of additional debt is issued in FY 2022-23, the cash balance is projected to remain positive throughout the study period.
2. Aggressive spending on the CIP plan will deplete the developer's capital contributions by the end of FY 2021-22.



Comments

1. To remain in compliance with the Wastewater Facilities Act of 1987, municipal utilities must have a positive change to net position at least every other year.
2. Current projections indicate, if revenue adjustments are enacted and the Town actively manages expenses, the Wastewater Utility can reasonably expect compliance within the state guidelines.
3. MTAS recommends the Town be sensitive to the financial performance of the Wastewater Utility.

An Open-House was discussed for possible presentations of the following:

- Matthew Johnson, Project Manager – Barge Design Solutions
- Ralph Cross, Consultant - MTAS
- Jim Marshall, Consultant – Jackson Thornton

Adjourn:

There being no further business, the meeting adjourned at 7:22 p.m.

_____

Chairman, Jeff Risden

BARGE
DESIGN SOLUTIONS

February 25, 2020

Mr. Ken McLawhon
Town Administrator
Town of Thompson's Station
1550 Thompson's Station Road W
Thompson's Station, TN 37179

RE: Draft Engineering Design Contract
Regional Wastewater Treatment Plant Upgrades

Dear Mr. McLawhon:

Please find attached to this letter our updated draft contract for design services associated with the planned upgrades to the Regional wastewater treatment plant. It is our understanding the Town is exploring different funding options for this project. One option is a loan through United States Department of Agriculture (USDA) Rural Development. The attached contract updates the draft contract, which was submitted on December 12, 2019, to incorporate the inclusion of an optional scope item, preparation of the preliminary engineering report and environmental assessment as required by USDA for an application for funding.

In addition to the attached, Barge is also preparing a draft design contract which adheres to USDA's requirements utilizing the EJCDC E-500 form. If the Town elects to pursue USDA funding, use of the EJCDC contract will be required in order for the Town to be reimbursed for design services. The scope and fee will remain the same for this EJCDC contract. We are working quickly to prepare this version of the contract and will present that to the Town as soon as it is ready.

Sincerely,

Barge Design Solutions, Inc.

Matthew Johnson, P.E.
Project Manager

c: Mrs. Paula Harris, CPSM, Barge Design Solutions, Inc.
Mr. Jonathan Childs, P.E., Barge Design Solutions, Inc.

Enclosures

Barge project # 36727-00

615 3RD AVENUE SOUTH // SUITE 700 // NASHVILLE // TENNESSEE // 37210 // 615-254-1500 // BARGEDESIGN.COM

BARGE DESIGN SOLUTIONS, INC.

PROFESSIONAL SERVICES AGREEMENT

This agreement is made as of _____ by and between Town of Thompson's Station, TN (**CLIENT**) and Barge Design Solutions, Inc. (**BARGE**) for professional services for the assignment described as follows:

Project: Regional Wastewater Treatment Plant Upgrades

Location: Thompson's Station, TN

Description of Project:

The project includes upgrades to the existing wastewater treatment facility including a new membrane bioreactor (MBR) to increase the capacity of the facility to 1.0 million gallons per day (MGD), new influent pump station, new digester, new dewatering system, and associated piping, site electrical, etc.

I. **PROFESSIONAL SERVICES: BARGE** agrees to perform the following Basic Services under this contract:

Services to be provided under this agreement are provided in Exhibit A

II. **COMPENSATION: CLIENT** shall compensate **BARGE** for the Basic Services in accordance with the Schedule of Standard Charges attached as Exhibit B to this agreement and as follows:

The estimated fee for Tasks 1, 2, and 3 as described in Exhibit A is the amount of $855,000.00.

Task 4 Funding Application Reports as described in Exhibit A can be provided as an optional service for an estimated fee of $30,000.

CLIENT shall pay **BARGE** for additional services performed beyond the Basic Services in accordance with the hourly rate schedule attached as Exhibit B to this Agreement.

III. **PAYMENTS:** Invoices for services rendered will be issued monthly, and payment is due upon receipt of each invoice. Unless special arrangements are made, a finance charge of 1.5% per month will be added to unpaid balances more than thirty (30) days old. In the event legal action is necessary to enforce the payment terms of this agreement, **BARGE** shall be entitled to a judgment for its attorneys' fees, court costs, and other collection expenses.

IV. **TIME:** Unless agreed otherwise in writing, **BARGE** will commence its services within a reasonable time after receipt of an executed copy of this Agreement. **BARGE** will perform its services in a timely manner commensurate with the exercise of due professional care. Time for performance shall be extended as necessary for delays or suspensions due to circumstances beyond **BARGE**'s control. If such delay or suspension extends more than six months (cumulatively), **BARGE**'s compensation shall be equitably adjusted.

