CHARLES TOWN UTILITY BOARD
AGENDA

WEDNESDAY, OCTOBER 13, 2021

Regular Meeting | **661 South George Street, Charles Town, WV 25414** | **4:00 PM**

CALL TO ORDER

1. **APPROVAL OF MINUTES**
   a. Approval of September 22, 2021 Regular Meeting Minutes
      UB Minutes.pdf

2. **PUBLIC COMMENT**
   This portion of the agenda is designed for members of the general public to share thoughts on items of interest in the community. By law, Board members may ask clarifying questions or discuss procedural matters but are not permitted to discuss the policy merits of any issue unless it is scheduled for discussion.

   The public is invited to attend this meeting in person or via webcast (www.ctubwv.com- Board Meetings - Meeting Agendas and Minutes 2021) or by accessing the following zoom link:

   https://us06web.zoom.us/j/83077829455?pwd=NElpNEtmbnd2OURETE9Ob1R3REM2UT09

   Meeting ID: 830 7782 9455
   Passcode: 022200
   +1 301 715 8592 US

3. **UNFINISHED BUSINESS**
   a. Fairfax Boulevard Water and Sewer Alternate Mainline Extension Agreement
      Fairfax Boulevard Extension AMEA's.pdf
   b. Greenhill Task Order
      Task Order.pdf

4. **NEW BUSINESS**
   a. RK&K - Final Facility Plan Review
      Final Facility Plan.pdf
   b. Dewberry - Capacity Improvement Fee Overview and Update
      CIF Presentation.pdf

5. **MANAGER REPORTS**

a. Utility Manager Report
   UM Report.pdf
b. Chairman Report

6. **APPROVAL OF BILLS**
   a. October 13, 2021
      Board Report.pdf

7. **ADJOURNMENT**

8. **INFORMATION ONLY**
   a. Next Meeting - October 27, 2021 at 4:00 PM
   b. Charles Town Class Cost of Service Study
      Charles Town COS Report.pdf

September 22, 2021

The Charles Town Utility Board held a regular meeting on September 22, 2021 at 4:00 p.m. Members of the Board present were Daryl Hennessy, Pete Kubic, Duke Pierson, Tommy Stocks and Jacquelyn Milliron. Also present were Kristen Stolipher, April Shultz, Hoy Shingleton and Ashley Stottlemyer. The Chairman called for changes or corrections to the September 8, 2021 regular meeting minutes. Jacquelyn suggested changes and with no objections, the Board approved the minutes as amended. The Board received no public comments.

The Chairman next opened the floor for discussion on RK&K Task Order No. 5, Scope of Work Change No. 1, Green Hill Sanitary Sewer Availability. Kristen provided the Green Hill development is located just North of the Aspen Greens subdivision and would consist of 320 residential units. They are proposing to connect through Aspen Greens. There is sufficient capacity at the point they are connecting, but would need capacity upgrades further downstream at the Breckenridge pump station. The scope of work by RK&K would be to evaluate the necessary upgrades needed to serve the development. Kristen requested direction from the Board on how to handle those upgrades and who is responsible to cover those costs. Rhiannon mentioned there may need to be upgrades made to the gravity lines as well. The Board held discussions, but with numerous unanswered questions, it was placed on the table for next meeting.

Next discussed was the GDF – Review of R&R Project and Cost Estimate. Chris Eckenrode gave a brief update on the Renewal & Replacement project as it is 85% complete. He mentioned the permit applications are ready for submittal. After further review of the Tuscawilla plant process by Chris and staff, it was determined those upgrades could be removed from the project as the plant is now running as it should. However, he suggested keeping the Tuscawilla design in the permit package so if the project was needed at a later date the permit would already be in hand. Chris also briefed the Board on the costs associated with the project which are around $6.1 million at this stage in the design completion, not including soft costs. Motion by Duke, second by Tommy, with discussion from the Board, the Board approved the submission of the permit application for the R&R project.

The Utility Manager Report was next addressed. Kristen briefed the Board on this month's sewer and water efforts including the first reading of bond refunding for the 2015A and B bonds, the City Council briefing on the Shenandoah Junction project, and attending the County Commission meeting next month to discuss the ARPA funding. The Board had further discussions on the ARPA funding requests.

Jacquelyn had questions regarding aluminum level chatter on social media. Duke mentioned this was in regards to aluminum testing around the Rockwool site. Kristen was unaware of any aluminum issues at the Charles Town facilities. Jacquelyn also had questions on Task Order 18-Wendy's Pump Station. Kristen mentioned this task order is to include pump replacement and installation of a flow meter which required engineering and surveying services.

The Chairman had no updates for the Chairman Report. The Board next discussed the Approval of Bills. Motion by Tommy, second by Duke, with discussion from the Board, the Board approved the payment of bills. Jacquelyn requested a discussion at a future meeting on executive session matters.

With no objections, the Board adjourned the meeting at 5:11 p.m. The October 13th regular meeting will be held beginning at 4:00 p.m.

_____ _____

Chairman Secretary

SEWER ALTERNATE MAIN LINE EXTENSION AGREEMENT

This AGREEMENT (the "Agreement") is made and effective this ____ day of _____ 2021, by and between the City of Ranson, a political subdivision of the State of West Virgina, whose address is 312 South Mildred Street, Ranson, West Virginia 25438 (hereafter, the "City") and the City of Charles Town, by and through the Charles Town Utility Board, a West Virginia public utility, whose address is 661 South George Street, Charles Town, West Virgnia 25414 (hereafter, the "Utility"). Collectively the "Parties"AGREE to enter into this Sewer Alternate Main Line Extension Agreement (the "Agreement") for the purpose of providing a sanitary sewer collection system extension to serve areas of Ranson and Jefferson County, West Virginia ("the Project").

WHEREAS, the Utility wishes to make sanitary sewer collection facilities available to the greatest number of individuals and entities within its service area in as prudent a manner as possible; and,

WHEREAS, the City is planning to develop certain public sewer infrastructure within the City of Ranson and the Utility's service territory; and,

WHEREAS, the Project includes installation of public sewer facilities that will provide reliable public sanitary sewer collection, transmission and treatment for residents of Ranson; and,

WHEREAS, the construction proposed to be undertaken by the City consists of approximately 902 LF of new sewer main pipeline and appurtenances, which will serve the Project, as shown on Exhibit A ("the Extension"); and,

WHEREAS, the City is willing to bear the expense of the Project.

NOW, THEREFORE, in consideration of the covenants and agreements set forth herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Utility and the City agree:

SECTION I
INTENT OF PARTIES

Section 1.01. It is the intent of the Parties that the City shall construct the Extension in accordance with the terms herein and that, upon completion, and inspection and reasonable approval by the Utility, the City shall convey, at no cost to the Utility, all of the Extension.

SECTION II
DESIGN

Section 2.01. The City hereby agrees to employ a Registered Professional Engineer, licensed by the State of West Virginia (the "City's Engineer"), to design the Extension. The City shall pay for the design of the Extension.

Section 2.02. The Utility shall bear no financial responsibility for the design of the Extension. The Utility shall reasonably cooperate with the City to facilitate the timely completion of the Extension, and shall provide the City with information in the Utility's possession or control in order to assist in the design of the Extension and the performance of the City's obligations under this Agreement.

Section 2.03. The design parameters for the Extension are subject to the review and approval of the Utility, and shall conform to the law and prevailing engineering professional standards. The design parameters governing the sizing and capacity of the Extension shall conform to the standard announced by the Utility.

Section 2.04. The City shall have the Extension designed to meet Utility specifications, including size and capacity of the main pipeline. The Extension shall consist of collection mains, pipes, manholes, fittings, and ancillary fixtures and equipment necessary to facilitate domestic public sewer service.

Section 2.05. Prior to the start of construction of the Extension, the City shall provide the Utility copies of the plans and specifications for the Extension. The Utility shall approve or disapprove, prior to the start of construction, the plans and specifications of the Extension, to ensure that the Extension: (i) will collect and transmit sanitary sewage in accordance with current engineering, regulatory, and Utility requirements; (ii) complies with the terms of this Agreement; and (iii) adequately protects the environment (collectively, the "Review Standard"). The Utility shall provide written notice of approval of the plans and specifications, or as required, shall document, with reasonable specificity, within fifteen (15) business days following their submission, any revisions required by the Utility in order to satisfy the Review Standard. The plans and specifications shall be deemed approved if no notice is received by the City within fifteen (15) business days following their submission.

Section 2.06. The City shall, consistent with the terms of this Agreement, administer, design and construct the Extension.

Section 2.07. The Parties mutually agree that no cost estimate shall be prepared for the Extension to be constructed under this Agreement. The Parties agree to waive this requirement for preparation of an estimate by the Utility, provided, however, the City may prepare cost estimates as necessary for its use.

SECTION III

PERMITS AND EASEMENTS

Section 3.01. The City shall, at its own expense, obtain and comply with necessary

permits, authorizations and approvals of federal, state and local agencies prior to and during construction of the Extension.

Section 3.02. The City, at no cost to the Utility, shall provide the Utility easements for main sewer lines and ancillary facilities included in the Extension.

SECTION IV
CONSTRUCTION

Section 4.01. The City will construct the Extension solely in accordance with the approved plans and specifications and this Agreement.

Section 4.02. The Utility shall bear no financial or other responsibility for the construction of the Extension.

Section 4.03. The Utility may deploy a full time resident project representative (the "RPR") during construction of the Extension. Full time shall mean that time during which construction layout is being reviewed, construction is ongoing and piping or appurtenances are being laid out, excavated for, installed, backfilled, repaired and tested. This includes construction related meetings. It shall be the obligation of the City to provide a minimum of twenty-four (24) hours notice to schedule construction inspection by the RPR.

It shall be the obligation of the City to satisfy the RPR that all construction and testing has been performed in accordance with the approved plans and specifications.

In any event, no facility shall be covered with stone or earth without the express inspection and approval of the Utility or its RPR. Any facilities covered without the inspection and approval may be re-excavated to allow for adequate inspection in accordance with the sole judgment of the Utility.

Section 4.04. The City shall continually update the plans and specifications through the

design and construction of the Extension as needed and have available "redlined" copies of the plans and specifications for review by the Utility as requested.

Section 4.05. At all times during the construction of the Extension the City shall maintain sole ownership of the Extension.

Section 4.06. The City shall employ a licensed land surveyor to accurately locate by post-construction survey all system fixtures on the as-built drawings which are to be provided as required by Section 5.05 of this Agreement.

Section 4.07. The Utility shall have the right to inspect and approve, prior to the implementation of service, the construction of the Extension to ensure that the Extension is constructed in accordance with the approved plans and apecifications, the current specifications and standards of the Utility, and using materials in compliance with federal, state and local standards.

SECTION V
COMPLETION AND TRANSFER OF RESPONSIBILITY

Section 5.01. It is expressly understood between the Parties that the Utility will receive title to the Extension upon completion and inspection without any renumeration or payment, provided, however, that the Utility shall have no obligation to receive title to or assume responsibility for the Extension until relevant terms and conditions of this Agreement are satisfied.

Section 5.02. Upon completion of the construction of the Extension and when the inspections and testing and repairs (if any) described in Section IV of this Agreement have been completed, the Extension shall be deemed completed in all respects. As used in this and subsequent sections, "completed in all respects" includes: (i) the Extension being completed in

accordance with the terms and conditions of this Agreement; (ii) engineers, material men, contractors and subcontractors of the City having been paid for their work on the Extension; and (iii) a certification from the City that legal disputes regarding the Extension are resolved, and no outstanding liens exist regarding the Extension, the same to be certified in writing by the City, (collectively, the "Completion Requirements"). The City shall provide the Utility with written notice of meeting the Completion Requirements (the "Completion Requirements Notice").

Section 5.03. The Utility shall have the right to inspect and conduct tests at its expense on the Extension before it takes possession of the same. If the Extension fails any such test, the Utility shall notify the City in writing of such failure as soon as possible and prescribe the action necessary to remedy the problem, which action shall be undertaken by the City at its expense and schedule.

Section 5.04. Unless within thirty (30) business days following its receipt of the Completion Requirements Notice described in Section 5.02, the Utility conducts additional inspection or testing in accordance with Section 5.03, the Utility shall be deemed to have accepted the Extension, and the City shall deliver by duly authorized and executed document, and the Utility shall acquire, in accordance with the terms outlined in Section VI of this Agreement, ownership of the Extension.

Section 5.05. Not later than sixty (60) business days following the Utility's acceptance of the Extension, the City shall provide the Utility with three (3) copies of certified and signed "as-built" drawings showing how the Extension was actually constructed. Such as-built plans shall reflect to results of a post-construction survey by a West Virginia licensed land surveyor in accordance with Section 4.06 of this Agreement.

SECTION VI

FINANCIAL TERMS

Section 6.01. The City shall design and construct the Extension at its own expense and shall, in accord with the provisions of this Agreement, deliver the completed Extension to the Utility at the earliest possible date, and the Utility shall accept the Extension as a part of its own system, in accord with the terms contained in this Agreement, at the earliest possible date.

Section 6.02. Upon transfer of ownership of the Extension to the Utility, nothing in this Agreement shall be construed to provide the City with any ownership or other interest in the Extension, which shall become the exclusive property of the Utility except as otherwise provided in this Agreement.

Section 6.03. Transfer of ownership of the Extension shall occur no later than sixty (60) days after the acceptance of the completed Extension by the Utility.

Section 6.04. The Utility shall be solely responsible for the operation and maintenance of the completed Extension to supply sewer service to the public.

SECTION VII

REPRESENTATIONS AND WARRANTIES

Section 7.01. The Utility and the undersigned represent and warrant that the execution, delivery and performance of this Agreement by the Utility has been duly authorized, and this Agreement constitutes a valid and binding obligation of the Utility enforceable in accordance with its terms.

Section 7.02. The City and the undersigned represent and warrant that that the execution, delivery and performance of this Agreement by the City has been duly authorized and that the

Extension will be designed and constructed in accordance with the approved plans and specifications and this Agreement.

SECTION VIII
MISCELLANEOUS PROVISIONS

Section 8.01. Nothing in this Agreement shall be construed to make the Utility liable or responsible for any obligations of the City, nor shall this Agreement be construed to make the City liable or responsible for any obligations of the Utility.

Section 8.02. The City hereby agrees to save, indemnify, hold harmless and defend the Utility against all liability claims and judgments or demands for damages arising from accidents to persons or property occasioned by the City, its agents or employees, and against all claims and demands for damages arising from accidents to the City, its agents or employees, resulting from construction of the Extension, whether occasioned by said City or its employees or any other person or persons hired or controlled by City, and the City will defend any suits that may be brought against the Utility and reimburse the Utility for any expenditures that the Utility may make by reason for such accidents. Furthermore, the City hereby agrees to save, indemnify, hold harmless and defend the Utility from claims, demands, causes of action, or suits of whatever nature arising out of the labor and materials used by the City and its contractors or subcontractors, and from laborers', materialmen's and mechanic's liens arising out of the labor and materials used by the City and its contractors or subcontractors, resulting from construction of the Extension.

The Utility hereby agrees to save, indemnify, hold harmless and defend the City against all liability claims and judgments or demands for damages arising from accidents to persons or

property occasioned by the Utility, its agents or employees, and against all claims and demands for damages arising from accidents to the Utility, its agents or employees, resulting from their presence during construction of the Extension, whether occasioned by said Utility or its employees, agents, representatives, or any other person or persons hired or controlled by the Utility, and the Utility will defend any and all suits that may be brought against the City. Upon satisfaction of the terms and conditions of this Agreement and the transfer of the Extension or any part thereof, Utility agrees to indemnify the City from any claim associated with the Utility utilizing this system.

Section 8.03. This Agreement constitutes the entire agreement between the Utility and the City with respect to the matters addressed and may be amended only in a subsequent writing executed by both parties and supersedes any other agreement executed by the Utility and the City with respect to the Extension and the Project.

Section 8.04.This Agreement may not be assigned or otherwise transferred to a third party by either party without the written consent of the other party. The Parties mutually agree that reasonable consent of assignment or transference of the Agreement shall not be withheld provided sufficient written notice is received.

Section 8.05. If any portion of this Agreement is declared void or unenforceable as a result of a change in federal or state law or regulations or by a change in federal, state or local specifications, the remaining sections will remain in force and the parties shall negotiate in good faith to reach agreement on an amendment to the offending section or part thereof to bring it back into compliance.

Section 8.06. The section headings in this Agreement are merely for the convenient reference of the parties and shall not affect the meaning or interpretation of the Agreement.

Section 8.07. This document shall be governed by and interpreted in accordance with the laws of the State of West Virginia and the enforcement hereof shall be exclusively within the jurisdiction of the Circuit Court of Jefferson County, West Virginia.

WITNESS the following signatures the day and year first written above.

City of Ranson

By: _____

Charles Town Utility Board

By: _____

EXHIBIT A

Map of the Extension

WATER MAIN LINE CONSTRUCTION AGREEMENT

This AGREEMENT is made and effective this ____ day of _____ 2021, by and between the City of Ranson, a political subdivision of the State of West Virgina, whose address is 312 South Mildred Street, Ranson, West Virginia 25438 (hereafter, the "City") and the City of Charles Town by and through the Charles Town Utility Board, a West Virginia public utility, whose address is 661 South George Street, Charles Town, West Virgnia 25414 (hereafter, the "Utility"). Collectively the "Parties", AGREE to enter into this Water Alternate Mainline Extension Agreement (the "Agreement") for the purpose of improving the Utility's public water distribution service in areas of Ranson and Jefferson County, West Virginia ("the Project").

WHEREAS, the Utility wishes to make public water available to the greatest number of individuals and entities within its service area in as prudent and efficient a manner as possible; and,

WHEREAS, the City is planning to develop certain public infrastructure within the City of Ranson and the Utility's service territory; and,

WHEREAS, the Parties agree that the Project is desirable and most efficiently and cost-effectively completed during and as part of the City's infrastructure project; and,

WHEREAS, the construction proposed to be undertaken by the City consists of approximately 580 LF of new water main pipeline and appurtenances, as shown on Exhibit A ("the Extension"); and,

WHEREAS, the Utility is willing to bear the full expense of the Project.

NOW, THEREFORE, in consideration of the covenants and agreements set forth herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby

acknowledged, the Utility and the City agree:

SECTION I
INTENT OF PARTIES

Section 1.01. It is the intent of the Parties that the City shall construct the Extension in accordance with the terms herein and that, upon completion, the City shall convey, at no cost to the Utility, all of the Extension.

SECTION II
DESIGN

Section 2.01. The Utility hereby agrees to employ a Registered Professional Engineer, licensed by the State of West Virginia (the "City's Engineer"), to design the Extension. The Utility shall pay for the design of the Extension.

Section 2.02. The City shall bear no financial responsibility for the design of the Extension.

Section 2.03. The design parameters for the Extension are the sole prerogative of the Utility.

Section 2.04. Prior to the start of construction of the Extension, the Utility shall provide the City copies of the plans and specifications for the Extension.

Section 2.05. The City shall, consistent with the terms of this Agreement, administer, design and construct the Extension.

Section 2.07. The Parties mutually agree that no cost estimate shall be prepared for the Extension to be constructed under this Agreement. The Parties agree to waive this requirement for preparation of an estimate by the Utility, provided, however, the City may prepare cost

estimates as necessary for its use.

SECTION III
PERMITS AND EASEMENTS

Section 3.01. The Utility shall, at its own expense, obtain and comply with necessary permits, authorizations and approvals of federal, state and local agencies prior to and during construction of the Extension.

Section 3.02. The City, at no cost to the Utility, shall provide the Utility easements for main lines and ancillary facilities included in the Extension.

SECTION IV
CONSTRUCTION

Section 4.01. The City will construct the Extension solely in accordance with the provided plans and specifications and this Agreement.

Section 4.02. The City shall bear no financial or other responsibility for the construction of the Extension.

Section 4.03. The Utility may deploy a full time resident project representative (the "RPR") during construction of the Extension. Full time shall mean that time during which construction layout is being reviewed, construction is ongoing and piping or appurtenances are being laid out, excavated for, installed, backfilled, repaired and tested. This includes construction related meetings. It shall be the obligation of the City to provide a minimum of twenty-four (24) hours notice to schedule construction inspection by the RPR.