V. **SUSPENSION OF SERVICES:** If **CLIENT** fails to pay any invoice when due or otherwise is in material breach of this Agreement, **BARGE** may at its sole discretion suspend performance of services upon five (5) days' written notice to **CLIENT**. **BARGE** shall have no liability to **CLIENT**, and **CLIENT** agrees to make no claim for any delay or damage as a result of such suspension. Upon cure of the cause of the suspension, **BARGE** shall resume services within a reasonable time, and there shall be an equitable adjustment of the project schedule and fees to reflect the effects of such suspension.

VI. **STANDARD OF CARE:** Notwithstanding any other provision of this Agreement or any other document describing the services, **BARGE** shall perform its services in accordance with the standard of professional care ordinarily exercised under similar circumstances by reputable members of its profession in the same locality at the time the services are provided. No warranty, expressed or implied, is made or intended by **BARGE**. The parties further agree that **BARGE** is not a fiduciary of **CLIENT**.

VII. **TERMINATION:** The obligation to provide further services under this Agreement may be terminated without cause by either party upon ten (10) days' written notice to the other party. On termination by either the **CLIENT** or **BARGE**, **CLIENT** shall pay **BARGE** all amounts due for any services performed to the date of termination (plus all reimbursable expenses incurred). Upon such termination by **CLIENT**, it shall immediately return to **BARGE** all drawings, reports, documents, and other instruments of professional services prepared by **BARGE**, and **CLIENT** shall make no further use thereof.

VIII. **OWNERSHIP AND REUSE OF DOCUMENTS:** All documents, including without limitation, drawings, specifications, and reports prepared by **BARGE** pursuant to this Agreement are instruments of professional service. **BARGE** shall own all legal and equitable rights therein, including copyrights. Such instruments are not intended or represented to be suitable for reuse by **CLIENT** or others for additions or modifications of the Project or on any other project. Any reuse without written consent of **BARGE** shall be at **CLIENT's** sole risk and without liability to **BARGE**; and to the fullest extent permitted by law, **CLIENT** shall indemnify, defend, and hold harmless **BARGE** from and against any and all claims, damages, losses, and expenses, including reasonable attorneys' fees and costs of defense arising out of or resulting therefrom. **BARGE** shall be entitled to further compensation for services it is requested to perform in connection with any reuse of its instruments of professional service.

IX. **ACCESS TO THE SITE/JOBSITE SAFETY**: Unless otherwise stated, **BARGE** will have access to the site for activities necessary for the performance of its services. **CLIENT** agrees that **BARGE** shall have no responsibility for the means, methods, sequences, procedures, techniques, and scheduling of construction, as these decisions are solely the responsibility of the contractors. **BARGE** further shall have no authority or duty to supervise the construction workforce and shall not be responsible for jobsite safety or for any losses or injuries that occur at the Project site.

X. **INSURANCE:** **BARGE** shall endeavor to secure and maintain insurance in such amounts as it deems necessary to protect **BARGE** from claims of professional negligence arising from the performance of services under this Agreement.

XI. **RISK ALLOCATION:** In recognition of the relative risks, rewards, and benefits of the Project to both **CLIENT** and **BARGE**, to the fullest extent permitted by law, the parties agree to allocate the risks such that **BARGE's** total liability to **CLIENT** for any and all injuries, claims, losses, expenses, damages, and/or claim expenses arising out of **BARGE's** services under this Agreement from any

cause or causes shall not exceed the amount of **BARGE's** fee or **One Hundred Thousand Dollars ($100,000)**, whichever is greater. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

XII. **DISPUTE RESOLUTION:** It is agreed that all claims, disputes, or other matters in question arising out of or related to this Agreement shall be submitted to nonbinding mediation before any legal proceeding is commenced. The parties shall equally bear the fees and expenses charged by the mediator.

XIII. **OPINIONS OF CONSTRUCTION COST:** Any opinion of probable construction cost prepared by **BARGE** represents the judgment of one or more **BARGE** design professionals and is supplied for general guidance of **CLIENT**. Since **BARGE** has no control over the construction marketplace and does not use the same pricing methods used by contractors, **BARGE** does not guarantee the accuracy of such opinions.

XIV. **GOVERNING LAW:** Unless otherwise specified within this Agreement, this Agreement shall be governed by the laws of the State of Tennessee.

Town of Thompson's Station, TN	**Barge Design Solutions, Inc.**
By:	By:
Printed Name:	Printed Name:
Title:	Title:
Address:	Address:
Date Signed:	Date Signed:

Barge Design Solutions, Inc. (Barge) is proposing the following scope of services to the Town of Thompson's Station (Town) to provide detailed design services for the Regional Wastewater Treatment Plant Upgrades project. The scope of work is presented in the following elements:

I. Project Description
II. Scope of Services
III. Project Schedule

I. Project Description

The treatment plant improvements planned at the Regional Wastewater Treatment Plant (WWTP) are as described in the 2018 Wastewater System Master Plan prepared by Barge dated September 2018 and summarized as follows:

- New Membrane Bioreactor (MBR) facility
- New influent screening facility
- New influent pump station
- Upgrades to the existing operations building including new ultraviolet (UV) system and new additional irrigation pump
- New aerobic digester
- New standby generator
- New sludge dewatering equipment

The above process upgrades will include the following major components:

1. New Membrane Bioreactor (MBR) Facility
   - Installation of a new two-train 1.0 MGD MBR consisting of new metal tank by manufacturer, process pump skid by manufacturer, and two membrane scour blowers.
   - Installation of new site piping including connections to existing force mains
   - Installation of canopy over MBR equipment

2. New Influent Screening Facility
   - New influent screenings structure with two new influent fine screens
   - New screenings washer/compactor

3. New Influent Pump Station
   - Installation of new influent submersible pump station with three 1,050 gallon per minute (gpm) pumps
   - Installation of new 12-foot diameter wet well
   - Installation of new 6-foot by 6-foot valve vault

- Demolition of existing pump station

4. Upgrades to the existing operations building including new ultraviolet (UV) system
   - Installation of new 1,200 gpm UV system in addition to the existing UV system.
   - Installation of new irrigation pump package

5. New Aerobic Digester
   - New pre-stressed concrete tank
   - Installation of two new blowers on outdoor concrete pad
   - Installation of canopy to cover blowers

6. New Standby Generator
   - New 500-kilowatt diesel generator
   - New 200-amp automatic transfer switch

7. New Sludge Dewatering Equipment
   - Installation of new screw press or fan press. Equipment selection to be finalized with Town during initial design stage.

II. Scope of Services

The scope of services is summarized into the following major tasks:

Task 1 – Project Management

Task 2 – Preliminary Engineering

2.1 Preliminary Engineering Report

2.2 30% Design Documents

Task 3 – Final Design

3.1 60% Design Documents

3.2 90% Design Documents

3.3 Bidding Documents

Task 4 – Funding Application Reports (Optional upon future Town approval)

Task 5– Bid Phase Services (Optional upon future Town approval)

Task 6 – Construction Management Assistance (Optional upon future Town approval)

The following sections provide a description of the purpose, activities, and deliverables anticipated for each of the tasks.

Task 1 – Project Management

Barge will plan, manage, and execute the work in accordance with the schedule and budget established herein. The project management task will generally include the following activities:

- Facilitate project kick-off meeting, prepare project work plan, and identify key project stakeholders for distribution of project information.
- Coordinate monthly status meetings with the Town, prepare meeting agenda, and prepare meeting summaries with action items and decisions. These meetings will occur as part of each project task.
- Monitor project progress including work completed, work remaining, budget expended, schedule progress, estimated cost of work remaining, and estimated cost at completion.
- Prepare and submit monthly invoices and project status reports with updated schedules and cash flow projections as applicable. Communicate potential scope changes, schedule impacts, and cost risks to allow for timely guidance from town to manage change.
- Provide coordination of Barge's subconsultants, including development of scopes of services, management of scopes, schedules, & budgets, and monitor project progress.
- Three project workshops with Town staff to review the major design milestone submittals (30% Design Documents, 60% Design Documents, and 90% Design Documents) are included in the Final Design task below.

Task 2 – Preliminary Design

Preliminary design including the development of a preliminary design report and as detailed below.

2.1 Preliminary Engineering Report

This task includes defining and clarifying Owner's requirements for the Project, including design objectives and constraints, space, capacity, and performance requirements, flexibility and expandability:

- Utilizing the wastewater treatment facility recommendations from the 2018 Wastewater System Master Plan, review the recommendations and design parameters with the Town.

- Consult with and analyze requirements of governmental authorities having jurisdiction to approve the portions of the Project to be designed or specified by Barge. Conduct preliminary project meeting with Tennessee Department of Environmental and Conservation (TDEC) staff as required by state regulations.
- Prepare a preliminary engineering report (PER) detailing the upgrades recommended. The report will, as appropriate, contain schematic layouts, sketches, and conceptual design criteria with appropriate exhibits to indicate the agreed to requirements, considerations involved, and Engineer's recommended solution(s). The PER will conform to TDEC requirements.
- Conduct review meeting with Town staff to review PER and obtain any feedback from the Town on the elements of the project.
- Submit final PER to Town (PDF format and two hard copies).
- Submit final PER to TDEC for regulatory agency review.