It shall be the obligation of the City to satisfy the RPR that all construction and testing has been performed in accordance with the approved plans and specifications.

In any event, no facility shall be covered with stone or earth without the express

inspection and approval of the Utility or its RPR. Any facilities covered without the inspection and approval may be re-excavated to allow for adequate inspection in accordance with the sole judgment of the Utility.

Section 4.04. The City shall continually update the plans and specifications through the design and construction of the Extension as needed and have available "redlined" copies of the plans and specifications for review by the Utility as requested.

Section 4.05. At all times during the construction of the Extension the City shall maintain sole ownership of the Extension.

Section 4.06. The City shall employ a licensed land surveyor to accurately locate by post-construction survey all system fixtures on the as-built drawings which are to be provided as required by Section 5.05 of this Agreement.

Section 4.07. The Utility shall have the right to inspect and approve, prior to the implementation of service, the construction of the Extension to ensure that the Extension is constructed in accordance with the approved plans and apecifications, the current specifications and standards of the Utility, and using materials in compliance with federal, state and local standards.

SECTION V
COMPLETION AND TRANSFER OF RESPONSIBILITY

Section 5.01. It is expressly understood between the Parties that the Utility will receive title to the Extension upon completion and final payment of project costs.

Section 5.02. Upon completion of the construction of the Extension and when the inspections and testing and repairs (if any) described in Section IV of this Agreement have been completed, the Extension shall be deemed completed in all respects. As used in this and

subsequent sections, "completed in all respects" includes: (i) the Extension being completed in accordance with the terms and conditions of this Agreement; (ii) engineers, material men, contractors and subcontractors of the City having been paid for their work on the Extension; and (iii) a certification from the City that legal disputes regarding the Extension are resolved, and no outstanding liens exist regarding the Extension, the same to be certified in writing by the City, (collectively, the "Completion Requirements"). The City shall provide the Utility with written notice of meeting the Completion Requirements (the "Completion Requirements Notice").

Section 5.03. The Utility shall have the right to inspect and conduct tests at its expense on the Extension before it takes possession of the same. If the Extension fails any such test, the Utility shall notify the City in writing of such failure as soon as possible and prescribe the action necessary to remedy the problem, which action shall be undertaken by the City at the Utility's expense and schedule.

SECTION VI
FINANCIAL TERMS

Section 6.01. The Utility shall design the Extension at its own expense and shall fully conmpensate the City for the cost of construction. The City shall, from time to time, present an invoice to the Utility for construction services, which shall be paid in full witin thirty (30) days of presentment.

Section 6.02. Upon transfer of ownership of the Extension to the Utility by a duly authozed document executed by the City, nothing in this Agreement shall be construed to provide the City with any ownership or other interest in the Extension, which shall become the exclusive property of the Utility except as otherwise provided in this Agreement.

Section 6.03. The Utility shall be solely responsible for the operation and maintenance of the completed Extension to supply water service to the public.

SECTION VII

REPRESENTATIONS AND WARRANTIES

Section 7.01. The Utility and the undersigned represent and warrant that the execution, delivery and performance of this Agreement by the Utility has been duly authorized, and this Agreement constitutes a valid and binding obligation of the Utility enforceable in accordance with its terms.

Section 7.02. The City and the undersigned represent and warrant that that the execution, delivery and performance of this Agreement by the City has been duly authorized and that the Extension will be constructed in accordance with the approved plans and specifications and this Agreement.

SECTION VIII

MISCELLANEOUS PROVISIONS

Section 8.01. Nothing in this Agreement shall be construed to make the Utility liable or responsible for any obligations of the City, nor shall this Agreement be construed to make the City liable or responsible for any obligations of the Utility.

Section 8.02. The City hereby agrees to save, indemnify, hold harmless and defend the Utility against all liability claims and judgments or demands for damages arising from accidents to persons or property occasioned by the City, its agents or employees, and against all claims and demands for damages arising from accidents to the City, its agents or employees, resulting from construction of the Extension, whether occasioned by said City or its employees or any other person or persons hired or controlled by City, and the City will defend any suits that may be

brought against the Utility and reimburse the Utility for any expenditures that the Utility may make by reason for such accidents. Furthermore, the City hereby agrees to save, indemnify, hold harmless and defend the Utility from claims, demands, causes of action, or suits of whatever nature arising out of the labor and materials used by the City and its contractors or subcontractors, and from laborers', materialmen's and mechanic's liens arising out of the labor and materials used by the City and its contractors or subcontractors, resulting from construction of the Extension.

The Utility hereby agrees to save, indemnify, hold harmless and defend the City against all liability claims and judgments or demands for damages arising from accidents to persons or property occasioned by the Utility, its agents or employees, and against all claims and demands for damages arising from accidents to the Utility, its agents or employees, resulting from their presence during construction of the Extension, whether occasioned by said Utility or its employees, agents, representatives, or any other person or persons hired or controlled by the Utility, and the Utility will defend any and all suits that may be brought against the City. Upon satisfaction of the terms and conditions of this Agreement and the transfer of the Extension or any part thereof, Utility agrees to indemnify the City from any claim associated with the Utility utilizing this system.

Section 8.03. This Agreement constitutes the entire agreement between the Utility and the City with respect to the matters addressed and may be amended only in a subsequent writing executed by both parties and supersedes any other agreement executed by the Utility and the City with respect to the Extension and the Project.

Section 8.04.This Agreement may not be assigned or otherwise transferred to a third party by either party without the written consent of the other party. The Parties mutually agree that reasonable consent of assignment or transference of the Agreement shall not be withheld

provided sufficient written notice is received.

Section 8.05. If any portion of this Agreement is declared void or unenforceable as a result of a change in federal or state law or regulations or by a change in federal, state or local specifications, the remaining sections will remain in force and the parties shall negotiate in good faith to reach agreement on an amendment to the offending section or part thereof to bring it back into compliance.

Section 8.06. The section headings in this Agreement are merely for the convenient reference of the parties and shall not affect the meaning or interpretation of the Agreement.

Section 8.07. This document shall be governed by and interpreted in accordance with the laws of the State of West Virginia and the enforcement hereof shall be exclusively within the jurisdiction of the Circuit Court of Jefferson County, West Virginia.

WITNESS the following signatures the day and year first written above.

City of Ranson

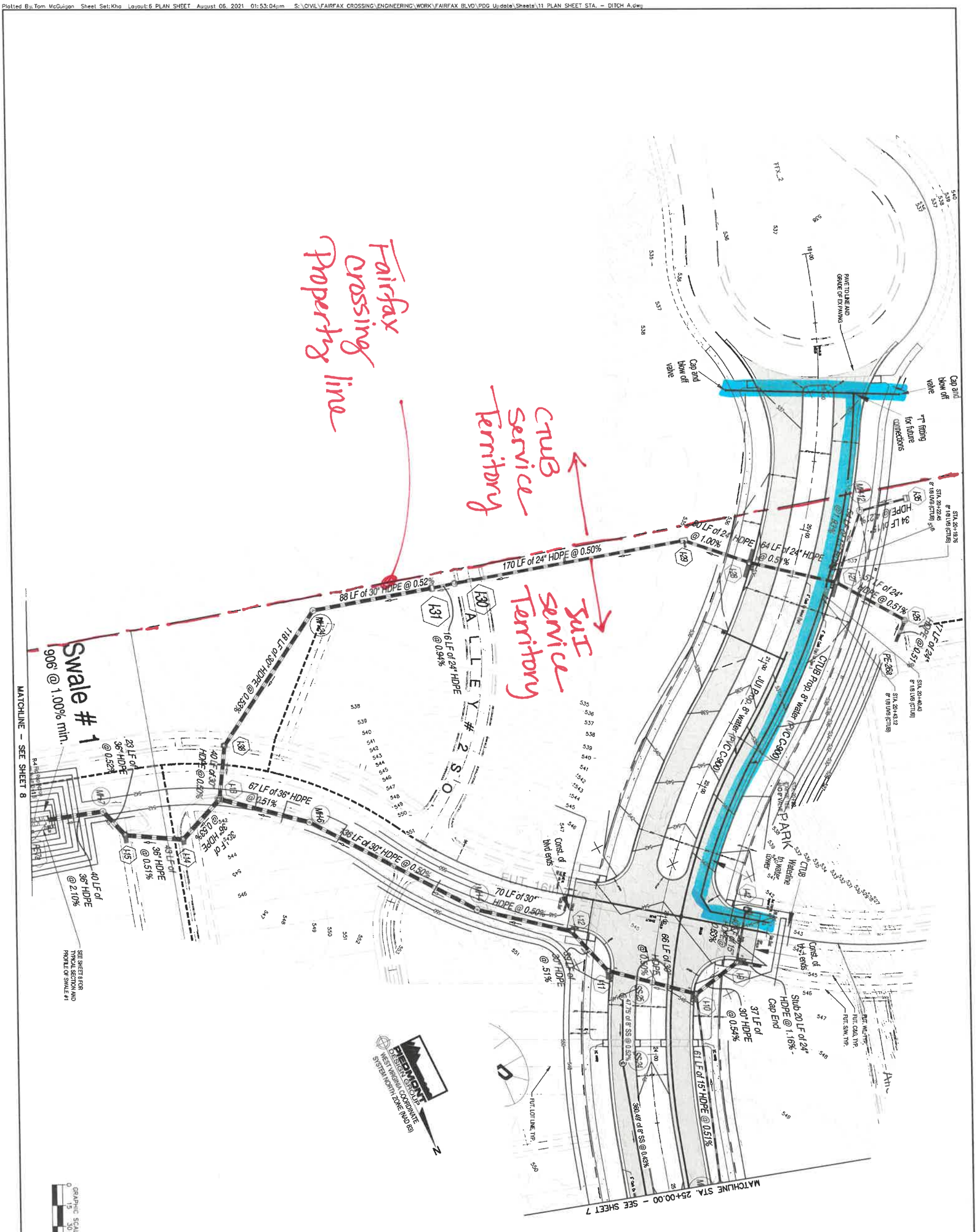
By: _____

Charles Town Utility Board

By: _____

EXHIBIT A

Map of the Extension



SHEET NUMBER 6	FAIRFAX BOULEVARD EXTENSION PLAN SHEET	The City of Ranson	City of Ranson Community Development 312 S. Mildred St. Ranson, WV 25438 304-725-1010	NO. DATE DESCRIPTION REVISIONS	PIEDMONT DESIGN GROUP 5233 CORPORATE DRIVE SUITE 300 FREDERICK, MD 21703 301-695-6614

CHARLES TOWN UTILITY BOARD
WATER/SEWER SYSTEMS UPGRADE PROJECTS

RUMMEL, KLEPPER & KAHL, LLP

TASK NO. 05
SCOPE OF WORK CHANGE NO. 01

PROFESSIONAL ENGINEERING & SURVEYING SERVICES

SEWER MODEL
GREEN HILL – SANITARY SEWER AVAILABILITY

August 5, 2021

Being a part of Agreement Between
Charles Town Utility Board and Rummel, Klepper & Kahl, LLP
dated November 13, 2019

This Scope of Work Change No. 01 to Task No. 05 dated August 5, 2021 to the Agreement between Charles Town Utility Board (CTUB) and Rummel, Klepper, and Kahl, LLP (RK&K) dated November 13, 2019 is to provide professional engineering services for evaluating the capacity within the Green Hill sanitary sewer residential project serving 320 lots utilizing the Sewer Model developed in RK&K Task 05.

Scope of Services

The following summarizes RK&K's services as part of this Task:

1. RK&K will expand the existing sewer model by including the existing gravity sewer system between the proposed Green Hill residential area and the Breckenridge Pump Station.
2. RK&K will work with CTUB Staff to analyze the existing collection system for expanding and calibrating the sewer model in this area. This effort will consist of flow monitoring and reviewing existing water meter usage data.
3. RK&K will utilize the flow monitor data provided by CTUB Staff to calibrate the sewer model.
4. RK&K will create a flow scenario for the additional Green Hill units.
5. RK&K will utilize the sewer model to provide a summary of the remaining capacity in the system.
6. RK&K will provide a technical memorandum summarizing the methodology and findings of the impact of the Green Hill units on the hydraulic model.

Schedule

Subject to weather, permitting and CTUB review time, RK&K anticipates 30 working days to perform the evaluation of Green Hill from issuance of notice to proceed. Impacts to the schedule may occur outside of RK&K's and CTUB's ability to control (i.e. regulatory and permitting approvals).

Estimated Person-Hours per Phase by Category, Engineer's Consultant Costs and Other Direct Costs

A labor derivation is attached as Page 3 which includes RK&K's estimated person-hours by category and other direct costs anticipated to complete the work for this project.

Materials and Resources Required of CTUB

- CTUB will be responsible for providing available mapping to facilitate RK&K's evaluation.
- CTUB will be responsible for providing invert data for the gravity lines between Green Hill and Breckenridge Pump Station.
- CTUB will be responsible for providing RK&K with flow monitoring data from the Breckenridge Pump Station for use in updating the model.
- CTUB will be responsible for installing temporary flow monitors in the sewer manholes designated by RK&K over the 30-working day period. Responsibilities also include periodic downloading and processing of data for distribution to RK&K.

Estimated Not-To-Exceed Fee

RK&K will provide the scope of services described above at an amount equal to Engineer's Direct Labor Costs times a factor of 2.7 for the services of Engineer's personnel engaged on the Project, plus Reimbursable Expenses. RK&K's current certified payrates for personnel to be assigned to this project is included as Exhibit B to Original Agreement dated November 13, 2019.

The total estimated Not-to-Exceed fee to perform the work is $13,000.00 as shown on RK&K's enclosed labor derivation.

Authorization

This Scope of Work Change No. 01, Green Hill – Sanitary Sewer Availability to Task No. 05, Sewer Model, dated August 5, 2021 and being a part of the Agreement between Charles Town Utility Board and Rummel, Klepper & Kahl, LLP for Engineering Services for Water/Sewer Systems Upgrade Projects dated November 13, 2019, is approved by the following duly authorized officials:

Engineer: RUMMEL, KLEPPER & KAHL, LLP

_____	8/5/21
John W. Cole, PE Senior Manager, Municipal Engineering	Date

Owner: Charles Town Utility Board

_____	_____
Daryl Hennessy Chairman	Date

RUMMEL, KLEPPER KAHL, LLP
FEE DERIVATION
CHARLES TOWN UTILITY BOARD
TASK 05
SEWER MODEL
SCOPE OF WORK CHANGE 01
GREEN HILL - SANITARY SEWER AVAILABILITY

August 5, 2020

Scope of Services	Senior Manager	Project Engineer	Associate Engineer / Engineer	GIS	Misc. Exp.	Task Total Hours
Technical Assistance						
Meetings	4		4			**8**
Pump Station Operational Data Review			8			**8**
Review of Available Data and Mapping			4			**4**
GIS Mapping and Input of Attributes				24		**24**
Current /Proposed Flow Estimates		8	4			**12**
Sewer Model - Existing/Proposed Conditions		16				**16**
Calibrate Sewer Model		8				**8**
Technical Memorandum	1	16	4			**21**
Total Hours	**5**	**48**	**24**	**24**	**$ -**	**101**

NTE Cost	**$ 13,000.00**

159 Plaza Drive | Keyser, WV 26726 | P 304.788.3370 | F 304.788.3577 | www.rkk.com

October 7, 2021

Kristen Stolipher, Utility General Manager
Charles Town Utility Board
661 South George Street, Suite 101
Charles Town, WV 25414

Reference: Charles Town Utility Board
2021 Collection System Project
Final Facility Plan

Dear Ms. Stolipher,

Enclosed is a copy of the Facility Plan for the 2021 Collection System Project for use as an amendment to the previously submitted Draft Facility Plan dated August 17, 2021. Please refer to all Appendices included in the Draft Facility Plan with modifications to Appendix H, Appendix R, and the map in Appendix B and the addition of Appendix S, Appendix T, and Appendix U.

Should there be any questions or comments regarding this request, please feel free to contact me at 304.788.3370 or jcole@rkk.com.

Sincerely yours,
RUMMEL, KLEPPER, & KAHL, LLP

John W. Cole, P.E.
Senior Manager, Municipal Engineering

JWC:rad

cc: Rhiannon Dodge, EIT, RK&K

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

October 7, 2021

CHARLES TOWN UTILITY BOARD
661 South George Street
Charles Town, WV 25414
(304)-724-7080

Prepared by:

Rummel, Klepper & Kahl, LLP
159 Plaza Drive
Keyser, WV 26726

Phone: 304-788-3370 Fax: 304-788-3577

_____
John W. Cole, PE #17949

_____
Date

8.0 List of Tables

EXECUTIVE SUMMARY

The Charles Town Utility Board's (CTUB) sewer system is located in Jefferson County, WV and encompasses the City of Ranson and the City of Charles Town. The CTUB sewer system consists of three wastewater treatment plants, over 100 miles of gravity sewer lines, over 25 miles of force main, and 47 pump stations.

A comprehensive evaluation of CTUB's collection system was conducted to determine improvements needed within the system. A Sewer Model focusing on the main trunklines of the system specified by the CTUB was created by RK&K in 2020. The Sewer Model indicated areas of concern with the existing system peak dry weather flows and wet weather flows. These areas included the Old Town Ranson gravity line, the Evitts Run Interceptor between the Flowing Springs Pump Station discharge and the CTWWTP, and the Park Interceptor through Jefferson Memorial Park.

Many of the pump stations within the system are in poor condition due to age and hydrogen sulfide within the system. Decommissioning of pump stations to consolidate the three systems has been a focus of the CTUB. Decommissioning reduces operation and maintenance costs, including the cost of electric for each pump station. Decommissioning of pump stations also reduced the amount of hydrogen sulfide in the system, which has deteriorated many manholes. RK&K has completed inspections of all manholes downstream of pump stations, and has made recommendations for lining and replacement of manholes

In addition, the installation of the Route 9 sewer project to serve ROXUL will impact the capacity of some of the pump stations, including the Burr East Pump Station, the Jett's Farm Pump Station, the Moose Lodge Pump Station, the Lloyd's Flat Pump Station, and the Flowing Springs Pump Station due to rerouting of the Burr Industrial Park flow to the War Admiral Pump Station.

Alternatives were evaluated for the Burr East Pump Station Flow Diversion, the Jett's Farm Pump Station and Force Main, the Moose Lodge Pump Station and Force Main, the Flowing Springs Pump Station, the Evitt's Run Interceptor, the Jefferson Park Memorial Force Main, the Fairfax Crossing Parallel Line, and the Forrest Avenue Pump Station Relocation.

Recommendations were made and the various components were combined into an overall project that will relieve the Old Town Ranson gravity sewer system of flow, will accommodate the flows through Jefferson Park and the Evitt's Run Interceptor, and will reduce operation and maintenance costs with the decommissioning of pump stations. The total proposed project cost is $4,861,000.

Preparation of plans, specifications and contract documents for the project will take approximately six (6) months and advertising for bids and award of contract will take four (4) months. Construction is estimated to take at least eighteen (13) months to complete. Based on the availability of project funding and the noted timelines, the project could potentially be completed and fully operational by the beginning of year 2024.

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

SECTION 1
INTRODUCTION

1.0 INTRODUCTION

This Facility Plan for the Charles Town Utility Board, 2021 Collection System Project has been prepared by Rummel, Klepper & Kahl, LLP (RK&K) on behalf of the Utility.

1.1 LOCATION

As shown in **Figure 1-1**, the Charles Town Utility Board service area is located in Jefferson County, West Virginia and encompasses the City of Ranson and the City of Charles Town.

The Charles Town Utility Board sewer system consists of three wastewater treatment plants, over 100 miles of gravity sewer lines, over 25 miles of force main, and 47 pump stations.