2.2 30% Design Documents

This task includes establishing details regarding equipment selection, building components, process and instrumentation details, and electrical one-lines. The following specific tasks are anticipated:

- Perform a site survey of the portions of the wastewater treatment facility affected by the project. The survey will include the location of existing structures, underground piping as marked on ground by the Town or various utilities, and topography.
- Assist Town with development of scope and request for proposal (RFP) document to procure a geotechnical firm to perform soils investigation and analysis. Assist Town in management of selected geotechnical firm and review draft geotechnical report.
- Prepare process flow diagram and preliminary Process and Instrumentation Diagrams (P&IDs) for all new or modified processes.
- Confirm selection and sizing of process equipment. Prepare detailed equipment list for all new process equipment and major instruments, including size, quantity, basis of design manufacturer, and other pertinent information.
- Perform hydraulic design calculations and prepare hydraulic profile for new or modified processes.
- Prepare preliminary plan drawings of all new or modified facilities.
- Confirm local and state regulatory and jurisdictional agency's requirements, including permits.

- Review work products and obtain quality control reviewer approvals.
- Submit 30% drawings to Town for review (PDF format and two half-sized sets).
- Facilitate review workshop with Town staff to discuss the 30% drawings and receive Town comments. Document review comments and Barge responses.

Task 3 – Final Design

Final Design phase services include preparation of bidding documents through 60%, 90%, and final submittals and reviews.

3.1 60% Design Documents

The 60% design deliverables are based on the details established during the preliminary design task. Following is a list of activities anticipated during this task:

- Incorporate the Town's preliminary design review comments and proceed with detailed design drawings.
- Prepare first draft of technical specifications.
- Prepare preliminary decommissioning and demolition plans.
- Prepare preliminary sequencing plan for of major electrical and process interconnections
- Perform constructability review.
- Hold internal coordination workshop between disciplines.
- Update preliminary opinion of probable construction cost (OPCC) based on the 60% design documents.
- Review work products and obtain quality control reviewer approvals.
- Submit 60% complete design documents to the Town for review and comment (PDF copy and two half-sized sets).
- Facilitate a design review workshop to receive Town review comments. Document review comments and Barge responses.

3.2 90% Design Documents

- Address and incorporate Town's review comments from the design review workshop.
- Finalize design drawings to include standard details and notes.

- Prepare final technical specifications.
- Prepare front end construction contract documents (Divisions 0 and 1) in conjunction with Town purchasing requirements.
- Prepare final calculations and obtain quality control reviewer approvals.
- Perform final coordination review between disciplines.
- Update OPCC based on the 90% design documents.
- Review work products and obtain quality control reviewer approvals.
- Submit 90% complete design documents to the Town for review and comment (PDF copy and two half-sized sets).
- Submit 90% design to TDEC for plan and specification review requirement.
- Facilitate a design review workshop to receive Town review comments. Document review comments and Barge responses.

3.3 Finalize Bidding Documents

- Incorporate Town and regulatory agency review comments into the 90% design documents.
- Submit the final bidding documents to Town for use during bidding (PDF copy, one half size set, and one full size set).
- Update OPCC if needed and submit to Town prior to bidding.
- Prepare permit applications and/or plan review set for submission to TDEC.
- Barge will provide assistance to the Town in obtaining permits from governmental agencies. Assistance will include preparation of applications, exhibits, drawings and specifications as necessary for Town's execution and submittal. Barge will also assist with responses to questions or requests for additional information. The following permits are anticipated:
    - Storm Water Pollution Prevention Permit (SWPPP), if necessary
    - TDEC SOP Permit, if necessary

Task 4 – Funding Application Reports (Optional upon future Town approval)

If the Town elects to pursue funding from the United States Department of Agriculture (USDA) Rural Development, some additional report information and applications will be required. This task includes those items to support the Town's loan application process, including the following:

- Development of the preliminary engineering report (PER) will be completed as part of Task 2
- An environmental assessment, as required by the USDA, will be prepared as part of this Task 4 and added to the PER, which will be submitted to the USDA with the loan application package
- Barge will provide assistance to the Town for completion of loan application documents. It is assumed the Town will provide all information necessary to support the funding application including but not limited to Town financial audits, plant data, and certifications required by USDA.
- Barge will provide electronic (pdf) and two hard copy versions of the PER and application documents to the Town.

Assumptions:

The following assumptions are applicable to the above scope of services:

- Front end documents provided by Barge shall be used as a basis for discussions to arrive at a mutually agreeable set of front-end documents. If Town standard documents are required to be used, additional effort may be required to coordinate with technical specification references.
- Barge standard design procedures, drafting standards, and typical drawing details will be used in the development of the construction documents. The drawings will be 22x34 sheet size.
- Geotechnical services are not included and will be contracted directly between the Town and a geotechnical firm selected through a separate procurement.
- Subsurface Utility Engineering (SUE) is not included in this scope of services. The Town will be responsible for locating and marking existing underground utilities within the plant site.
- Any surveying services required for property transfers or easements including establishment of property lines and rights of way are not included in the basic services proposal and will be considered additional services.
- The Town will provide record drawings for the existing wastewater treatment plant. The record drawings are assumed to be an accurate representation of the current structures and piping.
- This scope of services has been prepared based on the proposed improvements project as described in the September 2018 Wastewater System Master Plan.