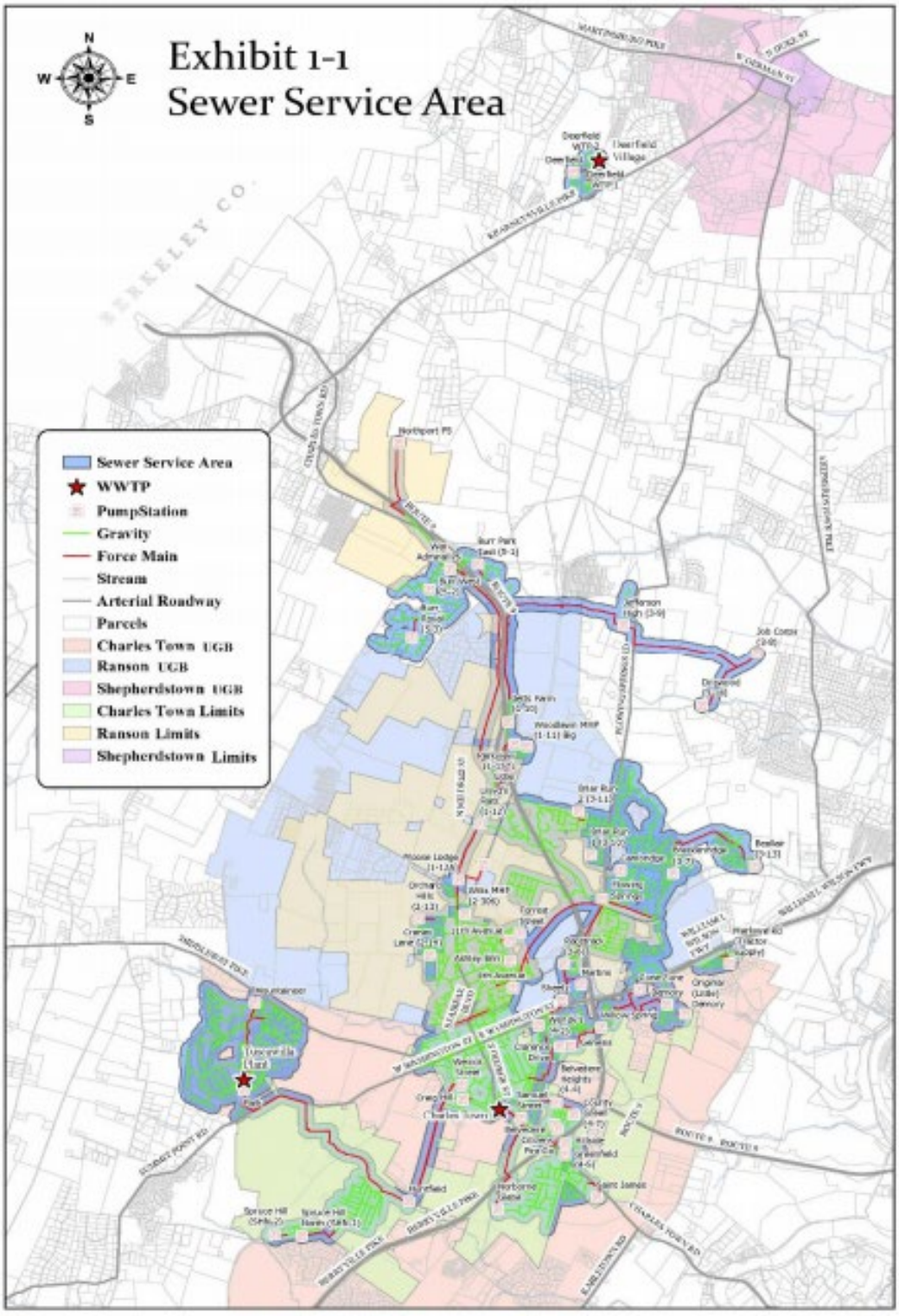


Figure 1-1 Charles Town Utility Board Existing System

1.2 HISTORY

On March 23, 2017, the WV PSC issued an Order in CASE NO. 16-0616-PSD-PC-CN wherein the Commission granted the application for a certificate of convenience and necessity and approved a Post-Project rate increase. Funding for the Project consisted of (i) a $3,575,000 USDA RD loan at a 2.5 percent interest rate over 40 years. And (ii) a DEP SRF loan of $2,844,984 at .25 percent interest, and a .25 percent administrative fee for a term up to 40 years, and debt forgiveness in the amount of $500,000 per the January 17, 2017 DEP assurance letter. During the consolidation of utilities, CTUB committed to the WV PSC completing necessary components of the Flowing Springs project through submission of a Modified Flowing Springs Plan in March 2018. Since the utility consolidation and completion of the Route 9 sewer project, CTUB has evaluated efficiencies and operational alternatives to significantly reduce components and costs of the Modified Flowing Springs Plan. The Flowing Springs Project and Modified Flowing Springs plan have evolved into a 2021 Collection System projects which consists of necessary improvements to the CTUB collection system. The Route 9 Sewer Project is now complete, with the exception of minor punch-list items, to serve the Rockwool Facility and adjacent Jefferson Orchards property customers along the Route 9 corridor. The construction of this project allows for diversion of flows from northeastern region to the new Route 9 sewer infrastructure thereby freeing up capacity in other segments of the system for future customers.

On July 1, 2018, the City of Charles Town acquired the City of Ranson sewer system, and on January 1, 2019, the City of Charles Town acquired the Jefferson County Public Service District. Prior to this consolidation, a Preliminary Engineering Report (PER) for Jefferson County PSD for the Wastewater Improvement Project WVIJDC #2014S-1538 was developed in 2014 (**Appendix A**).

At the time, the City of Ranson had contacted the Jefferson County PSD regarding concerns about heavy flows in the “Old Town” sewer lines and had requested that the PSD develop a solution to remove the flows from the “Old Town” section of the sewer system. The purpose of the 2014 PER was to divert existing sewer flows from the Northern Route 9 collection system to the Flowing Springs Basin collection system. This included constructing a new interceptor sewer line from the Northern Route 9 system to the Flowing Springs system, constructing a new pump station below the Breckenridge East Subdivision and upgrading the Ranson Flowing Springs Pump Station.

This project was never constructed, and changes have been made to the CTUB’s system, making this project no longer practical. As noted in the Charles Town Utility Board 2021 Wastewater Strategic Plan (**Appendix B**), the area is experiencing significant growth, and therefore, more demand for capacity within the system. In addition, in 2017, Governor Jim Justice announced that ROXUL will build a $150 million manufacturing plant in the City of Ranson, Jefferson County. The CTUB constructed the Route 9 Sewer Project (**Appendix C**), designed by Hatch, in 2021 to serve ROXUL. The addition of these flows via a new alignment that discharges to the Flowing Springs Pump Station has also

impacted the plan for rerouting flows within the system to alleviate capacity issues in the “Old Town” Ranson sewer lines.

Discussions with the CTUB have resulted in a list of projects with the same intent of removing flows from the “Old Town” Ranson sewer lines.

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

SECTION 2
CURRENT SITUATION

2.0 CURRENT SITUATION

2.1 LOCATION

CTUB provides sewer collection and treatment services for approximately 7,880 sewer customers comprising residential, commercial, industrial, and public authority entities within the municipalities of the City of Charles Town, the City of Ranson, and the surrounding areas within Jefferson County. The system consists of 100 miles of gravity sewer lines, 25 miles of force main, 47 pump stations, and three wastewater treatment facilities.

2.2 CONDITION OF EXISTING FACILITIES

2.2.1 Wastewater Treatment Plant

CTUB operates three wastewater treatment plants: the Charles Town Wastewater Treatment Plant (CTWWTP), the Tuscawilla Wastewater Treatment Plant (TWWTP), and the Deerfield Sewer Treatment Plant which is not connected to the larger Charles Town System. CTUB has the ability to treat flows at either the CTWWTP or the TWWTP through the Huntfield Transfer Pump Station. The relevant NPDES permit numbers are WV0022349, WV008461, and UIC0665-03-037-001. The CTWWTP has a treatment capacity of 1.75 MGD, and the TWWTP has a treatment capacity of 0.5 MGD. The average daily flow to the CTWWTP in 2020 was 1.15 MGD, and the average daily flow to the TWWTP in 2020 was 0.16 MGD. CTUB's 2021 Sewer Strategic Plan (**Appendix B**) includes planning for future capacity upgrades to the CTWWTP in the next 10 years in order to serve the growing population in Jefferson County.

2.2.2 Collection System

Following consolidation of the three systems, CTUB's system consists of 100 miles of gravity sewer lines, 25 miles of force main, and 47 pump stations. A Sewer Model (**Appendix D**) focusing on the main trunklines of the system specified by the CTUB was created by RK&K in 2020. The Sewer Model indicated areas of concern with the existing system peak dry weather flows and wet weather flows. These areas included the Old Town Ranson gravity line, the Evitts Run Interceptor between the Flowing Springs Pump Station discharge and the CTWWTP, and the Park Interceptor through Jefferson Memorial Park. The Sewer Model also analyzed 22 pump stations specified by the CTUB under current conditions. The majority of the pump stations were currently operating with available capacity, but if future development is proposed in the service area, the impact on each pump station's capacity would need to be evaluated.

Many of the pump stations are in poor condition due to age and hydrogen sulfide within the system. Decommissioning of pump stations to consolidate the three systems has been a focus of the CTUB.

Decommissioning reduces operation and maintenance costs, including the cost of electric for each pump station. Decommissioning of pump stations also reduced the amount of hydrogen sulfide in the system, which has deteriorated many manholes. RK&K has completed inspections of all manholes downstream of pump stations and has made recommendations for lining and replacement of manholes (**Appendix E**).

The installation of the Route 9 sewer project to serve ROXUL will impact the capacity of some of the pump stations, including the Burr East Pump Station, the Jett's Farm Pump Station, the Moose Lodge Pump Station, the Lloyd's Flat Pump Station, and the Flowing Springs Pump Station due to rerouting of the Burr Industrial Park flow to the War Admiral Pump Station.

The Annual Reports for 2018, 2019, and 2020 respectively report 13.35%, 32.03%, and 4.12% inflow and infiltration for an average of 16% inflow and infiltration (I&I) treated by CTUB. CTUB has completed a first phase of an I&I study, through smoke testing in selected areas of the collection system. The study was conducted by Hydrostructures in 2019 and identified defects in the system that needed to be repaired or investigated further.

2.2.3 Burr East Pump Station

The Burr East Pump Station currently collects flow from the Burr West Pump Station and the Bardane Industrial Park on the East side of Route 9. The Sewer Model Report (**Appendix D**) noted that the Burr East Pumps have a duty point of 265 GPM @ 98' TDH. Part of the Route 9 Project involves redirecting flow from the Burr West Pump Station to the new War Admiral Pump Station across Route 9 from the Burr East Pump Station.

After this redirection of flow, the Burr East Pumps will be oversized. In addition, the force main from the Burr East Pump Station is aging. To address these issues, and to relieve Old Town Ranson of flow, CTUB has requested that the Burr East Pump Station collect the flow from the Jefferson High School Pump Station and be redirected to the War Admiral Pump Station across Route 9. This would allow for the force main along Charles Town Road to the Jett's Farm Pump Station to be abandoned.

2.2.4 Jett's Farm Pump Station

The Jett's Farm Pump Station currently collects flow from the Woodlawn Pump Station and all of the northern flow from the Burr East Pump Station and the Jefferson High School Pump Station. The Jett's Farm pumps have a duty point of 287 GPM @ 97' TDH, and the pump station is in poor condition due to age. Redirection of flow at the Burr East Pump Station would result in a reduction in flow at the Jett's Farm Pump Station. After this reduction in flow, the pumps and force main would be oversized. These issues were analyzed in RK&K's Parkview-Woodlawn Report (**Appendix G**).

2.2.5 Moose Lodge Pump Station

The Jett's Farm Pump Station currently discharges to the Lloyd's Flat Pump Station. The War Admiral Pump Station associated with the new Route 9 Project discharges to a manhole on Baker Boulevard within The Boulevard at Potomac Town Center near the Lloyd's Flat Pump Station. In order to relieve flow in Old Town Ranson, CTUB has requested that the Lloyd's Flat Pump Station be decommissioned, and all flow added via gravity to the new Route 9 gravity line that flows through Fairfax Crossing.

The Moose Lodge Pump Station currently collects flow from the Lloyd's Flat Pump Station and from a few businesses via gravity. The Lloyd's Flat pumps have a duty point of 296 GPM and the Moose Lodge pumps have a duty point of 310 GPM. This redirection in flow at Lloyd's Flat will result in a reduction in flow at the Moose Lodge Pump Station, causing the Moose Lodge pumps and force main to be oversized. These issues were analyzed in RK&K's Parkview-Woodlawn Report (**Appendix G**).

2.2.6 Flowing Springs Pump Station and Evitt's Run Interceptor

The Route 9 Sewer Report (**Appendix C**), states that following the Route 9 Project, the flow from the War Admiral Pump Station will be received at the Flowing Springs Pump Station (FSPS). The Flowing Springs Pump Station currently receives flow from an 8-inch force main from the Breckenridge Pump Station, from an 8-inch gravity sewer from the Shenandoah Springs Subdivision, and from a 15-inch gravity sewer from the Fairfax Crossing area. Flowing Springs Pump Station was constructed in 2005 and was designed for future expansion. The Route 9 Sewer Report states that "when peak flow from the 15-inch sewer is adjusted to account for full interception of Lloyd's Flat flow, total peak flow increases to 687 GPM which represents a 76% consumption of FSPS' current simplex pumping capacity as of 2019."

The pumps currently in use at the FSPS are not the original pumps that the pump station was designed for and the basis of the noted flow rates. Based on conversations with CTUB Staff and Fluid Solutions, the pumps currently in use at the station were purchased as parts and assembled as the original pumps were no longer meeting the intended purpose.

The change in pumps is further validated from data provided by CTUB showing that the operating flow rate is 715 GPM based on the pump stations flow meter and 805 GPM based on the omnisite readings, neither of which amount to the 1,200+gpm.

The existing flows at the FSPS, based on data obtained from CTUB Staff in the last year, average 334,650 GPD. The project will include decommissioning the Lloyd's Flat PS along with rerouting all the northern flows to the FSPS. This results in an additional 168,720 GPD (average) based on pump station data obtained from CTUB Staff in the last year

redirected to the FSPS. This results in current customer flows of 503,370 GPD or 350 GPM at the FSPS. A peak factor of 4 is used in design which results in a design flow of 1,398 GPM.

RK&K's Sewer Model (**Appendix D**) analyzed the capacity of the gravity system downstream of the FSPS during current conditions. This section of line is also called the Evitt's Run Interceptor. The analysis indicated that under current dry weather conditions, the Evitt's Run Interceptor has sections over 75% of capacity and a surcharged manhole. Under current peak wet weather conditions, multiple portions of the Evitt's Run Interceptor are over 100% of capacity.

According to the CTUB's 2021 Sewer Strategic Plan (**Appendix B**), Flowing Springs Pump Station serves an area that includes the following developments:

- Aspen Green
- Beallair
- Blackford Village
- Breckenridge East
- Briar Run
- Burr Industrial Park and Bardane
- Cambridge
- Clayhill Farm
- Daniels Forest
- Harvest Hills
- Lakeland Place/Lloyd's
- Jefferson Orchards
- Lloyd Property
- Locust Knoll
- Potomac Marketplace
- President's Pointe
- Ranson Gateway/Boulevard
- Shenandoah Springs
- Greenhill (Stonecrest)
- Rockwool
- Shenandoah Junction

A summary of all projections for the Springs Pump Station and the Evitt's Run Interceptor is included in **Appendix H**. The projections indicate that the Flowing Springs Pump Station will need to be sized for the following:

	Year 1 2021	Year 5 2025	Year 10 2030	Year 20 2040
FSPS	1,500 GPM	1,900 GPM	2,500 GPM	3,700 GPM

The projected flows were incorporated into the Sewer Model to determine the impact of increased flows on the capacity in the Evitt's Run gravity line. The results of this scenario are shown in **Appendix I**.

2.2.7 Jefferson Memorial Park Force Main

RK&K's Sewer Model (**Appendix D**) analyzed the capacity of the gravity line through the Jefferson Memorial Park during current conditions. This analysis indicated that under peak wet weather flows, throughout this line, there are capacity restrictions, peak flows exceed the capacity of the downstream segments, and several manholes along this interceptor are predicted to be overflowing or surcharged.

This prediction has been verified by RK&K and CTUB Staff when manholes on this line have been seen surcharging during rain events.

2.2.8 Fairfax Crossing Parallel Line

The Route 9 Sewer Project connects to CTUB's existing system at manhole FC-59 on Baker Boulevard within the Boulevard at Potomac Town Center. The Route 9 Sewer Report (**Appendix C**) analyzed the capacity of this line from the Route 9 discharge to the Flowing Springs Pump Station. The analysis showed that the sewer will not be above capacity under 2019 peak conditions.

Prior to connection of the Route 9 Sewer Project to CTUB's existing system, an Agreement (**Appendix J**) was made between Potomac TC Owner LLC and the City of Charles Town. This Agreement states that:

"in connection with the Sewer Pipeline and the Easements contained herein, the Grantee hereby agrees, at its sole cost and expense, that upon receipt of notice from the Grantor that it intends to develop all or any portion of the Grantor's Property and such development needs additional sewer capacity, Grantee shall (i) construct and install approximately 2,400 linear feet of 10" gravity sewer line parallel with the existing 10" gravity sewer line and (ii) complete the installation and associated electrical connection of the third pump at the Flowing Springs Pump Station, located in Ranson, West Virginia. Such construction and completion shall accommodate development by Grantor and shall not unreasonably increase or reduce potential capacity for any upstream development by other parties."

Calculations have shown that the majority of the Fairfax Crossing Parallel Line is not currently above capacity following the addition of the Lloyd's Flat flows to the gravity line as proposed by the 2021 Collection System Project. The addition of these flows will result in a peak flow of 471 GPM. One section of line between manholes FC-34 (11D) and FC-32 (11C) will be over capacity during peak flows as shown in **Appendix T**, but the manholes will not surcharge. This line will not need to be upgraded during this project but will need to be monitored.

2.2.9 Forrest Street

The 11th Street Pump Station currently collects flow from houses on East 11th Avenue. The Forrest Street Pump Station currently collects flow East 12th Avenue, Forrest Avenue, and North Forrest Street via gravity and from the 11th Avenue Pump Station. The 11th Street pumps serve 15 customers, and the Forrest Street pumps serve 36 customers and have a duty point of 45 GPM. The Forrest Street Pump Station is located in the front yard of a house on North Forrest Street, and there have been previous instances of the pump station backing up into the house.

Expansion of the Lakeland Place Subdivision is currently being designed by a developer. This development would require a pump station to be located in the same vicinity as the Forrest Street Pump Station. CTUB has requested that the Forrest Street Pump Station and the new Lakeland Place Pump Station be combined into a single pump station. In addition, CTUB has requested that the 11th Avenue Pump Station is decommissioned and redirected via gravity to the new pump station. Doing so would eliminate two pump stations (Forrest Avenue and 11th Street), reducing operation and maintenance costs, as described in the RK&K Forrest Avenue/Fairfax Crossing Report (**Appendix K**).

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

SECTION 3
FUTURE SITUATION

3.0 FUTURE SITUATION

3.1 POPULATION TRENDS

The US Census projects that the number of customers within Charles Town Utility Board's system will increase within the next several years. Current projections for the City of Charles Town, the City of Ranson, and Jefferson County compared to 2000 and 2010 census data are as follows:

Table 3-1 Population Trends

Town	Pop. 2000 Census	Pop. 2010 Census	Pop. 2020 Census	% difference 2010 to 2020
Charles Town	5,259	5,229	6,534	25.0%
Ranson	4,440	4,394	5,433	23.6%
Jefferson County	53,498	53,490	57,701	7.9%

3.2 PROJECTIONS

CTUB's 2021 Sewer Strategic Plan (**Appendix B**) outlines growth projections for the sewer service area through 2040, and a table showing the development forecast is included in the Appendix. Historical data shows that an average of 129 residential units are built per year.

Based on the 2020 PSC Annual Report, the breakdown of the existing customer counts and EDUs for the Charles Town Utility Board are as follows:

Table 3-2 Customer Counts & EDUs

Type of Customer	Number of Customers	EDUs
Residential	7,195	7,195
Commercial	664	2,143
Industrial	3	15
Public Authority	18	127
Total	7,880	9,481

Based on population trends Charles Town, Ranson, and Jefferson County, for the next 10 years there is significant growth anticipated.

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

SECTION 4
ALTERNATIVES

4.0 ALTERNATIVES

This section identifies the needed improvements for the Charles Town Utility Board's Wastewater system. The proposed improvements are as follows:

- Burr East Pump Station Flow Diversion
- Jett's Farm Pump Station and Force Main
- Moose Lodge Pump Station and Force Main
- Flowing Springs Pump Station
- Evitts Run Interceptor
- Jefferson Memorial Park Force Main
- Fairfax Crossing Parallel Line
- Forrest Avenue Pump Station Relocation

The proposed improvements noted above for the Utility's Wastewater system will be evaluated and discussed separately in the following paragraphs.

4.1 BURR EAST PUMP STATION

4.1.1 Alternative BE 1 – Burr East Pump Station Diversion – 2 Pumps

This alternative involves redirecting flow from the northern portion of the system (Jefferson High School Pump Station, Burr East Pump Station) into the new Route 9 line at the new War Admiral Pump Station (**Appendix L**). Doing so relieves the Old Town Ranson gravity sewer of flow. This alternative would consist of:

- Redirection of gravity sewer flowing into the Burr East Pump Station
- Installing a new force main from the Burr East Pump Station to the War Admiral Pump Station
- Modifying the force main on Shenandoah Junction Road
- Modifying the force main along Charles Town Road
- Upgrading the Burr East Pump Station

As shown in **Table 4-1**, the construction cost for Alternative BE 1 is $638,660 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-1

No.	Description	Quantity	Unit	Unit Price	Total Price
	BURR EAST PUMP STATION DIVERSION				
1	Mobilization	1	LS	$ 7,000	$ 7,000
2	Erosion & Sediment Control	1	LS	$ 5,000	$ 5,000
3	Test Pit	1	EA	$ 800	$ 800
4	Launching/Receiving Pit Excavation	1,950	CY	$ 60	$ 117,000
5	Burr East Pump Station Modifications	1	LS	$234,000	$ 234,000
6	Doghouse Manhole	1	EA	$ 3,500	$ 3,500
7	Manhole Extension	4	VF	$ 250	$ 1,000
8	Air Release Valve	1	EA	$ 3,500	$ 3,500
9	6" C900 Class 165 FM	2,150	LF	$ 45	$ 96,750
10	1.5" SDR 9 HDPE FM	1,100	LF	$ 25	$ 27,500
11	System Tie-in Connection	5	EA	$ 7,500	$ 37,500
12	Valve Vault Modifications	1	LS	$ 10,000	$ 10,000
13	Miscellaneous Ductile Iron Fittings	1,000	LBS	$ 5	$ 5,000
14	Miscellaneous Items (Asphalt, etc.)	1	LS	$ 17,000	$ 17,000
15	Traffic Control	1	LS	$ 15,000	$ 15,000
		Construction Subtotal			**$ 580,600**
	Construction Contingency	10%		$	58,060
	ESTIMATED CONSTRUCTION COST			**$**	**638,660**

4.1.2 Alternative BE 2 – Burr East Pump Station Diversion – 3 Pumps

This alternative involves redirecting flow from the northern portion of the system (Jefferson High School Pump Station, Burr East Pump Station) into the new Route 9 line at the new War Admiral Pump Station (**Appendix L**). Doing so relieves the Old Town Ranson gravity sewer of flow. This alternative would consist of:

- Redirection of gravity sewer flowing into the Burr East Pump Station
- Installing a new force main from the Burr East Pump Station to the War Admiral Pump Station
- Modifying the force main on Shenandoah Junction Road
- Modifying the force main along Charles Town Road
- Upgrading the Burr East Pump Station

As shown in **Table 4-2**, the construction cost for Alternative BE 2 is $643,170 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-2

No.	Description	Quantity	Unit	Unit Price	Total Price
	BURR EAST PUMP STATION DIVERSION				
1	Mobilization	1	LS	$ 7,000	$ 7,000
2	Erosion & Sediment Control	1	LS	$ 5,000	$ 5,000
3	Test Pit	1	EA	$ 800	$ 800
4	Launching/Receiving Pit Excavation	1,950	CY	$ 60	$ 117,000
5	Burr East Pump Station Modifications	1	LS	$ 238,000	$ 238,000
6	Doghouse Manhole	1	EA	$ 3,500	$ 3,500
7	Manhole Extension	4	VF	$ 250	$ 1,000
8	Air Release Valve	1	EA	$ 3,500	$ 3,500
9	6" C900 Class 165 FM	2,150	LF	$ 45	$ 96,750
10	1.5" SDR 9 HDPE FM	1,105	LF	$ 25	$ 27,625
11	System Tie-in Connection	5	EA	$ 7,500	$ 37,500
12	Valve Vault Modifications	1	LS	$ 10,000	$ 10,000
13	Miscellaneous Ductile Iron Fittings	1,000	LBS	$ 5	$ 5,000
14	Miscellaneous Items (Asphalt, etc.)	1	LS	$ 17,000	$ 17,000
15	Traffic Control	1	LS	$ 15,000	$ 15,000
			Construction Subtotal		**$ 584,700**
	Contingency	10%		$	58,470
	ESTIMATED CONSTRUCTION COST			**$**	**643,170**

4.1.3 Alternative BE 3 – Do Nothing

If Alternative BE 3 is selected, no diversion of flow will be made from the northern areas of the system to the new War Admiral Pump Station and Route 9 line. This will result in continued high flows through the Old Town Ranson gravity system.

4.2 JETT'S FARM PUMP STATION

4.2.1 Alternative JF 1 – Jett's Farm Pump Station Modifications and Force Main Slip-Lining

The Burr East Project described above includes redirecting flow from the northern pump stations (Burr East, Burr Royal, Burr West, Driswood Job Corps, Jefferson High School) to the new War Admiral Pump Station instead of continuing towards the Jett's Farm Pump Station. This will greatly reduce the flow at the Jett's Farm Pump Station, and therefore, modifications to the pump station and force main must be made.

This option consists of replacing the pumps, controls, piping, and valve vault at the Jett's Farm Pump Station. This option also includes the installation of approximately 4,300 LF of 4" HDPE force main inserted inside the existing 6" force main from the Jett's Farm Pump Station to the

discharge manhole (MH 37) on War Admiral Boulevard. Pump and haul will be utilized while the existing 6" force main is slip lined with the new 4" force main. Also included with this option is connecting the single residential grinder unit at 2466 North Mildred Street into the new 4" HDPE force main (**Appendix G**).

This option also consists of installing a connection under Route 115 to connect the residences at 2328 N Mildred Street and 2256 N Mildred Street to the new Route 9 gravity sewer line.

As shown in **Table 4-3**, the construction cost for alternative JF 1 is $426,000 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-3

No.	Description	Quantity	Unit	Unit Price	Total Price
	JETT'S FARM OPTION 1				
1	Mobilization	1	LS	$ 9,000	$ 9,000
2	Erosion & Sediment Control	1	LS	$ 7,000	$ 7,000
3	3" DR 21 HDPE Force Main	4,300	LF	$ 30	$ 129,000
4	Air Release Valve Assembly	2	EA	$ 3,500	$ 7,000
5	Flushing Valve	4	EA	$ 3,500	$ 14,000
6	Pump Station Modifications	1	LS	$ 122,000	$ 122,000
7	Pump and Haul	1	LS	$ 25,000	$ 25,000
8	System Tie-in Connection	2	EA	$ 7,500	$ 15,000
9	Traffic Control	1	LS	$ 5,000	$ 5,000
10	Miscellaneous Items (Asphalt, etc.)	1	LS	$ 22,000	$ 22,000
			Construction Subtotal		**$ 355,000**
	Construction Contingency	20%		$	71,000
	ESTIMATED CONSTRUCTION COST			**$**	**426,000**

4.2.2 Alternative JF 2 – Jett's Farm Pump Station and Force Main Installation

The Burr East Project described above includes redirecting flow from the northern pump stations (Burr East, Burr Royal, Burr West, Driswood Job Corps, Jefferson High School) to the new War Admiral Pump Station instead of continuing towards the Jett's Farm Pump Station. This will greatly reduce the flow at the Jett's Farm Pump Station, and therefore, modifications to the pump station and force main must be made.

This option consists of replacing the pumps, controls, piping, and valve vault at the Jett's Farm Pump Station and installation of approximately 1,355 LF of 4" force main from the Jett's Farm Pump Station through an existing casing under Route 9 to the new Route 9 force main.

This option includes abandoning the existing 6" force main from the Jett's Farm Pump Station to the residence at 2466 North Mildred Street and installing a grinder pump and force main (**Appendix G**).

As shown in **Table 4-4**, the construction cost for alternative JF 2 is $396,880, excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-4

No.	Description	Quantity	Unit	Unit Price	Total Price
	JETT'S FARM OPTION 2				
1	Mobilization	1	LS	$ 3,000	$ 3,000
2	Erosion & Sediment Control	1	LS	$ 3,000	$ 3,000
3	Test Pit Excavation & Refill	2	EA	$ 1,000	$ 2,000
4	4" C900 PVC Force Main	1,355	LF	$ 30	$ 40,650
5	12" Steel Casing (Bore & Jack)	60	LF	$ 800	$ 48,000
6	Air Release Valve	1	EA	$ 3,500	$ 3,500
7	Pump Station Modifications	1	LS	$185,000	$ 185,000
8	1.5" SDR-9 IPS HDPE Force Main	940	LF	$ 25	$ 23,500
9	8" SDR 35 PVC Gravity Sewer	28	LF	$ 125	$ 3,500
10	Doghouse Manhole	3	EA	$ 3,500	$ 10,500
11	Doghouse Manhole Extension	2	EA	$ 250	$ 375
12	Drop Connection	1	EA	$ 1,500	$ 1,500
13	Frame and Cover (highway)	3	EA	$ 500	$ 1,500
14	System Tie-in Connection	1	EA	$ 7,500	$ 7,500
15	Line Manhole	3	EA	$ 1,500	$ 4,500
16	Traffic Control	1	LS	$ 5,000	$ 5,000
17	Aggregate for Backfill	215	CY	$ 50	$ 10,750
18	Miscellaneous Items (Asphalt, etc.)	1	LS	$ 7,000	$ 7,000
			Construction Subtotal		**$ 360,800**
19	Construction Contingency	10%		$	36,080
	ESTIMATED CONSTRUCTION COST			**$**	**396,880**

4.2.3 Alternative JF 3 – Do Nothing

If Alternative JF 3 is selected, no changes will be made to the Jett's Farm Pump Station or force main. If no changes are made, the pump station will be oversized due to flow being diverted at the Burr East Pump Station. This will lead to odor and hydrogen sulfide issues due to long detention times in the wet well and force main.

4.3 MOOSE LODGE PUMP STATION

4.3.1 Alternative ML 1 – Moose Lodge Replacement with Gravity

The Lloyd's Flat Pump Station Decommission, being constructed in house by Charles Town Utility Board Staff, redirects flow into the new Route 9 Sewer Project, so that the Moose Lodge Pump Station will only serve 1 industrial and 4 commercial customers. This option consists of the demolition of the Moose Lodge Pump Station and the construction of approximately 1,820 LF of 8" gravity sewer line and 6 manholes from MH 45B beside the Moose Lodge Pump Station to MH R3. This option also includes abandoning approximately 1,390 LF of the existing 6" force main from the Moose Lodge Pump Station to MH R3 (**Appendix G**).

As shown in **Table 4-5**, the estimated construction cost of the Moose Lodge Replacement with Gravity is $391,050 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-5

No.	Description	Quantity	Unit	Unit Price	Total Price
	MOOSE LODGE OPTION 1				
1	Mobilization	1	LS	$ 4,000	$ 4,000
2	Erosion & Sediment Control	1	LS	$ 3,000	$ 3,000
3	Demo Existing Moose Lodge Pump Station	1	LS	$ 25,000	$ 25,000
4	8" SDR 35 PVC Gravity Sewer	1,820	LF	$ 125	$ 227,500
5	Manhole	6	EA	$ 7,500	$ 45,000
6	Manhole Extension	14	LF	$ 500	$ 7,000
7	System Tie-in Connection	2	EA	$ 7,500	$ 15,000
8	16" Steel Casing (Bore & Jack)	40	LF	$ 350	$ 14,000
9	Traffic Control	1	LS	$ 5,000	$ 5,000
10	Miscellaneous Items (Asphalt, etc.)	1	LS	$ 10,000	$ 10,000
			Construction Subtotal		**$ 355,500**
	Construction Contingency	10%		$	35,550
	ESTIMATED CONSTRUCTION COST			**$**	**391,050**

4.3.2 Alternative ML 2 – Moose Lodge Upgrade and Force Main

The Lloyd's Flat Pump Station Decommission, being construction in house by Charles Town Utility Board Staff, redirects flow into the new Route 9 Sewer Project, so that the Moose Lodge Pump Station will only serve 1 industrial and 4 commercial customers. Therefore, the pump station and the force main will experience far less flow and will require modifications. This option consists of the demolition of the existing pump station, installation of a new package pump station, and installation of approximately 1,375 LF of 2" force main inside of the existing 6" force main (**Appendix G**).

As shown in **Table 4-6**, the estimated cost of construction of the Moose Lodge Upgrade and Force Main is $188,000 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-6

No.	Description	Quantity	Unit	Unit Price	Total Price
	MOOSE LODGE OPTION 2				
1	Mobilization	1	LS	$ 6,000	$ 6,000
2	Erosion & Sediment Control	1	LS	$ 8,000	$ 8,000
3	2" SDR 21 PVC Force Main	1,375	LF	$ 15	$ 20,625
4	Demo Existing Station	1	LS	$ 10,000	$ 10,000
5	Package Pump Station	1	LS	$121,200	$ 121,200
6	Traffic Control	1	LS	$ 5,000	$ 5,000
			Construction Subtotal		**$ 170,900**
	Construction Contingency	10%		$	17,100
	ESTIMATED CONSTRUCTION COST			**$**	**188,000**

4.3.3 Alternative ML 3 – Do Nothing

If Alternative ML 3 is selected, no modifications will be made to the Moose Lodge Pump Station or force main. If no changes are made, the pump station will be oversized due to flow being diverted at the Burr East Pump Station. This will lead to odor and hydrogen sulfide issues due to long detention times in the wet well and force main.

4.4 FLOWING SPRINGS PUMP STATION

4.4.1 Alternative FSPS 1 – Upgrade FSPS

This alternative involves using a phased approach to upgrade the Flowing Springs Pump Station to handle the rerouting of flows due to the other components of this project. The upgrade will also accommodate future flows projected in the CTUB 2021 Sewer Strategic Plan (**Appendix B**).

The Flowing Springs Upgrades can be phased to accommodate projected flows at year 5, year 10, and year 20. At year 5, the existing 12" force main will be sufficient for the proposed pump flow. At year 10, a parallel 12" force main will need to be installed to allow capacity for the projected flow.

As shown in **Table 4-7**, the estimated construction cost to upgrade the FSPS at year 5 is $755,700 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-7

No.	Description	Quantity	Unit	Unit Price	Total Price
	FLOWING SPRINGS PS UPGRADE				
1	Mobilization	1	LS	$ 5,000	$ 5,000
2	Bypass Pumping	1	LS	$ 60,000	$ 60,000
3	Demo Existing Station	1	LS	$ 18,000	$ 18,000
4	Miscellaneous Site Work	1	LS	$ 5,000	$ 5,000
5	Miscellaneous Concrete	10	CY	$ 2,000	$ 20,000
6	Wet Well Liner Installation	1	LS	$ 40,000	$ 40,000
7	Submersible Non-Clog Pumps (Assume Myers 4VLX, 150 HP)[4]	3	EA	$ 40,000	$ 120,000
8	Lift-out base and rail system	2	EA	$ 12,000	$ 24,000
9	Sewer Grinder	1	EA	$ 95,000	$ 95,000
10	Misc. Fittings	1	LS	$ 5,000	$ 5,000
11	Flow Meter Replacement	1	EA	$ 7,000	$ 7,000
12	Pressure Gauge Assemblies (Replacement)	3	EA	$ 1,500	$ 4,500
13	Misc. Mechanical[3]	1	LS	$ 5,000	$ 5,000
14	Wet Well Terminal Boxes/Structure (Replacement)	1	LS	$ 15,000	$ 15,000
15	Pump Soft Starters (To Replace VFD's)	3	EA	$ 8,000	$ 24,000
16	Electrical[2]	1	EA	$ 40,000	$ 40,000
17	Controls	1	EA	$ 40,000	$ 40,000
18	Generator & ATS Replacement	1	EA	$153,000	$ 153,000
19	Clean-up / Demobilization	1	LS	$ 5,000	$ 5,000
20	Start-up (Non-supplier)	1	LS	$ 1,500	$ 1,500
				Construction Subtotal	**$ 687,000**
21	Construction Contingency	10%		$	68,700
	ESTIMATED CONSTRUCTION COST			**$**	**755,700**

4.4.2 Alternative FSPS 2 – Do Nothing

This alternative involves doing nothing to accommodate the additional flows from the project and the projected development flows to the Flowing Springs Pump Station.

4.5 EVITTS RUN INTERCEPTOR

4.5.1 Alternative ER 1 – New Parallel Gravity Sewer Line

This alternative involves installing a parallel gravity line adjacent to the existing gravity sewer line from the Flowing Springs Discharge to the Charles Town WWTP and abandoning the existing gravity line. This alternative will be installed in an existing sewer easement where an old gravity sewer line used to be prior to 1987. The new gravity sewer line will be utilized for the FSPS flow and for flow in Old Town Ranson (**Appendix M**).

As shown in **Table 4-8**, the estimated total construction cost of the new gravity sewer line is $3,344,800 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-8

No.	Description	Quantity	Unit	Unit Price	Total Price
	EVITT'S RUN OPTION 1 - PARALLEL GRAVITY				
1	Mobilization	1	LS	$ 145,000	$ 145,000
2	Erosion & Sediment Control	1	LS	$ 138,000	$ 138,000
3	36" SDR 35 PVC Gravity Sewer	2,600	LF	$ 350	$ 910,000
4	30" SDR 35 PVC Gravity Sewer	1,600	LF	$ 300	$ 480,000
5	24" SDR 35 PVC Gravity Sewer	1,700	LF	$ 250	$ 425,000
6	4 ft. Dia. Manholes (up to 6')	27	EA	$ 7,500	$ 202,500
7	MH Extensions	65	EA	$ 500	$ 32,500
8	Frame & Cover (Highway)	27	EA	$ 500	$ 13,500
9	System Tie-in Connection	11	EA	$ 2,000	$ 22,000
10	Test Pit Excavation and Refill	5	EA	$ 1,000	$ 5,000
11	Asphalt Overlay	87	TON	$ 120	$ 10,440
12	Aggregate for Backfill	3,720	CY	$ 50	$ 186,000
13	Bypass Pumping	1	LS	$ 1,000	$ 1,000
14	Line New Manholes	260	VF	$ 345	$ 89,700
15	48" Steel Casing (Bore & Jack)	250	LF	$ 1,500	$ 375,000
16	Traffic Control	1	LS	$ 5,000	$ 5,000
			Construction Subtotal		**$ 3,040,700**
17	Contingency	10%		$	304,100
	ESTIMATED CONSTRUCTION COST			**$**	**3,344,800**

4.5.2 Alternative ER 2 – Extend FSPS Force Main and Rehab Manholes

This alternative involves extending the Flowing Springs Pump Station Force Main the entire way to the Charles Town WWTP and rehabilitating the existing manholes and sewer lines between the current FSPS discharge and the CTUB WWTP (**Appendix M**).

As shown in **Table 4-9**, the estimated total construction cost of the force main extension and manhole rehabilitation is $1,354,000 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-9

No.	Description	Quantity	Unit	Unit Price	Total Price
	EVITT'S RUN OPTION 3 - EXTEND FM				
1	Mobilization	1	LS	$ 59,000	$ 59,000
2	Erosion & Sediment Control	1	LS	$ 56,000	$ 56,000
3	4 ft. Dia. Manholes (up to 6')	1	EA	$ 7,500	$ 7,500
4	MH Extensions	1	EA	$ 500	$ 500
5	Frame & Cover (Highway)	5	EA	$ 500	$ 2,500
6	System Tie-in Connection	2	EA	$ 2,000	$ 4,000
7	Test Pit Excavation and Refill	5	EA	$ 1,000	$ 5,000
8	Asphalt Trench Patch (Base)	62	TON	$ 150	$ 9,300
9	Aggregate for Backfill	1,740	CY	$ 50	$ 87,000
10	Bypass Pumping	1	LS	$ 60,000	$ 60,000
11	Line Existing Manholes	260	VF	$ 500	$ 130,000
12	12" Force Main	6,060	LF	$ 85	$ 515,100
13	24" Steel Casing (Bore & Jack)	250	LF	$ 1,100	$ 275,000
14	Traffic Control	1	LS	$ 20,000	$ 20,000
			Construction Subtotal	**$**	**1,230,900**
15	Contingency	10%		$	123,100
	ESTIMATED CONSTRUCTION COST			**$**	**1,354,000**

4.5.3 Alternative ER 3 – Phased Replacement

This alternative involves replacing the sewer line and manholes from the Flowing Springs Pump Station discharge to the Charles Town WWTP utilizing a phased approach based on the analysis of the Evitt's Run capacity (**Appendix I**).