- Any abatement and/or remediation work associated with presence of hazardous materials in any of the existing facilities such as asbestos or lead paint is not included as a part of this scope of services.
- Town shall be responsible for payment of all permit and application review fees.
- Assistance with public relations or legal/administrative proceedings are not included in this scope of services.

III. Project Schedule

The preliminary project schedule is shown in the table below.

Task	Duration
30% Design	3 months
60% Design	2 months
90% Design	2 months
Bidding Documents	1 month

BARGE DESIGN SOLUTIONS, INC.

EXHIBIT B
SCHEDULE OF STANDARD CHARGES

The following hourly rates apply for **BARGE** and ResourceTek (Barge Subsidiary) personnel for time properly chargeable to the work.

Hourly Rate Schedule

Classification	Hourly Rate
Principal-In-Charge / Sr. Technical Advisor	$ 225
Sr. Project Manager / Sr. Technical Leader/Quality Control	$ 215
Sr. Technical Specialist	$ 205
Sr. Professional Engineer IV / Project Manager II / Engr. Manager II	$ 195
Sr. Professional Engineer III	$ 190
Project Manager I / Engineering Manger I / Sr. Architect	$ 185
Sr. Professional Engineer II	$ 180
Sr. Scientist/Professional Engineer III	$ 170
Sr. Professional Engineer I	$ 155
Professional Engineer II / Architect III	$ 150
Professional Engineer I / Survey Manager	$ 135
Staff Engineer II / Architect II	$ 120
Staff Engineer I / Architect I	$ 110
Designer III / Sr. Specialist	$ 155
Designer II	$ 125
Designer I	$ 115
CAD Technician II	$ 110
CAD Technician I	$ 100
Sr. Registered Land Surveyor	$ 150
Registered Land Surveyor	$ 105
2-Man Survey Crew	$ 150
Survey Tech with Robotic Instrument/GIS	$ 90
Resident Project Representative III	$ 150
Resident Project Representative II	$ 130
Resident Project Representative I	$ 110
Project Administrator	$ 75-95
Office Administrator	$ 75-95
Administrative Assistant	$ 75-95

Outside services contracted for a specific project, such as professional and technical consultants, laboratory testing, reproduction, photography, etc., will be invoiced at the amount of the subcontractor's statement plus 10 percent.

Other expenses such as travel expenses, mileage (standard IRS rates), reproduction, photography or videography, or other direct expenses incurred by Barge and related to the work will be invoiced at the actual cost incurred.

The hourly rates listed above are valid until January 1, 2021, after which the rates may be adjusted.

WASTEWATER CAPACITY RESERVATION SYSTEM

TECHNICAL MEMORANDUM

Prepared For: Town of Thompson's Station, Tennessee

36727-19

February 2020

CONTENTS

1.0 INTRODUCTION

The Town of Thompson's Station (Town) is a rapidly growing community with developers requesting sewer service throughout the sewer system area. The Town needs a process to review, track, and monitor proposed developments to ensure that the Town can provide sewer capacity from the connection point in the collection system through the treatment plant without causing sewer overflows. This process has the following benefits:

1. Ensuring sufficient capacity for new development while maintaining existing service.
2. Preventing sewer overflows.
3. Protecting the Town by allocating sewer capacity to a specific development.
4. Identifying potential capacity deficiencies in the existing system.

This technical memorandum describes the protocols, policies, and analytical methods for the continuous assessment and determination of capacities for the Town's collection system. The Wastewater Capacity Reservation System will follow the sequence presented below with more detail provided in subsequent sections.

Step 1 Complete a Capacity Request Application: The developer will complete an application to provide the Town with enough information to evaluate the project's potential impact on the sewer system.

Step 2 Capacity Request Review of Proposed Development: An engineer obtained by the Town will review the capacity of the collection and treatment systems receiving the proposed flow increase to determine if adequate capacity is present in the existing system in accordance with the requirements outlined in this document.

Step 3 Capacity Request Results: The Town can issue a notification to the applicant in cases where adequate collection and treatment capacities can be determined and in cases where there are capacity deficits.

Step 4 Completing the Reservation Process: Developers who want to pursue a project will sign an agreement with the Town and submit a reservation deposit. This will ensure that the upcoming development's additional capacity load is included when reviewing future requests in that area.

2.0 WASTEWATER CAPACITY REQUEST APPLICATION

The capacity of the wastewater system is determined by the existing pipes within the system, equipment size and storage capacity at lift stations, and wastewater treatment permit limits. These variables will change based upon where the proposed development is located within the Town. A customer requesting a new connection to the Town's collection system or a significant increase in flow from an existing service connection must complete a Capacity Reservation Application (Appendix A) and submit the application to the Town. The application will help to define the development so that a determination on whether capacity is available can be completed including agent information, property information, and type of development.

The Town should review the cost and time required to determine capacity availability. A fee should be determined which helps to offset costs to the Town. The fee should be due up front and be non-refundable, even if capacity is not available or the applicant decides not to develop the property.

3.0 CAPACITY REVIEW OF PROPOSED DEVELOPMENT

The following section describes the process by which the Town's engineer will review the collection system and treatment plant capacity to confirm that each asset has the capacity to convey the proposed flow plus the existing flow from all new or existing service connections and authorized service connections (including those which have been approved for capacity but have not begun to discharge into the sanitary sewer system) without causing surcharge conditions.

3.1 Determine Discharge Location

The discharge location (specific pipe segment, manhole, or pump station) into which the proposed flow increase will enter the Town's collection system will be determined using the information provided as a part of the Capacity Reservation Application and the latest version of the GIS mapping of the collection system as determined by the Town. As infrastructure is installed, the Town will update the wastewater system GIS data.

In addition to the pipe segment or manhole where the proposed flow increase will connect to the collection system, all downstream pump stations and the treatment plant receiving the proposed flow increase will be identified.

If there is a capacity deficit at the location proposed by the developer, the Town will review and, if available, provide alternative connection points that may decrease or eliminate the need for capacity improvements.

3.2 Calculate Flow Increase

For each new or existing sanitary sewer service connection included on a Capacity Reservation Application, the proposed flow increase will be calculated based on the information provided by the applicant. If the estimated flow increase is provided in the application, the Town will verify the calculation using the procedure described in Section 3.2.1 or Section 3.2.2.

For redevelopment of property with an existing connection to the sewer system, the existing flow will be based upon the best available information as determined by the Town or estimated using the procedures described in Section 3.2.1 or Section 3.2.2. The existing flow will be documented as a credit towards the wastewater flow for the redeveloped property.

3.2.1 Single Family Residential

For single-family homes, a standard 250 gallons per day (gpd) per household should be used for estimating the peak-hour flow increase to the collection system. The 250-gpd per household flow is a conservative flow rate which will provide a 50% contingency factor. The collection system consists of the pipes and pump stations and excludes the wastewater treatment plants (WWTPs).

3.2.2 Other Properties

For non-single-family residential properties, the unit sewer flows outlined for design by the Tennessee Department of Environment and Conservation (TDEC) Design Criteria for different usage types are in Appendix 2-A and shown in Appendix B. The applicable unit flows should be

applied to the specific project variables (e.g., seats, bedrooms) to estimate the total sewer flow that will be added to the system from the proposed project.

3.3 Review System Capacity

The Town has developed a hydraulic model as a tool for determining existing sewer capacity. The capacity of the affected system will be checked for availability or deficit after the location and estimated sewer flows are determined. An engineer will be required to complete a capacity review for all new connections and increased flows.

3.3.1 Collection System Capacity

Determination of adequate collection capacity will confirm that each gravity sewer line between the requested tie-in location and the receiving WWTP has the capacity to transmit the proposed flow, the flow from all existing service connections, and the flow from authorized service connections, during the modeled peak 1-hour of the 2-year, 24-hour rain event, without causing surcharge conditions. Authorized service connections include entities with a reservation agreement or those entities who are within the allowed capacity review decision period. Existing 1-hour peak flow is defined as the greatest flow in a sewer averaged over a 60-minute period at a specific location expected to occur as a result of the representative 2-year, 24-hour storm (design) event.

A surcharge condition is defined as the condition that occurs when the 1-hour peak flow from the design event exceeds the capacity of the collection system. A surge condition causes the water surface to reach within 36 inches of the manhole rim, while above the crown of the pipe, or greater than 24 inches above the crown of the pipe; however, if the Town has identified pipe segments or manholes designed to operate under a pressure condition, the capacity of these pipe segments or manholes shall be evaluated based on their respective design criteria.

Determination of adequate transmission capacity will confirm that each pump station through which the requested additional flow would pass has the capacity to transmit the proposed peak 1-hour flow, the existing peak 1-hour flow from all existing service connections, and the flow from authorized service connections.

3.3.2 Treatment Plant Capacity

Determination of adequate treatment capacity will confirm that the WWTP receiving flow from the proposed new connections, increased flows from an existing source, and authorized sewer service connections will be in compliance for quarterly reporting.