In year 5, 1,600 LF of sewer line between CT-423 and CT-58 will need to be upgraded to a 30" line.

In year 10, 2,600 LF of sewer line between C-59 and the CTWWTP will need to be upgraded to a 36" line.

In year 20, 1,700 LF of sewer line between R-259 and CT-423 will need to be upgraded to a 24" line.

As shown in **Table 4-10**, the estimated construction cost for the necessary replacement in year 5 is $907,100 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-10

No.	Description	Quantity	Unit	Unit Price	Total Price
	EVITT'S RUN OPTION 3 - PHASED REPLACEMENT YEAR 5				
1	Mobilization	1	LS	$ 40,000	$ 40,000
2	Erosion & Sediment Control	1	LS	$ 38,000	$ 38,000
3	30" SDR 35 PVC Gravity Sewer	1,600	LF	$ 300	$ 480,000
4	4 ft. Dia. Manholes (up to 6')	9	EA	$ 7,500	$ 67,500
5	MH Extensions	6	EA	$ 500	$ 3,000
6	Frame & Cover (Highway)	9	EA	$ 500	$ 4,500
7	System Tie-in Connection	4	EA	$ 2,000	$ 8,000
8	Test Pit Excavation and Refill	1	EA	$ 1,000	$ 1,000
9	Asphalt Overlay	10	TON	$ 120	$ 1,200
10	Aggregate for Backfill	1,020	CY	$ 50	$ 51,000
11	Bypass Pumping	1	LS	$ 60,000	$ 60,000
12	Line New Manholes	59	VF	$ 345	$ 20,355
13	48" Steel Casing (Bore & Jack)	30	LF	$ 1,500	$ 45,000
14	Traffic Control	1	LS	$ 5,000	$ 5,000
			Construction Subtotal		**$ 824,600**
15	Contingency	10%		$	82,500
	ESTIMATED CONSTRUCTION COST			**$**	**907,100**

4.5.4 Alternative ER 4 – Do Nothing

This alternative involves doing nothing to relieve the Evitt's Run Interceptor line of flow, allowing surcharges to continue to occur. This alternative does not involve rehabilitation of the existing sewer, leaving the sewer in poor condition due to hydrogen sulfide.

4.6 JEFFERSON MEMORIAL PARK FORCE MAIN

4.6.1 Alternative JMP 1 (Red Alignment)

The existing gravity sewer line through the Jefferson Memorial Park is shallow and is undersized for the current flow conditions. The manholes through the Park have been observed surcharging on multiple occasions, and the RK&K Sewer Model noted capacity issues in this line. This alternative involves the continuation of the Clarence Drive Pump Station force main down Morison Street, through an existing utility easement, to the Samuel Street Pump Station. This alternative relieves the gravity line through the park of flow so that it is no longer at capacity.

This alternative has less impact on property owners and the park. As a result, less easements will be required because construction will occur within existing City streets and existing easements (**Appendix N**).

As shown in **Table 4-11**, the estimated construction cost for Alternative JMP 1 is $187,900 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-11

No.	Description	Quantity	Unit	Unit Price	Total Price
	RED LINE				
1	Mobilization	1	LS	$ 5,000	$ 5,000
2	Erosion & Sediment Control	1	LS	$ 4,000	$ 4,000
3	6" SDR 21 PVC Force Main	2,341	LF	$ 45	$ 105,345
4	12" SDR 35 PVC Gravity Sewer	21	LF	$ 125	$ 2,625
5	4 ft. Dia. Manholes (up to 6')	1	EA	$ 7,500	$ 7,500
6	Frame & Cover (Highway)	1	EA	$ 500	$ 500
7	Combination Air Release Vacuum Break	1	EA	$ 3,500	$ 3,500
8	System Tie-in Connection	2	EA	$ 2,000	$ 4,000
9	Test Pit Excavation and Refill	2	EA	$ 1,000	$ 2,000
10	Asphalt Trench Patch (Base)	26	TON	$ 150	$ 3,825
11	Asphalt Wearing	13	TON	$ 120	$ 1,530
12	Aggregate for Backfill	438	CY	$ 50	$ 21,900
13	Bypass Pumping	1	LS	$ 4,000	$ 4,000
14	Traffic Control	1	LS	$ 5,000	$ 5,000
			Construction Subtotal		**$ 170,800**
15	Contingency		10%	$	17,100
	ESTIMATED CONSTRUCTION COST			**$**	**187,900**

4.6.2 Alternative JMP 2 (Blue Alignment)

The existing gravity sewer line through the Jefferson Memorial Park is shallow and is undersized for the current flow conditions. The manholes through the Park have been observed surcharging on multiple occasions, and the RK&K Sewer Model noted capacity issues in this line. This alternative involves the continuation of the Clarence Drive Pump Station force main through the Jefferson Memorial Park to the Samuel Street Pump Station. This alternative relieves the gravity line through the park of flow so that it is no longer at capacity. This alternative would require easements from one property owner (**Appendix N**).

As shown in **Table 4-12**, the estimated construction cost for Alternative JMP 2 is $225,700 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-12

No.	Description	Quantity	Unit	Unit Price	Total Price
	MODIFIED BLUE LINE				
1	Mobilization	1	LS	$ 5,000	$ 5,000
2	Erosion & Sediment Control	1	LS	$ 4,000	$ 4,000
3	6" SDR 21 PVC Force Main	2,325	LF	$ 45	$ 104,625
4	16" SDR 35 PVC Gravity Sewer	50	LF	$ 125	$ 6,250
5	Combination Air Release Vacuum Break	1	EA	$ 3,500	$ 3,500
6	Flushing Valve	1	EA	$ 3,500	$ 3,500
7	System Tie-in Connection	6	EA	$ 2,000	$ 12,000
8	Test Pit Excavation and Refill	1	EA	$ 1,000	$ 1,000
9	Asphalt Trench Patch (Base)	40	TON	$ 150	$ 6,000
10	Asphalt Overlay	70	TON	$ 120	$ 8,400
11	Asphalt Milling	360	SY	$ 8	$ 2,880
12	Aggregate for Streets and Driveways	325	TON	$ 55	$ 17,875
13	Aggregate for Backfill	500	CY	$ 50	$ 25,000
14	Traffic Control	1	LS	$ 5,000	$ 5,000
			Construction Subtotal		**$ 205,100**
15	Contingency	10%		$	20,510
	ESTIMATED CONSTRUCTION COST			**$**	**225,700**

4.6.3 Alternative JMP 3 – Do Nothing

If Alternative JMP 3 is selected, no changes will be made to the Jefferson Memorial Park gravity line, and the line will continue to be undersized for the current flows. As a result, surcharging will continue to occur during wet weather events.

4.7 FAIRFAX CROSSING PARALLEL LINE

4.7.1 Alternative FC 1 – Option 1

This option consists of installing 3,090 LF of 15" gravity sewer and 12 manholes from the Route 9 line to the existing sewer on the opposite side of Route 9. This option parallels the existing 10" sewer alignment through the Fairfax Crossing Development. Utilizing a parallel alignment will allow for the proposed line to be placed near the existing line, hopefully eliminating the need for blasting. Interruptions to traffic should only occur on Joshua M. freeman Boulevard and North Fairfax Boulevard. This option also consists of upgrading the 12" section of line under Route 9 to a 15" section of line with a new bore and jack under Route 9 (**Appendix J**).

As shown in **Table 4-13**, the estimated construction cost of rehabilitation of manholes and gravity sewer lines is $1,542,900 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-13

No.	Description	Quantity	Unit		Unit Price		Total Price
	Fairfax Crossing Parallel Line (Option 1)						
1	Mobilization	1	LS	$	67,000	$	67,000
2	Erosion & Sediment Control	1	LS	$	64,000	$	64,000
3	15" SDR 35 PVC Gravity Sewer (D<8')	570	LF	$	110	$	62,700
4	15" SDR 35 PVC Gravity Sewer (8'<D<12')	770	LF	$	120	$	92,400
5	15" SDR 35 PVC Gravity Sewer (D>12')	1,750	LF	$	130	$	227,500
6	4 ft. Dia. Manholes (up to 6')	12	EA	$	7,500	$	90,000
7	MH Extensions	125	LF	$	300	$	37,500
8	Frame & Cover (Highway)	12	EA	$	650	$	7,800
9	System Tie-in Connection	2	EA	$	7,500	$	15,000
10	30" Steel Casing (Bore & Jack)	305	LF	$	1,100	$	335,500
11	48" Steel Casing (Bore & Jack)	240	LF	$	1,500	$	360,000
12	Traffic Control	1	LS	$	30,000	$	30,000
13	Concrete Sidewalk Repair	1	CY	$	300	$	300
14	Concrete Curb Repair	2	CY	$	1,000	$	1,500
15	Asphalt Repair	36	TON	$	205	$	7,380
16	Test Pit Excavation and Refill	4	EA	$	1,000	$	4,000
			Construction Subtotal			**$**	**1,402,600**
17	Contingency	10%		$			140,300
	ESTIMATED CONSTRUCTION COST			**$**			**1,542,900**

4.7.2 Alternative FC 2 – Option 2

This option consists of installing 2,095 LF of 15' gravity sewer and 14 manholes from the Route 9 line to the existing sewer on the opposite side of Route 9. This option parallels the existing 10" sewer line along Baker Place, follows North Fairfax Boulevard, and crosses the Potomac TC Owner LLC property. Utilizing this alignment allows for the sewer line to be bored under many of the

roads, rather than open cut. Interruptions to traffic would occur on Joshua M. Freeman Boulevard and North Fairfax Boulevard. This option also consists of upgrading the 12" section of line under Route 9 to a 15" section of line with a new bore and jack under Route 9 (**Appendix J**).

As shown in **Table 4-14**, the estimated construction cost of rehabilitation of manholes and gravity sewer lines is $1,560,900 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-14

No.	Description	Quantity	Unit	Unit Price	Total Price
	Fairfax Crossing Parallel Line (Option 2)				
1	Mobilization	1	LS	$ 68,000	$ 68,000
2	Erosion & Sediment Control	1	LS	$ 65,000	$ 65,000
3	15" SDR 35 PVC Gravity Sewer (D<8')	410	LF	$ 110	$ 45,100
4	15" SDR 35 PVC Gravity Sewer (8'<D<12')	475	LF	$ 120	$ 57,000
5	15" SDR 35 PVC Gravity Sewer (D>12')	1,210	LF	$ 130	$ 157,300
6	4 ft. Dia. Manholes (up to 6')	14	EA	$ 7,500	$ 105,000
7	MH Extensions	155	LF	$ 300	$ 46,500
8	Frame & Cover (Highway)	14	EA	$ 650	$ 9,100
9	System Tie-in Connection	2	EA	$ 7,500	$ 15,000
10	30" Steel Casing (Bore & Jack)	425	LF	$ 1,100	$ 467,500
11	48" Steel Casing (Bore & Jack)	240	LF	$ 1,500	$ 360,000
12	Concrete Sidewalk Repair	15	CY	$ 300	$ 4,500
13	Traffic Control	1	LS	$ 15,000	$ 15,000
14	Test Pit Excavation and Refill	4	EA	$ 1,000	$ 4,000
			Construction Subtotal	**$**	**1,419,000**
15	Contingency	10%		$	141,900
	ESTIMATED CONSTRUCTION COST			**$**	**1,560,900**

4.7.3 Alternative FC 3 – Option 3

This option consists of installing 2,585 LF of 15" gravity sewer and 12 manholes from the Route 9 line to the existing sewer on the opposite side of Route 9. This option parallels the existing 10" sewer line along Baker Place, goes around the Fairfax Boulevard roundabout, and crosses the Potomac TC Owner LLC property. Utilizing this alignment allows for the sewer line to be bored under North Fairfax Boulevard, rather than open cut. Interruptions to traffic will only occur on North Fairfax Boulevard (**Appendix J**).

As shown in **Table 4-15**, the estimated construction cost of rehabilitation of manholes and gravity sewer lines is $1,471,000 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-15

No.	Description	Quantity	Unit	Unit Price	Total Price
	Fairfax Crossing Parallel Line (Option 3)				
1	Mobilization	1	LS	$ 64,000	$ 64,000
2	Erosion & Sediment Control	1	LS	$ 61,000	$ 61,000
3	15" SDR 35 PVC Gravity Sewer (D<8')	25	LF	$ 110	$ 2,750
4	15" SDR 35 PVC Gravity Sewer (8'<D<12')	570	LF	$ 120	$ 68,400
5	15" SDR 35 PVC Gravity Sewer (D>12')	1,990	LF	$ 130	$ 258,700
6	4 ft. Dia. Manholes (up to 6')	12	EA	$ 7,500	$ 90,000
7	MH Extensions	160	LF	$ 300	$ 48,000
8	Frame & Cover (Highway)	12	EA	$ 650	$ 7,800
9	System Tie-in Connection	2	EA	$ 7,500	$ 15,000
10	30" Steel Casing (Bore & Jack)	315	LF	$ 1,100	$ 346,500
11	48" Steel Casing (Bore & Jack)	240	LF	$ 1,500	$ 360,000
12	Traffic Control	1	LS	$ 15,000	$ 15,000
				Construction Subtotal	**$ 1,337,200**
13	Contingency	10%		$	133,800
	ESTIMATED CONSTRUCTION COST			**$**	**1,471,000**

4.7.4 Alternative FC 4 – Do Nothing

This alternative involves doing nothing. If this alternative is chosen, the agreement between Potomac TC Owner LLC and the City of Charles Town will not be satisfied at this time.

RK&K reviewed flow monitor data collected between 07/21/2021 and 08/05/2021 from manholes FC-29 and FC-58 along the existing Fairfax Crossing sewer line. Review of the data indicated that the maximum flow through the gravity line during the timeframe is 225 gpm.

Once the 2021 Collection System Project is complete, the projected maximum flow is estimated at 475 GPM. This projected flow is comprised of 150 gpm from the War Admiral PS; 250 gpm from the Lloyd's Flat PS; and the 75 gpm generated from the existing Fairfax Crossing commercial development. This projected flow does not include any flows from future developments.

Based on review of the available plans for the existing gravity sewer line between manholes FC-59 and FC-30, RK&K calculated an average hydraulic capacity of 550 GPM based on the current alignment, except for a 291 LF section between manholes FC-32 and FC-34 which has a limited capacity of 450 GPM. As a result, the proposed flows from the 2021 Collection System Project will exceed the available capacity in this section of the existing gravity line. Despite exceeding the line's capacity during peak flows, the manholes will not surcharge. As continued development occurs within the Fairfax Crossing development, it will further hinder the

hydraulic capacity of the existing gravity line resulting in the need for continued reevaluation. It is recommended that this line is monitored with a flow meter to determine the impact of the peak flows. Upgrade of the line is not needed at this time.

4.8 FORREST AVENUE PUMP STATION RELOCATION

4.8.1 Alternative FA 1 – Combined Lakeland Place Pump Station

This alternative involves decommissioning of the 11th Street Pump Station, decommissioning of the Forrest Avenue Pump Station, and construction of a combined Lakeland Place Pump Station.

This option consists of the construction of 735 LF of 8" gravity sewer, 5 manholes, demolition of the existing 11th Avenue PS; and converting the existing pump station into a sanitary manhole. This option utilizes the alley between E. 10th Ave. and E. 11th Ave. and ties into the proposed manhole at the location of the existing Forrest Ave. Pump Station.

This option also consists of the construction of 685 LF of gravity sewer, 3 manholes, demolition of the existing Forrest Avenue PS, and 830 LF of force main. This option also includes the construction of the Lakeland Place Pump Station at the low point of the developer's property in the proposed dog park. This alignment utilizes the property lines and will require 125 LF of easement from a homeowner and 242 LF of easement from the GLP capital tract property. This leaves the GLP capital tract property open for future development (**Appendix K**).

The benefit of this Option is that it removes the existing Forrest Ave. Pump Station from the front yards and combines the existing Forrest Ave. Pump Station and the proposed Lakeland Place Pump Station into a single pump station. The new force main will run along Mare Street and will tie into an existing manhole in the development.

As shown in **Table 4-16**, the estimated cost of construction is $821,000 excluding soft costs such as engineering, legal, and administration, etc.

TABLE 4-16

No.	Description	Quantity	Unit	Unit Price	Total Price
	COMBINED LAKELAND PLACE				
1	Mobilization	1	LS	$ 36,000	$ 36,000
2	Erosion & Sediment Control	1	LS	$ 34,000	$ 34,000
3	8" SDR 35 PVC Gravity Sewer (D<8')	1,045	LF	$ 110	$ 114,950
4	8" SDR 35 PVC Gravity Sewer (8'<D<12')	108	LF	$ 125	$ 13,500
5	8" SDR 35 PVC Gravity Sewer (D>12')	267	LF	$ 175	$ 46,725
6	4 ft. Dia. Manholes (up to 6')	8	EA	$ 7,500	$ 60,000
7	MH Extensions	13	EA	$ 500	$ 6,500
8	Frame & Cover (Highway)	8	EA	$ 500	$ 4,000
9	System Tie-in Connection	2	EA	$ 2,000	$ 4,000
10	Test Pit Excavation and Refill	6	EA	$ 1,000	$ 6,000
11	Forrest Ave. PS Demolition	1	LS	$ 12,000	$ 12,000
12	Asphalt Trench Patch (Base)	2	TON	$ 150	$ 225
13	Asphalt Overlay	3	TON	$ 120	$ 300
14	Aggregate for Backfill	7	CY	$ 50	$ 350
15	11th St. PS Demolition	1	LS	$ 12,000	$ 12,000
16	Pump Station	1	LS	$358,355	$ 358,355
17	4" PVC Force Main	830	LF	$ 45	$ 37,350
				Construction Subtotal	**$ 746,300**
18	Contingency	10%		$	74,700
	ESTIMATED CONSTRUCTION COST			**$**	**821,000**

4.8.2 Alternative FA 2 – Do Nothing

This alternative involves do nothing. If this alternative is chosen, the 11th Street and Forrest Avenue Pump Stations will stay in service and O&M costs will not be decreased. A separate pump station will be installed for the Lakeland Place Pump Station, and all pump stations will not be combined.

4.9 PRESENT WORTH ANALYSIS

All proposed alternatives are accompanied by no salvage value and low operation and maintenance costs over their lifetimes. Because of this, a life cycle cost analysis is not applicable to the wastewater collection system part of this project.

4.10 NON-MONETARY FACTORS

Completion of the various components in the 2021 Collection System Project will give capacity back to the gravity lines in “Old Town” Ranson and will give capacity back to the Jefferson Memorial Park gravity line. Rerouting of various pump stations and flows will remove old and aging infrastructure from the collection system, minimizing the need for maintenance. No additional staff will be needed to maintain the proposed infrastructure.

The projects outlined in the Facility Plan are all designed to accommodate the current system flows with a standard peak factor of 4. The components will be designed to accommodate expansion in the future when development is added to the system.

The Sewer Model shows that under current conditions, there are areas within the system that are over capacity including the Old Town Ranson line, Evitts Run line, and the Jefferson Park line. These components are in need of upgrade regardless of future development.

Gravity lines can be designed with larger diameter for future flow without causing septicity issues. The FSPS force main will not encounter septicity issues after the rerouting of flows. When development does occur, a parallel force main will need to be constructed at that time and the pumps can be replaced with larger pumps at the FSPS.

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

SECTION 5
PLAN SELECTION AND PUBLIC PARTICIPATION

5.0 PLAN SELECTION AND PUBLIC PARTICIPATION

The proposed alternatives for the Burr East Pump Station Flow Diversion, Jett's Farm Pump Station and Force Main, Moose Lodge Pump Station and Force Main, Flowing Springs Pump Station and Evitts Run Interceptor, Jefferson Memorial Park Force Main, Fairfax Crossing Parallel Line, and Forrest Avenue Pump Station Relocation and their associated costs were discussed in Section 4. In this section, the advantages and disadvantages for each project will be discussed, and the recommended solution for each proposed project will be presented.