3.3.3 Essential Services

The Town may authorize a new sewer service connection or additional flow from an existing sewer service connection for essential services, even if it cannot determine that it has adequate capacity. Essential services are defined as healthcare facilities, public safety facilities, public schools, government facilities, and other facilities as approved by the Town. It also includes cases where

a pollution or sanitary nuisance exists as a result of a discharge of untreated wastewater from an on-site septic tank.

3.4 Capacity Review Result

If model results show available capacity, the results with instructions on how to reserve the available capacity can then be issued to the developer according to Town policy. If the model shows a deficit, the Town will issue a notice of insufficient capacity to the developer. The notice will include a description and map of where the capacity restrictions are located and what improvements will need to be made to reach adequate capacity.

If service can be provided immediately or after working out an alternative option, then the developer must make a service reservation to proceed. The decision must be made within 60 days of the date of the letter from the Town to the developer stating that there is available capacity. If the developer decides to not move forward with the project, the capacity review ends. To build on that property in the future, the developer would need to start the process again by filling out a new application and paying another application fee.

3.5 Completing the Reservation Process

Developers who decide to pursue the proposed project will sign an agreement and submit a reservation deposit which reserves that capacity for one year. This ensures that the Town will consider the upcoming development when reviewing current and future capacity in that area. This also ensures that a second requested development, even one built and in service sooner, does not reduce the Town's ability to serve the first property during that time. The developer can request an extension based on the conditions outlined in the reservation agreement. The Town would need to develop the cost breakdown structure for the reservation deposit.

As a part of the reservation agreement or separately, the Town has the option to enter into a participation agreement with the developer to increase capacity of the proposed improvements beyond the needs of the development. The Town would be responsible for paying for the increase in capacity over the needs for the development.

After signing the capacity reservation agreement and submitting the required deposit, a developer has one year to submit formal plans and execute an extension agreement which will include construction milestones with the Town. The developer can request an extension to the construction milestones based on the conditions outlined in the extension agreement. A developer who does not complete all (or both) requirements or meet milestones would forfeit a percentage of the reservation deposit and the reserved capacity for that property. The remaining reservation deposit would be returned to the developer. To proceed with the project at a later time, the developer would be required to submit a new application and pay another review fee. If the capacity is still available or improvements are necessary to provide adequate capacity, the developer would also have to sign a new capacity reservation agreement and submit another deposit.

The Town will annually refund a portion of the deposit based on the number of billable connections or amount of incremental daily flow added in the year. Developers who produce the number of connections outlined in the extension agreement will receive a full refund upon completion of the tie-in of those defined connections. Developers who do not will forfeit a percentage of the remaining amount as outlined in the agreement.

3.5.1 Collection System and WWTP Improvements

If improvements to the collection system or the WWTP are required to provide adequate capacity to serve the proposed development, then the Town will determine who (Town or developer) will complete the improvements based on project location, site constraints, and project complexity. If the Town chooses to complete the work, then the developer will pay the Town to complete the engineering design. The fee paid will be based on the Town engineer's estimate to complete design. The project will be bid according to the Town's policy and the developer will be responsible for the construction cost, construction administration, and resident project representative costs.

If the developer completes the work, then the developer will be responsible for covering the costs of a Town-appointed field representative, paying a fee for the Town's engineer to review the plans, and acquiring all easements necessary to complete the work. Easements will be acquired using the Town's standard documents. After completing the improvements, the developer will deed over the completed improvements.

3.6 Existing Sewer Tap Reservation

Developers who have an existing sewer tap agreement with the Town will have those agreements honored per the executed agreement. If requested by the Town, it will be the responsibility of the developer to provide the agreement and documentation of the existing sewer tap reservation. If the agreement has a termination date on the sewer tap reservations, then the developer will have 60 days past the termination date to complete the reservation agreement and submit the required deposit like a developer who submitted utilizing the process outlined in this memorandum. The developer will then be under the requirements to submit formal plans and execute an extension agreement within one year.

APPENDIX A

Wastewater Capacity Reservation Application Form

Wastewater Capacity Reservation Application Form

A Wastewater Capacity Reservation application must be submitted when a property owner proposes new development or re-development of property that may increase the demand on existing infrastructure. The guidelines for determining capacity and issuing points of connection are located within the Capacity Reservation System Technical Memorandum. Complete the following and return to Town Hall with proof of property ownership: recorded deed, recorded deed of trust, title report, or title insurance. Applicant shall also provide map locating proposed connection point.

Title Owner Information					
Name					
Company					
Address					
City		State		Zip Code	
Email				Phone Number	
Signature					

Applicant Information					
Name					
Company					
Address					
City		State		Zip Code	
Email				Phone Number	
Signature					

Parcel / Property Information					
Service Address					
City		State		Zip Code	
Property Tax Account Number (s)					
Building Project Number					
Tract Size (Acres or Sq. Ft.)					