5.1 BURR EAST PUMP STATION

Table 5-1 Advantages and Disadvantages of Each Alternative

Burr East Alternative	Advantages	Disadvantages
BE 1 – Burr East Pump Station Diversion – 2 Pumps	Reduced flow through Old Town Ranson Impeller can be modified for future development for more capacity	Construction cost
BE 2 – Burr East Pump Station Diversion – 3 Pumps	Reduced flow through Old Town Ranson	Construction cost
BE 3 – Do Nothing	No cost	Flow through Old Town Ranson

5.1.1 Recommendation

RK&K's recommendation for the Burr East Pump Station is to divert flow to the War Admiral Pump Station via modifications to the pump station in accordance with Alternative BE 1.

5.2 JETT'S FARM PUMP STATION AND FORCE MAIN

Table 5-2 Advantages and Disadvantages of Each Alternative

Jett's Farm Alternative	Advantages	Disadvantages
JF 1 – Jett's Farm Pump Station Modifications and Force Main Slip-Lining	Accommodates reduction in flow	Construction cost Utilization of old force main with slip lining resulting in temporary bypassing
JF 2 – Jett's Farm Pump Station Modifications and Force Main Installation	All new infrastructure Accommodates reduction in flow Utilization of existing bore under Route 9	Construction cost
JF 3 – Do Nothing	No cost	O&M cost for aging pump station Does not accommodate reduction in flow

5.2.1 Recommendation

RK&K's recommendation for the Jett's Farm Pump Station and Force Main is to modify the Jett's Farm Pump Station and install a new force main through the existing bore in accordance with Alternative JF 2.

5.3 MOOSE LODGE PUMP STATION AND FORCE MAIN

Table 5-3 Advantages and Disadvantages of Each Alternative

Moose Lodge Alternative	Advantages	Disadvantages
ML 1 – Moose Lodge Replacement with Gravity	Decommission pump station	Higher construction cost Easements required
ML 2 – Moose Lodge Upgrade and Force Main	No new easements required	Pump station O&M Construction cost
ML 3 – Do Nothing	No cost	Does not accommodate reduction in flow

5.3.1 Recommendation

RK&K's recommendation for the Moose Lodge Pump Station and Force Main is that the pump station is modified and the force main is slip lined with a smaller force main in accordance with Alternative ML 2.

5.4 FLOWING SPRINGS PUMP STATION

Table 5-4 Advantages and Disadvantages of Each Alternative

Flowing Springs Pump Station Alternative	Advantages	Disadvantages
FSPS 1 – Upgrade Pump Station	Accommodates future development Phased approach	Construction cost
FSPS 2 – Do Nothing	No cost	Pump station undersized Pump station cannot handle future development

5.4.1 Recommendation

RK&K's recommendation for the pump station is that the upgrades are done at the station in accordance with Alternative FSPS 1.

5.5 EVITTS RUN INTERCEPTOR

Table 5-5 Advantages and Disadvantages of Each Alternative

Evitts Run Interceptor Alternative	Advantages	Disadvantages
ER 1 – New Gravity Sewer Line	Utilizes existing easement Phased approach	Construction cost Possibility of continued hydrogen sulfide issues
ER 2 – Extend FSPS Force Main and Rehab Manholes	Utilizes existing easement Reduced hydrogen sulfide issues in gravity	Construction cost Infrastructure lined and not replaced
ER 3 – Phased Replacement	Phased approach Only replace sections in need	Bypass pumping needed Construction cost
ER 4 – Do Nothing	No cost	Infrastructure in poor condition Gravity line undersized for flows

5.5.1 Recommendation

RK&K's recommendation for the Evitts Run Interceptor is that the new gravity line is installed utilizing a phased approach in accordance with Alternative ER 3.

5.6 JEFFERSON MEMORIAL PARK FORCE MAIN

Table 5-6 Advantages and Disadvantages of Each Alternative

Jefferson Memorial Park Alternative	Advantages	Disadvantages
JMP 1 – Red Alignment	No new easements required Park line relieved of flow	Construction cost
JMP 2 – Blue Alignment	Park line relieved of flow	Construction cost Easements required
JMP 3 – Do Nothing	No cost	Manholes surcharged during storm events Line under capacity

5.6.1 Recommendation

RK&K's recommendation for the Jefferson Memorial Park Force Main is that the force main is constructed through existing easements in accordance with Alternative JMP 1.

5.7 FAIRFAX CROSSING PARALLEL LINE

Table 5-7 Advantages and Disadvantages of Each Alternative

Fairfax Crossing Alternative	Advantages	Disadvantages
FC 1 – Option 1	Agreement satisfied Connects to proposed developments	Construction cost Increased traffic control needed
FC 2 – Option 2	Agreement satisfied Connects to proposed developments	Construction cost
FC 3 – Option 3	Agreement satisfied Bored rather than open cut Lowest construction cost to satisfy agreement Connects to proposed developments	Construction cost
FC 4 – Do Nothing	No cost Available capacity at this time No surcharge	Agreement not satisfied

5.7.1 Recommendation

RK&K's recommendation is that no line is constructed at this time through Fairfax Crossing and the capacity of the existing line is monitored as each new development upstream is proposed in accordance with Alternative FC 4. Depending on development, it is anticipated that the parallel line will need to be constructed in the following five to ten years, as a second phase to the 2021 Collection System Project.

Overall, as more development occurs, and additional capacity is needed, RK&K's recommendation is that the parallel 15" dia. line is constructed in accordance with Option 3. The cost for this option is the less expensive of the various options evaluated at $1,471,000 and will also result in less impact on vehicular and pedestrian traffic during construction.

5.8 FORREST AVENUE PUMP STATION RELOCATION

Table 5-8 Advantages and Disadvantages of Each Alternative

Forrest Avenue Alternative	Advantages	Disadvantages
FA 1 – Combined Lakeland Place Pump Station	O&M for only 1 pump station Pump station removed from front yard	Easement required Deep gravity sewer lines Construction cost
FA 2 – Do Nothing	No construction cost	O&M for three pump stations

5.8.1 Recommendation

RK&K's recommendation for the Forrest Avenue Pump Station Relocation is that the combined Lakeland Place pump station is constructed in accordance with Alternative FA 1.

5.9 PUBLIC PARTICIPATION

The alternatives in this PER have been discussed during the Utility Board's regular board meetings which are recorded and posted on the Utility's website. Additionally, the alternatives in this PER have been presented in various reports during the Utility Board's regular meetings. These reports have been posted on the Utility Board's website in each meeting's Agenda Packet.

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

SECTION 6
ENVIRONMENTAL INFORMATION

6.0 ENVIRONMENTAL INFORMATION

6.1 ENVIRONMENTAL IMPACTS

6.1.1 Air Quality

The only potential effect on air quality created by this project would be during the construction phase. This impact would be from exhaust fumes and dust from construction equipment.

Incineration is not proposed with this project.

There will be significant growth and development expected from the implementation of this project. It is anticipated that the growth and development will not create violations of the ambient air quality or noise standards as either primary or secondary impacts. Growth will be controlled by county zoning.

Violation of noise standards is not expected as a primary or secondary impact of the project.

6.1.2 Water Quality

The existing WWTP discharges do not cause a violation of existing stream standards, and present stream standards are not being legally challenged.

To mitigate the effects of possible sedimentation or erosion, a plan utilizing best practice procedures will be submitted for approval with the construction plans. The procedures outlined in the submitted plan will be followed by the contractor and the owner.

If the planning area continues to grow at the rates experienced in the past ten years, non-implementation of this project could affect the surface water and groundwater quality of Jefferson County. This would be due to the increased number of septic tanks installed or additional point source discharges of package treatment plants. It is natural to assume that the more septic water infiltrates into the ground, the greater the chance for groundwater deterioration. It should be noted that most of Jefferson County is underlain by carbonate bedrock which has undergone karsification. Chemicals can quickly be carried from the surface through conduits in the bedrock into the groundwater. From there, they can move quickly to streams, springs, and water wells.

6.1.3 Water Supply

There are no known water supply intakes downstream of the existing discharge points.

Since all current receiving streams eventually flow into the Potomac and Shenandoah Rivers, the project will not cause a significant amount of water to be transferred from one sub-basin to another.

There are no known existing or future proposed groundwater supply sources to which the project will discharge.

6.1.4 Biology

There are one endangered and two threatened species in the project area including the Indiana Bat, the Northern Long-eared Bat, and the Madison Cave Isopod (**Appendix O**).

Response has not yet been received from USFWS.

Response from WV DNR stated:

"We have no known records of any RTE species at the project site; however, Evitts Run is a High Quality Stream and state mussel stream. If any in-stream work is anticipated, a mussel survey may be needed. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review."

No wildlife or their habitat will be affected by the proposed construction. The effects of future development on wildlife or their habitat will be controlled by the Jefferson County Planning Commission.

There are no indications that aquatic life will be affected by the project or the discharge from the existing treatment plant.

6.1.5 Sensitive Areas

The service area does not include and is not part of an area designated or considered sensitive by a local state or federal agency.

The service area does not include streams which have or are being considered for designation as a Wild and Scenic River.

6.1.6 Wetlands

Wetlands are included in the service area, but no permanent disturbance of wetlands will occur (**Appendix P**).

Response from ACOE stated:

"The U.S. Army Corps of Engineers regulates any earth moving activities within streams or wetlands. This includes any placement of fill material,

temporary or permanent. Due to the fact that your letter and location map do not clearly identify each aquatic resource, we recommend that you hire a qualified wetland consultant to evaluate the entire project area in order to determine if any jurisdictional streams or wetlands are present. Enclosed is a list of wetland consultants. If impacts to streams or wetlands are in fact proposed, you should again contact this office to discuss permitting requirements.

Your project will likely qualify for Nationwide Permit. Every effort should be made to avoid and minimize impacts to the aquatic resources on-site. We will continue to work with you in order to protect any aquatic resources that may be present."

The wetlands in the service are will not be affected directly or indirectly by the existing treatment plant or the interceptors once construction is complete.

6.2 LAND USE PLANNING AND MANAGEMENT

6.2.1 Existing Land Use

The Jefferson County Planning Commission has zoned a large amount of land for either residential, commercial, or industrial growth. This project largely serves the zoned growth areas and is in agreement with the Comprehensive Plan's goals for land usage.

The project conforms to existing land use plans and will not cause significant changes to existing land use patterns. Several subdivisions are already planned and some are already under construction. Growth is already planned for the County, and this project is in response to that growth to provide those developments with adequate wastewater facilities.

6.2.2 Reserve Capacity

The proposed pump stations will not have an initial reserve capacity greater than 50% of its design average capacity.

6.2.3 Vacant Land

Large areas of existing vacant land will not be subject to increased development pressure because of this project.

6.2.4 Population Changes

The proposed project will be designed to take care of planned and projected wastewater requirements. The project will serve population changes which have already been provided for by the Jefferson County planning. These projects will induce population changes but the effect will be only minor on energy sources and loss of agricultural land.

Response has not yet been received from NRCS.

Floodplains will not be opened to development due to interceptor routing. The current sludge disposal practices will not be changed.

6.3 SOCIO-ECONOMIC ENVIRONMENT

The project will not require the acquisition of residential property except for easements on the proposed lines. The modifications to pump stations will occur within the existing easement. A site will be required for the Forrest Avenue Pump Station and has been chosen outside of residential areas of the study area. Land for the pump station will be acquired by negotiation or condemnation.

No parks or recreational areas will be acquired for or affected by pump station or interceptor routing. The force main adjacent to Jefferson Memorial Park has a chosen alignment in the street rather than through the park.

There is no known documentation which suggests the local populace cannot afford their local share of the proposed project. In addition, existing landowners could benefit from the development of land due to the project.

Buffer zones exist between pump stations and existing or proposed parks, and buffer zones exist between the proposed project and existing residential areas.

The project will not affect known or potential archaeological sites as identified by the Federal Register, state preservation officer, or other interested parties.

Response from WV Culture and History stated:

"Architectural Resources & Archaeological Resources:

According to our records, the project may have the potential to affect the following resources: the Old Charles Town Historic District (NR# 00001308) , the Happy Retreat property (NR# 73001912) including 46-JF-624, Aspen Hill (NR # 80004024), Gap View Farm (NR# 96001574), The Peter Burr House (NR # 82004322) and archaeological sites 46-JF-21, 46-JF-338, 46-JF-339, 46-JF-340, 46-JF-214, 46-JF-216, 46-JF-195, 46-JF-198, and 46-JF-193. We require additional information to better assess potential impacts on these resources.

Please elaborate on the proposed modifications/improvements that will occur at the Burr East Pump Station, the Jett's Farm Pump Station, the Moose Lodge Pump Station, and Flowing Springs Pump Station. Clearly illustrate on project mapping the locations of all new force main and gravity sewer lines that will be installed during this project. The submitted project information states that the Forrest Avenue and the 11th Avenue Pump Stations will be demolished during the project and replaced by the construction of the Lakeland Place Pump Station. However, the location of the 11th Avenue Pump Station and the Lakeland Place Pump Station are not illustrated on project mapping. Also, the location of the new grinder pump in the Jett's Farm Pump Station and Force Main project area is not illustrated

on project mapping. Please denote the locations of these support facilities on project mapping. Provide photographs of the following: the pump station locations, the grinder pump location, the routes of all new force main and gravity sewer lines, and all buildings and/or structures over 45 years of age that will have or have a line of sight to the project's above ground components (e.g., pump stations). Key the photographs to project mapping. We will provide further comments upon receipt of the requested information; however, we reserve the right to request the completion of Historic Property Inventory (HPI) forms and/or a Phase I archaeological survey upon review of this information.

Cemetery Resources:

The proposed project may have the potential to affect the Mordington Cemetery (46-JF-129) and the Burr-McGarry Cemetery. The Mordington Cemetery is associated with the National Register-listed Happy Retreat. The Burr-McGarry Cemetery is a contributing component to the William Burr property (JF-0078-0102) which is considered eligible for listing in the National Register. Please clearly delineate the location of the new gravity sewer line within the Flowing Springs Pump Station and Evitt's Run Interceptor project area. Clearly delineate the route of the new Route 9 line that ties into the War Admiral Pump Station. We will provide further comment upon receipt of this information."

The project does not threaten to violate a Federal, State, or local law or requirement, which was originally imposed to protect the environment.

The project as proposed has not developed a significant level of public controversy.

6.4 SUSTAINABILITY CONSIDERATIONS

Completion of the proposed projects for the CTUB will reduce the CTUB's operation and maintenance costs. The project involves the decommissioning of three pump stations and the downsizing of two pump stations.

Table 6-1 Pump Station O&M Costs

Pump Station	Current O&M	Proposed O&M	Change
Burr East	$17,360	$14,020	-$3,340
Jett's Farm	$17,211	$14,630	-$2,581
Moose Lodge	$21,410	$14,588	-$6,822
Lloyd's Flat	$22,360	$0	-$22,360
Flowing Springs	$57,160	$61,243	$4,083
Forrest Avenue	$9,760	$0	-$9,760
11th Street	$9,760	$0	-$9,760
Lakeland Place	$0	$18,692	$18,692
Total	$155,021	$123,173	-$31,848

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

SECTION 7
PROJECT SUMMARY

7.0 PROJECT SUMMARY

The preceding sections described the various proposed projects and their alternatives to improve the Charles Town Utility Board's Wastewater System. The various components have been combined into an overall project (**Appendix R**). The resulting project will relieve the Old Town Ranson gravity sewer system of flow. In the following paragraphs, each recommended component of the project will be discussed in detail.

7.1 BURR EAST PUMP STATION

The designated alternative for the Burr East Pump Station is Alternative BE 1. This option involves redirecting flow from the northern portion of the system (Jefferson High School Pump Station, Burr East Pump Station) into the new Route 9 line at the War Admiral Pump Station.

See **Section 4.1.1** for the cost breakdown for the $638,660 project component.

7.2 JETT'S FARM PUMP STATION AND FORCE MAIN

The designated alternative for the Jett's Farm Pump Station and Force Main is Alternative JF 2. This option involves downsizing the Jett's Farm Pump Station by replacing the pumps, controls, piping, and valve vault, and installing approximately 1,355 LF of 4" force main through an existing casing under Route 9 from the Jett's Farm Pump Station to the new Route 9 force main from the War Admiral Pump Station.

This option also includes abandoning the existing 6" force main from the Jett's Farm Pump Station to the residence at 2466 North Mildred Street and installing 940 LF of 1.5" force main from the residence to MH 37.

See **Section 4.2.2** for the cost breakdown for the $396,880 project component.

7.3 MOOSE LODGE PUMP STATION AND FORCE MAIN

The designated alternative for the Moose Lodge Pump Station and Force Main is Alternative ML 2. This option involves modifications to the Moose Lodge Pump Station and installation of approximately 1,375 LF of 2" force main inside of the existing 6" force main.

See **Section 4.3.2** for the cost breakdown for the $188,000 project component.

7.4 FLOWING SPRINGS PUMP STATION

The designated alternative for the Flowing Springs Pump Station is Alternative FSPS 1. This option involves using a phased approach to upgrade the Flowing Springs Pump Station to handle the rerouting of flows due to other components of this project. The upgrade will also accommodate future flows projected in the CTUB 2021 Sewer Strategic Plan.

See **Section 4.4.1** for the cost breakdown for the $755,700 project component.

7.5 EVITT'S RUN INTERCEPTOR

The designated alternative for the Evitt's Run Interceptor is Alternative ER 4. This option involves replacing the existing Evitt's Run gravity line utilizing a phased approach.

See **Section 4.5.2** for the cost breakdown for the $907,100 project component.

7.6 JEFFERSON MEMORIAL PARK FORCE MAIN

The designated alternative for the Jefferson Memorial Park Force Main is Alternative JMP 1. This option involves the continuation of the Clarence Drive Pump Station force main down Morison Street, through an existing utility easement, to the Samuel Street Pump Station. This alternative relieves the gravity line through the park of flow so that it is no longer at capacity.

See **Section 4.6.1** for the cost breakdown for the $187,900 project component.

7.7 FAIRFAX CROSSING PARALLEL LINE

The designated alternative for the Fairfax Crossing Parallel Line is Alternative 4 at this time. RK&K's recommendation is that no line is constructed at this time through Fairfax Crossing and the capacity of the existing line is monitored as each new development upstream is proposed. Depending on development, it is anticipated that the parallel line will need to be constructed in the following five to ten years, as a second phase to the 2021 Collection System Project.

Overall, as more development occurs, and additional capacity is needed, RK&K's recommendation is that the parallel 15" dia. line is constructed in accordance with Option 3. The cost for this option is the less expensive of the various options evaluated at $1,471,000 and will also result in less impact on vehicular and pedestrian traffic during construction.

There is no cost associated with this project component at this time.

7.8 FORREST AVENUE PUMP STATION RELOCATION

The designated alternative for the Forrest Avenue Pump Station Relocation is Alternative FA 1. This option involves decommissioning of the 11th Street Pump Station, decommissioning of the Forrest Avenue Pump Station, and construction of a combined Lakeland Place Pump Station.

This option consists of the construction of 735 LF of 8" gravity sewer, 5 manholes, demolition of the existing 11th Avenue PS; and converting the existing pump station into a sanitary manhole. This option utilizes the alley between E. 10th Ave. and E. 11th Ave. and ties into the proposed manhole at the location of the existing Forrest Ave. Pump Station.

This option also consists of the construction of 685 LF of gravity sewer, 3 manholes, demolition of the existing Forrest Avenue PS, and 830 LF of force main. This option also includes the construction of the Lakeland Place Pump Station at the low point of the developer's property in the proposed dog park. This alignment utilizes the property lines and will require 125 LF of easement from a homeowner and 242 LF of easement from the GLP capital tract property. This leaves the GLP capital tract property open for future development (**Appendix K**).

See **Section 4.8.1** for the cost breakdown for the $821,000 project component.

7.9 PROJECT SCHEDULE

The proposed project schedule is based on the project being submitted to IJDC in December 2021.