Type of Development					
	New Construction		Replacement		Interior Only Remodel
	Additional Building		Exterior Addition		Other:
	Tenant Build-Out		Conversion		

OFFICE USE ONLY			
Project Number:		Date:	

Existing Development		
Vacant (only if undeveloped) *		
Facility/Building Type		
Existing Number of Occupants/ Employees		
Existing Facility Square Footage		
Existing Flow (GPD)		
Additional Property Information (# of bathrooms, # of washers, etc.)		

*If vacant skip to next section

Proposed Development		
Single Family Residence (# of units) *		
Proposed Facility/Building Type		
Proposed Number of Occupants/ Employees	Existing Flow (GPD)	
Proposed Facility/Building Square Footage		
Proposed Development Acreage		
Proposed Flow (GPD)		
Additional Property Information (# of bathrooms, # of washers, etc.)		

*Single family residences include apartment, condos, and townhomes.

APPENDIX B
TDEC Design Flows

APPENDIX 2-A

Design Basis for Wastewater Flow and Loadings

Table 2-A.1. Typical Wastewater Flow Rates from Commercial Sources

(Source: Crites and Tchobanoglous, 1998)

FACILITY	UNIT	Flow, gallons/unit/day	
		Range	Typical
Airport	Passenger	2 - 4	3
Apartment House	Person	40 - 80	50
Automobile Service Station	Vehicle served	8 - 15	12
	Employee	9 - 15	13
Bar	Customer	1 - 5	3
	Employee	10 - 16	13
Boarding House	Person	25 - 60	40
Department Store	Toilet Room	400 - 600	500
	Employee	8 - 15	10
Hotel	Guest	40 - 60	50
	Employee	8 - 13	10
Industrial Building (Sanitary waste only)	Employee	7 - 16	13
Laundry (self-service)	Machine	450 - 650	550
	Wash	45 - 55	50
Office	Employee	7 - 16	13
Public Lavatory	User	3 - 6	5
Restaurant (with toilet)	Meal	2 - 4	3
Conventional	Customer	8 - 10	9
Short order	Customer	3 - 8	6
Bar/cocktail lounge	Customer	2 - 4	3
Shopping Center	Employee	7 - 13	10
	Parking Space	1 - 3	2
Theater	Seat	2 - 4	3

Table 2-A.2. Typical Wastewater Flow Rates from Institutional Sources

(Source: Crites and Tchobanoglous, 1998)

FACILITY	UNIT	Flow, gallons/unit/day	
		Range	Typical
Assembly Hall	Seat	2 - 4	3
Hospital, Medical	Bed	125 -240	165
	Employee	5 - 15	10
Hospital, Mental	Bed	75 - 140	100
	Employee	5 - 15	10
Prison	Inmate	80 - 150	120
	Employee	5 - 15	10
Rest Home	Resident	50 - 120	90
	Employee	5 - 15	10
School, day-only:			
With cafeteria, gym, showers	Student	15 - 30	25
With cafeteria only	Student	10 - 20	15
Without cafeteria, gym, or showers	Student	5 - 17	11
School, boarding	Student	50 - 100	75

Table 2-A.3. Typical Wastewater Flow Rates from Commercial Sources
(Source: Crites and Tchobanoglous, 1998)

FACILITY	UNIT	Flow, gallons/unit/day	
		Range	Typical
Apartment, resort	Person	50 - 70	60
Bowling Alley	Alley	150 - 250	200
Cabin, resort	Person	8 - 50	40
Cafeteria	Customer	1 - 3	2
	Employee	8 - 12	10
Camps:			
Pioneer Type	Person	15 - 30	25
Children's, with central toilet/bath	Person	35 - 50	45
Day, with meals	Person	10 - 20	15
Day, without meals	Person	10 - 15	13
Luxury, private bath	Person	75 - 100	90
Trailer Camp	Person	75 - 125	125
Campground-developed	Person	20 - 40	30
Cocktail Lounge	Seat	12 - 25	20
Coffee Shop	Customer	4 - 8	6
	Employee	8 - 12	10
Country Club	Guests on-site	60 - 130	100
	Employee	10 -15	13
Dining Hall	Meal Served	4 - 10	7
Dormitory/bunkhouse	Person	20 - 50	40
Fairground	Visitor	1 - 2	2
Hotel, resort	Person	40 - 60	50
Picnic park, flush toilets	Visitor	5 - 10	8
Store, resort	Customer	1 - 4	3
	Employee	8 - 12	10
Swimming Pool	Customer	5 - 12	10
	Employee	8 - 12	10
Theater	Seat	2 - 4	3
Visitor Center	Visitor	4 - 8	5