Preparation of plans, specifications and contract documents for the project will take approximately six (6) months and advertising for bids and award of contract will take four (4) months. Construction is estimated to take at least eighteen (13) months to complete. Based on the availability of project funding and the noted timelines, the project could potentially be completed and fully operational by the beginning of year 2024.

7.10 PERMIT REQUIREMENTS

The following is a list of the permits anticipated to complete the various phases for the Charles Town Utility Board:

- Health Department
- NPDES Modification Permit
- Clearance letter from Culture & History
- Department of Highways Permit (for any work within their jurisdiction)
- DEP E&S Control

7.11 TOTAL PROJECT COST ESTIMATE (ENGINEER'S OPINION)

In this section, the total estimated cost for the various components of this 2021 Collection System Project for the Charles Town Utility Board will be discussed.

The work recommended for the CTUB has compiled into a single sewer collection project. Individual cost estimates including construction and soft costs have been prepared. Each phase is detailed in **Section 4.** The estimated total project cost including soft costs is $4,861,000.

TABLE 7-1

No.	Description	Quantity	Unit	Unit Price	Total Price
	CTUB 2021 COLLECTION SYSTEM PROJECT				
1	Burr East Pump Station	1	LS	$ 580,600	$ 580,600
2	Jett's Farm Pump Station and Force Main	1	LS	$ 360,800	$ 360,800
3	Moose Lodge Pump Station and Force Main	1	LS	$ 170,900	$ 170,900
4	Flowing Springs Pump Station	1	LS	$ 687,000	$ 687,000
5	Evitt's Run Interceptor	1	LS	$ 824,600	$ 824,600
6	Jefferson Memorial Park Force Main	1	LS	$ 170,800	$ 170,800
8	Forrest Ave. Pump Station Relocation	1	LS	$ 746,300	$ 746,300
			Construction Subtotal		**$ 3,541,000**
9	Construction Contingency	10%		$	354,240
	ESTIMATED CONSTRUCTION COST			**$**	**3,895,240**
10	Engineering				$ 353,800
11	Study and Report				$ 58,500
12	Bidding and Negotiation				$ 8,300
13	Construction				$ 413,100
14	Permitting Fees				$ 7,000
15	Accounting				$ 20,000
16	Legal				$ 30,000
17	Bond Counsel				$ 30,500
18	Easements and Acquisition				$ 6,020
19	Project Contingency				$ 38,540
				Total Project Cost	**$ 4,861,000**

7.12 ANNUAL OPERATING BUDGET

The report defines one project needed for the CTUB's sewer collection system. In the following paragraphs, the expected revenue generated and O&M costs will be discussed for the project.

7.12.1 INCOME

This project involves repairing/improving the existing wastewater system's efficiency and performance. Currently, the CTUB generates revenue through monthly sewer billings that go towards debt collection, O&M costs, and cost to treat the wastewater. The CTUB currently charges their customers in the territory formerly served by the Charles Town Utility Board or the City of Ranson $44.48/3,400 gallons a month for wastewater treatment and currently charges their customers in the territory formerly served by the Jefferson County Public Service District $50.72/3,400 gallons a month for wastewater treatment. Overall, this project will improve the quality of the wastewater service that the CTUB provides.

7.12.2 ANNUAL O&M COSTS

The proposed projects will maintain or reduce the operation and maintenance cost of the system. The improvements to the pump stations and collection system will improve the facilities so that future deficiencies do not occur.

The CTUB will repay their debts through annual revenue from wastewater service that the CTUB performs. Annual O&M costs for the CTUB are shown in the CTUB's 2020 Annual Report (**Appendix F**). As of the 2020 Annual Report, the CTUB's total operating expenses are $3,343,575 and the CTUB's total wastewater operating revenues are $6,133,529.

7.12.3 RESERVES

The CTUB currently uses funds from sewer bill collection to maintain their existing wastewater system. It is suggested that the CTUB continue using the monies collected from sewer service to make payments for debt service and O&M costs.

7.13 FUNDING

CTUB is seeking funding for the proposed $4,861,000 project consisting of both CTUB contributions through Capital Improvement Fees (CIF) and Clean Water State Revolving Funds. CTUB has identified $1,300,000 in available CIF that will be applied towards the sewer improvement project, leaving a $3,561,000 shortfall that will utilize CWSRF.

In June 2017 the former Jefferson County Public Service District received a binding commitment letter (**Appendix U**) from the WV Department of Environmental Protection totaling $3,344,984 in funding. The $3.34M in funding was further identified as $500,000 of forgivable loan (i.e. grant) and a separate $2,844,984 loan. The terms for the $2.84M loan consisted of 0.25% in interest plus an additional 0.25% in administrative fee for a term of up to 40 years. The 0.5%, 40 yr. term has been utilized as the basis for determining potential user rate impacts.

Coordination efforts with CWSRF are ongoing however the basis of this report assumes utilizing the $1,300,000 CIF, $500,000 CWSRF loan forgiveness along with a $3,061,000 CWSRF Loan to fund the $4.861M project.

While this funding strategy is being pursued, CTUB is also evaluating other funding opportunities that is advantageous to the utility and their rate payers.

7.14 SUMMARY

The proposed project is to include improvements to the sewer collection system to improve both efficiency and performance. The revenue generated from sewer service will go to debt collection and O&M costs.

This project will help the CTUB improve its sewer collection system to provide safer and more reliable sewer service to its customers.

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

SECTION 8
APPENDIX

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

APPENDIX B
CTUB 2021 SEWER STRATEGIC PLAN

Exhibit 1-1
Sewer Service Area

N
W
E
S

- Sewer Service Area
- WWTP
- PumpStation
- Gravity
- Force Main
- Stream
- Arterial Roadway
- Parcels
- Charles Town UGB
- Ranson UGB
- Shepherdstown UGB
- Charles Town Limits
- Ranson Limits
- Shepherdstown Limits

MARTINSBURG PIKE
N DUKE ST
W GERMAN ST
Deerfield WTP 2
Deerfield
Deerfield Village
Deerfield WTP 1
KEARNEYSVILLE PIKE
BERKELEY CO.
CHARLES TOWN RD
Northport PS
ROUTE 9
War Admiral PS
Burr Park East (5-1)
Burr West (5-2)
Burr, Royal (5-3)
ROUTE 9
Jefferson High (3-9)
Job Corps (3-8)
FLOWING SPRINGS RD
Driswood (3-14)
SHEPHERDSTOWN PIKE
Jetts Farm (1-10)
Woodlawn MHP (1-11) Big
Parkview (1-157)
Little Lloyd's Flats (1-12)
N MILDRED ST
Briar Run 2 (3-11)
Briar Run 1 (3-10)
Breckenridge
Cambridge (3-7)
Beallair (3-13)
Moose Lodge (1-12A)
Orchard Hills (2-13)
Wilts MHP (2-306)
Flowing Springs
Forrest Street
Cranes Lane (2-14)
11th Avenue
Racetrack (3-6)
WILLIAM L WILSON FWY
Marlowe Rd (Tractor Supply)
Ashley Brin
4th Avenue
Martins
Sheetz
Cone Zone
Demory
Original (Little) Demory
MIDDLEWAY PIKE
Mountaineer
S FAIRFAX BLVD
E WASHINGTON ST
W WASHINGTON ST
Wendy's (4-2)
Willow Spring
Genesis
Tuscawilla Plant
Weirick Street
S GEORGE ST
Clarence Drive
Belvedere Heights (4-4)
Park
Craig Hill
Charles Town
Samuel Street
County Green (4-7)
Belvedere
Citizens Fire Co
Hillside
Greenfield (4-5)
ROUTE 9
ROUTE 9
ROUTE 9
SUMMIT POINT RD
Huntfield
Norborne Glebe
Saint James
Spruce Hill (SHN-2)
Spruce Hill North (SHN-1)
BERRYVILLE PIKE
BERRYVILLE PIKE
CHARLES TOWN RD
KABLETOWN RD

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

APPENDIX H
FLOWING SPRINGS PUMP STATION PROJECTIONS

RK&K

Subject: Flowing Springs P.S. — Page 1 of 2
Lloyd's Flat addition analysis — Cm. No. 19339.017
Prepared By B. Felton — Date 7/27/2021 — Checked By — Date

Lloyd's Flat

Data (From 2019)

Pump Flow Rate: 296 GPM
Avg. Current Run Time: 9.5 hrs/day
Max. Current Run Time: 20.1 hrs/day

Current ADF

$(9.5\ \text{hrs/day})(296\ \text{GPM})(60\ \text{min/hr}) = 168{,}720\ \text{GPD}$

Current PDF

$(20.1\ \text{hrs/day})(296\ \text{GPM})(60\ \text{min/hr}) = 356{,}976\ \text{GPD}$

Current Actual Operating Peak Factor

$$\frac{20.1\ \text{hrs/day}}{9.5\ \text{hrs/day}} = 2.1$$

Current Available Peak Factor

$$\frac{24\ \text{hrs/day}}{9.5\ \text{hrs/day}} = 2.5$$

Flowing Springs

Data (Derived from flow meter recordings 7/13/2021 thru 7/20/2021. Refer to attached spreadsheet)

Pump Flow Rate: 715 GPM (1 Pump Operating)
1,010 GPM (2 Pumps Operating, derived from projected pump/system curve)

Data (Derived from OmniSite recordings 1/1/2021 thru 7/1/2021)

Avg. Pump Run Time: 7.8 hrs/day — Max. Pump Run Time: 18.6 hrs/day (6/12/2021)

Calculated ADF

$(7.8\ \text{hrs/day})(60\ \text{min/hr})(715\ \text{GPM}) = 334{,}620\ \text{GPD}$

Calculated Design PDF

(1,010 GPM)(60 min/hr)(24 hrs/day) = **1,454,400 GPD**

Calculated Design ADF

$$\frac{1,454,400 \text{ GPD}}{4 \text{ P.F.}} = 363,600 \text{ GPD}$$

Current Actual Operating Peak Factor

$$\frac{18.6 \text{ hrs/day}}{7.8 \text{ hrs/day}} = 2.4$$

Current Available Peak Factor

$$\frac{24 \text{ hrs/day}}{7.8 \text{ hrs/day}} = 3.1$$

Combined Flowing Springs & Lloyd's Flat

ADF = 168,720 GPD + 334,620 GPD = 503,340 GPD

PDF = (168,720 GPD)(2.1) + (334,620 GPD)(2.4) = **1,157,400 GPD**

1,157,400 GPD < 1,454,400 GPD

Projected Operating Peak Factor

$$\frac{PDF}{ADF} = \frac{1,157,400 \text{ GPD}}{503,340 \text{ GPD}} = 2.3$$

Projected Available Peak Factor

$$\frac{1,454,400 \text{ GPD}}{503,340 \text{ GPD}} = 2.9$$

2.3 < 2.9

Charles Tow[illegible]ility Board
Flowing Springs Sewer Pump Station
Flow Meter Data

Date	Meter Readings			OmniSite		Difference (Omni - Meter) (GPD)	Pump Flowrate (GPM)	
	Time	Meter Reading (Gallons)	GPD	Pump Run Time	GPD		Meter	OmniSite
7/13/2021	9:32	108,828,463	*257,043*	*8.55*	*411,275*	*46,276*	*501*	*800*
7/14/2021	9:33	109,085,506	263,657	6.30	303,319	20,262	698	800
7/15/2021	9:32	109,349,163	255,844	5.88	283,919	33,597	725	800
7/16/2021	9:35	109,605,007	272,776	5.92	289,441	35,901	768	811
7/17/2021	10:47	109,877,783	244,599	6.33	308,677	61,609	644	810
7/18/2021	9:29	110,122,382	261,897	6.30	306,208	27,719	693	809
7/19/2021	*No Reading*		261,897	6.00	289,615	20,663	727	803
7/20/2021	9:29	110,646,175	262,494	5.83	282,559	31,945	750	804
7/21/2021		110,908,669	0	6.12	294,439	-	-	800
7/22/2021	*No Reading*		0	5.57	269,015	-	-	804
7/23/2021	*No Reading*		0	5.77	281,641	-	-	813
7/24/2021	*No Reading*		-	5.63	273,661	-	-	806

Averages (7/13 thru 7/20)

Daily Flow (GPD)			Pump Flowrate (GPM)		Pump Run Time[1]
Meter	OmniSite	Difference	Meter	OmniSite	Hours/Day
260,452	294,820	33,099	715	805	6.08

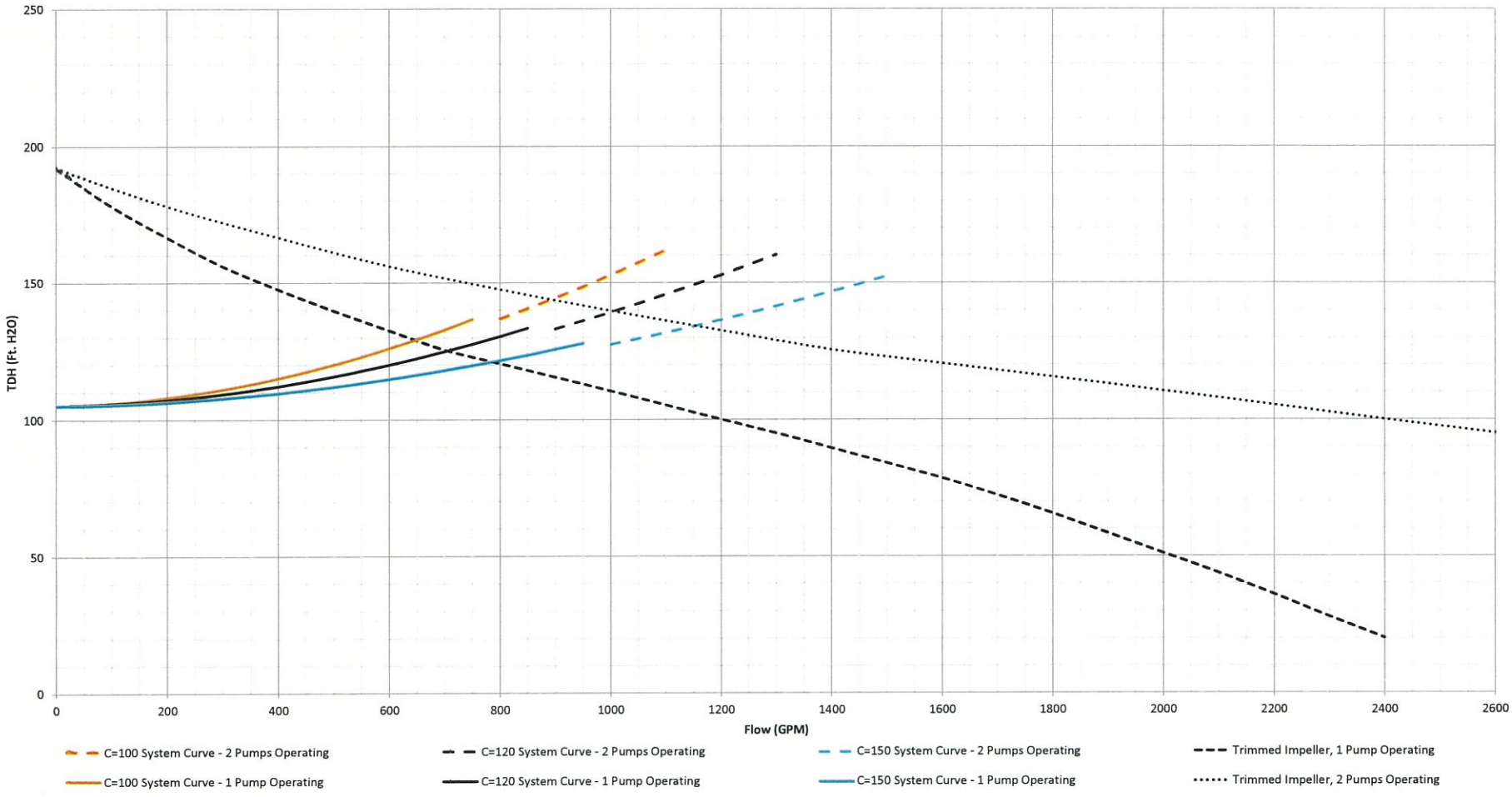
Notes: 1. Average pump run time from 1/1/2021 thru 7/1/2021 was 7.8 hours/day.
2. Void data shown in *red*.

Flowing Springs Sewer Pump Station

Equivalent Length Method - Design Flow

HOMA AMX644-335, 13.19" Trim[1] Impeller[2], 1750 RPM, 70 HP

1. - Impeller trimmed to match calculated ADF duty point.
2. - Impeller trim range for pump volute is 12.8125" to 14.625"



FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

APPENDIX R
PROJECT DISPLAY

X - DENOTES POTENTIAL FUTURE DEVELOPMENTS

1	AMERICAN HERITAGE (HUNTWELL)
2	ASPEN GREEN
3	BEALLAIR
4	BLACKFORD VILLAGE
5	BRECKENRIDGE EAST
6	BRIAR RUN
7	BURR INDUSTRIAL PARK & BARDANE
8	CAMBRIDGE
9	CHARLES TOWN INFILL
10	CLAYHILL FARM
11	DANIELS FOREST
12	FRITTS PROPERTY
13	HARVEST HILLS
14	HUNTFIELD
15	JEFFERSON HEIGHTS NORTH
16	TATE MANOR
17	LAKELAND PLACE/LLOYD'S
18	JEFFERSON ORCHARDS
19	LANGLET
20	LLOYD PROPERTY
21	LOCUST KNOLL
22	MAGNOLIA SPRINGS
23	NORBORNE GLEBE
24	OLD TOWN RANSON - INFILL
25	POTOMAC MARKETPLACE
26	PRESIDENT'S POINTE
27	PROSPECT PLACE
28	RANSON GATEWAY/BOULEVARD
29	SHENANDOAH SPRINGS
30	STOLIPHER
31	WASHINGTON LANDING
32	WINCHESTER COLD STORAGE
33	WINDMILL CROSSING
34	GREENHILL (STONECREST)
35	ROCKWOOL
36	SHENANDOAH JUNCTION

FLOWING SPRINGS PUMP STATION UPGRADE

FAIRFAX CROSSING PARALLEL GRAVITY SEWER LINE AND ALTERNATIVE OPTIONS

JETTS FARM PUMP STATION AND FORCEMAIN

BURR EAST PUMP STATION FLOW DIVERSION

FORREST AVE & 11TH AVE P.S. DECOMMISSION

JEFFERSON MEMORIAL PARK FORCEMAIN

MOOSE LODGE PUMP STATION AND FORCEMAIN

EVITTS RUN INTERCEPTOR

FLOWING SPRINGS P.S.

FORREST AVE P.S.

11th AVE P.S.

WOODLAWN P.S.

JETTS FARM P.S.

BURR EAST P.S.

WAR ADMIRAL P.S.

NORTHPORT P.S.

LLOYDS FLAT P.S.

WILTS P.S.

MOOSE LODGE P.S.

SAMUEL STREET P.S.

CTUB SEWER TREATMENT PLANT

TUSCAWILLA SEWER TREATMENT PLANT

U.S. Route 340

New WV Rte. 9

WV 9

WV 115

War Admiral Blvd.

Flowing Springs Rd.

Norfolk & Southern Railroad

Currie Rd.

Wiltshire Rd.

Leetown Rd.

E. Washington St.

St. Augustine Ave.

Middleway Pike

Summit Point Rd.

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECTS
NOT TO SCALE

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FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

APPENDIX S
JEFFERSON COUNTY PSD 2015 WASTEWATER STRATEGIC PLAN

Jefferson County
Public Service District

Wastewater Strategic Plan 2015

Prepared by

Dunn Engineers Inc.

July 2015

Jefferson County

Public Service District

Kearneysville, West Virginia

Wastewater Strategic Plan 2015

Prepared by

Dunn Engineers, Inc.

400 South Ruffner Road
Charleston, WV 2531

July 2015

Jefferson County

Public Service District

Kearneysville, West Virginia

Wastewater
Strategic Plan 2015

Prepared by

Dunn Engineers, Inc.

400 South Ruffner Road
Charleston, WV 2531

July 2015

Jefferson County Public Service District
Wastewater Strategic Plan 2015

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Wastewater Strategic Plan 2015

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Jefferson County Public Service District
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PREFACE

Jefferson County Public Service District (the District) presents a Strategic Plan for moving forward in order to comply with its mandated mission to take measures necessary to preserve public health, comfort and convenience to citizenry in designated territories. In the case of the Jefferson County Public Service District, that territory is all unincorporated areas of Jefferson County. This plan is focused on provision of sewer service to our citizenry.

Taking a short term approach to providing the necessary services for our citizenry has proven to be costly, ineffective and counter-productive. The District's citizenry have the right to proper service that is provided with sufficient foresight that any change does not immediately disrupt or cause failures to the service. The solution, presented in this Plan, is created with a long term vision that accounts for change, an inevitable prospect for the District's future.

Any long term plan will appear to be more costly in terms of immediate impact on acquisition of funds to pay for that plan. The truth, however, as explained within this Plan, is that short term fixes cost more over time as the 'fixes' are quickly overcome by further demands upon the system. Then, the fixes need fixing. This, in turn, costs more money. A long term plan provides for anticipated future changing demands and has sufficient flexibility and elasticity to accommodate those changes over time.

The District has taken the short-term road in the past, and is now paying for this with continuing and proliferating problems and the costly fixes required. Further attempts to fix the fixes will only last for the short term. With the obligation to safeguard our citizenry's health, comfort and convenience, the Plan presented here takes the long view but does so with a conservative mindset to make the burden of financing as equitable as possible.

Presented here is the Jefferson County Public Service District's Strategic Plan for provision of sewer service well into the future for Jefferson County's unincorporated areas and the citizenry dwelling within.

Jefferson County Public Service District

2015 Strategic Plan

I. EXECUTIVE SUMMARY

The Jefferson County Public Service District (the District) provides approximately 2,400 residential, commercial and public authority customers with sanitary sewer service, and has provided that service to some of its customers since the mid-1980s. The County population has grown by over 50% during that time, and similar growth is projected to continue into the future according to the Envision Jefferson 2035 Comprehensive Plan. The District has entered into numerous Alternate Mainline Extension Agreements (AMEAs) with developers that have requested sewer service, and adequate sewer capacity will not be available to provide that service without existing sewer infrastructure being upgraded and / or new infrastructure being constructed.

At the direction of the Public Service Commission of West Virginia, the District has undertaken a Strategic Planning effort to provide a framework for maintaining high quality service to its existing customers and for delivering service to hundreds of new customers that will be connecting to the District's sewer system in the future.

The proposed Strategy for achieving those goals will involve upgrading, replacing and eliminating existing pumping equipment, adding capacity to the existing collection system, and working with the cities of Charles Town and Ranson to ensure that sufficient treatment and transportation capacity is available to meet the District's needs.

The strategy will also include a standardization of pumping equipment, continued use of Alternate Mainline Extension Agreements to extend service and the pursuit of authority to implement an Impact Fee via the Jefferson County Commission or a Capacity Improvement Fee to offset the cost of installing additional capacity for anticipated growth and to minimize financial impacts to existing customers.

Lastly, the District will explore the use of "green" technologies to provide sewer service to areas, with failing septic tanks and leach fields and to planned lower density and / or smaller development areas and villages, similar to that currently in use at the District's Deerfield facility.

The Strategic Plan will be updated on a three year cycle to allow the District to respond in a timely manner to changing development and regulatory trends.

II. INTRODUCTION

The Jefferson County Public Service District (the District) has the responsibility for providing sanitary sewer service in the unincorporated areas of Jefferson County, West Virginia. The District is responsible for the operation, maintenance and renovation of existing facilities and infrastructure and the construction of new facilities and infrastructure. Presently the District serves over 2,400 sanitary sewer customers.

The District staff of 10 personnel provides most of the District's day-to-day functions of administration and operation. The staff consists of a General Manager, Operations Manager, Administrative Assistant, Finance Manager, two Billing Clerks, Engineering Technician and three Maintenance Technicians. The Board consists of three County Residents who are appointed by the County Commission for staggered six-year terms.

This is a Strategic Plan to manage the wastewater infrastructure within the Jefferson County Public Service District's service area.

Over the past 15 years, more than a dozen studies and reports have been prepared to address various wastewater collection and treatment needs.

Recent requests from several of the developers of previously platted subdivisions, as well as from the Jefferson County Development Authority, for additional wastewater transmission capacity have underscored the need for the District to develop and implement a plan to provide additional transmission capacity and maintain existing infrastructure. This plan addresses needed equipment replacement and system maintenance, including the identification and elimination of infiltration and inflow throughout the collection system. Wastewater treatment capacity is addressed by reference to the City of Charles Town's 2015 Wastewater Strategic Plan.

There are currently proposals being prepared by Thrasher Engineering to construct an interceptor and enhanced pumping system in the Flowing Springs Run basin; implementation of that proposal will be a central component of this Strategic Plan. Flows from Burr Industrial Park, four (4) Jefferson County Schools, Job Corps, and Harvest Hills subdivision are included in the current proposed project. Additional information and alternatives that are addressed as part of the Strategic Plan, evaluate the portions of the transmission system that serve the Southern Route 9 system.

Other information incorporated into this Strategic Plan includes the District's Asset Management Plan, agreements with developers, and planning and zoning information from the Jefferson County Commission and its agencies and departments.

This Plan incorporates information from previous engineering studies, as well as the funding applications and supporting engineering studies for the Flowing Springs Run sewer system upgrade.

This Strategic Plan will assist the Jefferson County Public Service District in its efforts to expand, upgrade and improve its wastewater facilities. The Strategic Plan complements and supports project funding applications and also supports the District's pursuit of the additional operating revenues required for ongoing and future maintenance requirements.

III. PURPOSE & OBJECTIVE

The District and the Public Service Commission of West Virginia have determined that it is appropriate to prepare a long term vision and strategic plan for the service areas. While the objective is to provide the framework for guiding how the District provides services in the future; particular attention must also be focused on integrating ongoing efforts and meeting near-term needs.

The intent of this strategic plan is to assist the District with identifying options and alternatives for meeting wastewater transmission and treatment needs of Jefferson County (exclusive of municipalities and the Harpers Ferry - Bolivar Public Service Distrct), both current and future customers, through 2035, while considering possible alternatives through 2050.

This strategic planning effort will promote the District's desire to provide ratepayers with rate predictability and reliable service, strengthen partnerships, support prudent infrastructure development and project delivery, and develop benefits from end products while meeting community sustainability goals.

The Plan will be re-assessed every three years, before addressing the future year's annual budget, including a request for input from other local public utilities and local governments.

The following list identifies other planning efforts and potential stakeholders:

Ratepayers/Customers

Local Government:

- Jefferson County Planning Commission
- Jefferson County Planning and Zoning Departments
- Jefferson County Department of Capital Planning and Management
- Jefferson County Economic Development Authority (Burr Industrial Park)
- Jefferson County Department of Health
- Jefferson County Solid Waste Authority
- The incorporated municipalities of Jefferson County:
    - Charles Town
    - Ranson
    - Harpers Ferry/Bolivar
    - Shepherdstown

State Agencies

- WV Department of Environmental Protection
- WV Department of Health and Human Resources
- WV Public Service Commission
- WV Infrastructure & Jobs Development Council

Others

- Eastern Panhandle Regional Planning and Development Council
- Other local utility providers

OPERATIONAL EFFICIENCIES AND COORDINATION WITH OTHER ENTITIES

Many other utility service providers in Jefferson County are facing the same types of challenges as the District. In some cases they are actually providing very similar functions. There may be future opportunities for sharing resources with Charles Town and Ranson. District personnel already work well with Charles Town and Ranson staff to share equipment and manpower when needed, but there may be possibilities for some level of consolidation in other areas. The sewer lines for all three entities intersect and overlap in numerous locations making identification of line ownership challenging. Reliance upon a set of maps (drawings) prepared by Chester Engineers and commonly known as the "Chester Maps" has become the common base for determination of ownership.

Conversations about total consolidation of the utilities have been occurring for years but the obstacles have always appeared monumental and no meaningful progress has been achieved to date. Efforts towards consolidation, however, are expected to continue into the future. Continued cooperation and communications with Charles Town and Ranson will become more necessary as the District's customer base continues to grow. The only way to have fair representation for the County as well as each Municipality is to have an equal number of members from each existing utility plus one "unbiased" person on a new structure such as a "Regional Utility Council." This may require legislation.

Currently the District Board consists of three members. This number is a result of West Virginia Code and cannot be expanded unless there is enabling legislation or there is a consolidation with one or more utilities. At that point each utility would have an opportunity to be represented on a board with more members.

IV. BRIEF HISTORY OF JEFFERSTON COUNTY PUBLIC SERVICE DISTRICT

The District has a wealth of information available from previous studies that has been utilized to form the basis of this strategic plan. New data, including flow monitoring results, should be obtained to update existing reports, along with information about the ongoing upgrade treatment projects being undertaken by the City of Charles Town to meet Chesapeake Bay effluent limits.

Established by the Jefferson County Commission on December 1, 1983, the Jefferson County Public Service District (District) was organized exclusively for the purposes set forth in Chapter 16, Article 13A of the Code of West Virginia of 1931, as amended (the "Act"). This section of the Act allows County Commissions to create Public Service Districts outside of municipalities and to empower these Districts to take measures necessary to preserve public health, comfort and convenience to citizenry in designated territories. The territory of the District includes all of the unincorporated areas of Jefferson County.

The District's sanitary sewer system is principally a collection system, which transmits wastewater to the City of Charles Town for treatment. Most of the wastewater infrastructure owned by the District was constructed by developers and then conveyed to the District. Prior to 2002, the District reimbursed the developers for this infrastructure. Since 2002 the District's agreements with developers no longer include a reimbursement clause.

In 2006 the District assumed ownership and operation of the Deerfield Wastewater Treatment Plant and facilities, which serves approximately 48 homes and is not connected to the District's principal collection system.

Another parcel of about 10 acres was deeded to the District at the site of the Old Standard Quarry for construction of a wastewater treatment plant. This site has been developed with the planned wastewater treatment plant and now serves about 79 homes in the Sheridan Development. The plant is an Enviroquip MBR plant and is capable of discharging Chesapeake Bay compliant effluent. Due to declining market conditions, the developer has not yet conveyed the facility to the District but it does sit upon land that the District owns in the southeastern part of the County along the Shenandoah River in Millville.

The District also has title to one parcel, of about 5 acres. This parcel was to have a similar plant constructed to serve the proposed Highland Farms development and other proposed development in the Southern portion of the Evitts Run watershed. Due to market conditions that plant and the developments it was planned to serve have not been constructed.

The District has always transmitted all but the Deerfield wastewater to the Charles Town Wastewater Treatment Plant. This currently equates to approximately 450,000 gallons per day.

In 2001 the West Virginia Public Service Commission (PSC) approved the City of Charles Town's acquisition of the Sanitary Associates Wastewater system, and Charles Town's decommissioning of the Sanitary Associates Treatment Plant, with the flows sent to the District's Breckenridge Pump station. This extra 40,000 GPD of flow into the pump station that was designed for a particular area of District customers, created numerous long-term problems for the District. This pump station was designed as a temporary pump station and did not have a generator or other components that are necessary for a permanent installation. The pump station was designed as temporary because at that time, the District was going through the process of attempting to build a new plant for the County.

In the middle of 2003 the Charles Town Utility Board was directed by West Virginia Department of Environmental Protection to cease accepting new flows at its wastewater treatment plant, resulting in a *de facto* moratorium on building in all the areas

served by the plant. This moratorium lasted about 20 months. In December of 2005 the upgrades were completed and the capacity of the plant was rated at 1.75 MGD. In 2010, although the hydraulic capacity of the plant was still 1.75 MGD, due to high ammonia in the discharge, the threat of a severe capacity reduction further indicated the need for another plant in the area that was Chesapeake Bay compliant.

The District received a NPDES permit and a Certificate of Convenience and Necessity from the West Virginia Public Service Commission, based in part upon a $10 million stimulus grant for a new 1 MGD, Chesapeake Bay compliant plant in 2010. The District was unable to close on stimulus funding within the time constraints of that program. When alternative loan funding was substituted, this caused a large increase to post project rates, and in August of 2011 the Certificate was revoked. The District intends to undertake upgrades to its transmission facilities at an estimated cost in excess of $7 million in lieu of building the Flowing Springs wastewater treatment plant project.

Since 2010, Charles Town has undertaken and completed upgrading projects at their Evitts Run Wastewater Treatment Plant, and replaced the lagoon treatment facility at Tuscawilla with a new 0.5 MGD MBR treatment and interconnected the two facilities. According to Charles Town's 2015 Strategic Plan, the City has 0.75 MGD of capacity available for treating future sewage flows (up to 7000 Equivalent Dwelling Units - EDUs). Computations for reaching these generalized statements on capacity are made with Chesapeake Bay compliance regulations in mind, that is, with the plant's remaining available capacity, remaining nitrogen poundage related to average concentration of discharge, and remaining phosphorous poundage taken into account.

Developers have once again begun to press the District to provide sewage capacity for their developments. Two of those developments (Harvest Hills and Breckenridge East) have requested capacity for over 1000 new homes. Additional capacity must be added to the District's existing collection system if it is to accommodate the new customers.

V. EXISTING SYSTEM DESCRIPTIONS & CONSTRAINTS

WASTEWATER INFRASTRUCTURE

The District provides wastewater collection and transmission infrastructure to approximately 2400 customers in numerous subdivisions and business developments. The District also provides these services for the Bardane and Burr Industrial Parks. The District operates a small wastewater treatment facility that serves the Deerfield subdivision; however, most wastewater is pumped to the city of Charles Town for treatment. The Public Service Commission has ruled that at that time, it was appropriate for Charles Town is to treat all of the sewage generated by the District (exclusive of Deerfield flows).

The District's sewer collection and transmission system includes approximately 45 miles of gravity sewer pipe that ranges from 4 inch diameter to 21 inch diameter, 15.25 miles of 1.5 inch diameter to 10 inch diameter force main, and 28 pump stations that send flows to Charles Town for treatment and discharge. This system serves four general areas that have been designated by the District as Northern Route 9, Flowing Springs Run Basin, Southern Route 9, and Spruce Hill North. These systems, as well as Deerfield, are described on the following pages.

DEERFIELD WASTE WATER TREATMENT PLANT

This system consists of two adjacent Ashco re-circulating sand filter wastewater treatment plants, one pump station, and twelve septic tanks and associated PVC piping. It currently serves approximately 35 residential units that are clustered in cul-de-sacs with two septic tanks serving each cul-de-sac. The liquid from six of these tanks flows to the pump station where it is forced to one of two re-circulating sand filter treatment plants. The other six tanks flow by gravity to the second treatment plant. The final effluent is distributed just below the surface of the ground in two subsurface disposal fields. The subdivision is platted for 48 homes, and the sewage collection and treatment facilities are

in good condition and appear adequate to serve the needs of the subdivision through build-out.

NORTHERN ROUTE 9 SYSTEM

The Northern Route 9 System serves the Burr Industrial Park, the USDA Research Station, Job Corps, Drisswood Elementary School, Jefferson High School, Wildwood Middle School, TA Lowery Elementary School and Woodlawn Mobile Home Park. As these flows are transported down Route 115 through Ranson, they pick up flows from the Orchard Hills and Robelei subdivisions. This system includes the following pump stations:

- Burr Industrial Park Pump Stations 5-1, 5-2, 5-3;
- Route 9 Pump Stations: 1-10, 1-11, 1-12, 1-12A, 1-157, and,
- Job Corps (PS 3-8), Drisswood PS (PS 3-14), and Jefferson High School (PS 3-9).

This collection system will also serve the Harvest Hills subdivision and its 400 remaining lots. Should conditions warrant the connection of the Shenandoah Junction sewer system to the District at some point in the future, it too could be served by this segment of the District's collection system. There is also the possibility that the City of Ranson could send sewer flows from the Tackley Mill area to the District's system, once a suitable transportation agreement has been negotiated.

The Northern Route 9 system conveys flow from the Burr Industrial Park, schools and Job Corps south along Route 9 through a series of pump stations and 6 inch diameter force mains that discharge into gravity mains, into the Ranson sewer system and ultimately to Charles Town's Evitts Run interceptor.

CONSTRAINTS ON NORTHERN ROUTE 9 SYSTEM

The Northern Route 9 collection system includes almost half (11 of 28) of the District's pumping stations, many of which are almost 30 years old and in need of

replacement or major upgrades; only Pump Station 5-3 in the Burr Industrial Park has been replaced and upgraded recently. These pumping stations have a finite hydraulic capacity, as do their associated force mains, and those capacities will be reached in a very few years as new housing and businesses are constructed in the area. The 10 inch diameter gravity sewers in the "Old Town" section of Ranson also significantly limit the amount of sewage flow that the District can convey to Charles Town for treatment. If Ranson moves forward with their plans for expansion, there will be no available capacity for customers in the District's system.

These constraints have been well documented in previous engineering studies that were performed for the District (the most recent of which was completed in April 2015 by Thrasher Engineering). Unless additional capacity is added to the Northern Route 9 system, development in this part of the District's service area will continue to be limited, and it will soon be halted altogether.

SOUTHERN ROUTE 9 SYSTEM

The Southern Route 9 area is located to the east and south of Charles Town, and includes the Crosswinds, Greenfield, Hillside, and Norborne Glebe subdivisions. This area contains pumping stations 4-5, 4-6, and one for Norborne Glebe.

CONSTRAINTS ON THE SOUTHERN ROUTE 9 SYSTEM

Constraints on the continued delivery of satisfactory sewer service to the southern Route 9 area involve Pumping Station 4-5 and the force main associated with Pump Station 4-5. These issues are to be addressed in the future, probably within the next three year review of the Strategic Plan.

SPRUCE HILL NORTH

The Spruce Hill North subdivision is the fourth of the District's service areas. Located south of Charles Town and south of the Huntfield subdivision, the Spruce Hill North area includes two pumping stations that deliver flows to sewer lines in the Huntfield Subdivision for transmission to Charles Town.

CONSTRAINTS TO SPRUCE HILL NORTH

There are no known constraints on the District's ability to continue to provide satisfactory sewer service to the Spruce Hill North area.

FLOWING SPRINGS RUN BASIN SYSTEM

The Flowing Springs Run Basin area serves customers in the Walnut Grove, Briar Run, Breckenridge, Cambridge, Flowing Acres, Beallair and Aspen Green subdivisions, as well as receiving flows from Charles Town's Sanitary Associates sewer system. This area includes pump stations 3-7 (Breckenridge), 3-10 and 3-11 in Briar Run, and 3-13 (Beallair). All of the sewage in this area is currently pumped by the Breckenridge station to Ranson's Flowing Springs Pump Station. One third of the amount of flow the District sends to the Ranson Pump Station is sent back to the District's pump station 3-6 to continue on to pump station 4-2 and on to the Charles Town system. The Flowing Springs Run Basin includes the largest concentration of developments in the District. Existing developments include Breckenridge, Walnut Grove, Flowing Acres, Briar Run, Cambridge, and Beallair. There are also existing platted lots in the developments of Breckenridge East and Aspen Greens, which, when added to the future homes in Beallair West, will add up to 1,340 new homes. This is one of the fastest growing areas of Jefferson County, and has been identified as the preferred Residential Growth Area for Jefferson County in accordance with the Jefferson County Comprehensive Plan.

CONSTRAINTS TO THE FLOWING SPRINGS RUN BASIN SYSTEM

There are three significant constraints that limit the District's ability to provide an acceptable level of sanitary sewer service to the Flowing Springs Run Basin area. These include the problematic Breckenridge pump station, existing 8 inch diameter and 10 inch diameter gravity sewer mains that deliver sewage to the Breckenridge pump station and the capacity of the Ranson Flowing Springs Run pumping station.

The Breckenridge pump station was originally built to provide "temporary" service, and was to be removed by a subsequent project that was never constructed. Backups at the station have caused damage and health risks in the Breckenridge subdivision and the wetwell does not have adequate operation depth, which makes upgrading the station difficult. This station is also positioned in a very bad location to continue to add flows beyond the initially planned flows.

The small 8 inch diameter and 10 inch diameter sewer mains have little available capacity to accept additional flows from subdivisions that will be constructed in the area. Aspen Green has already installed a 15 inch diameter main at the request of the District to accommodate anticipated flows beyond the amount of capacity they will need for their development.

The City of Ranson's existing Flowing Springs Run pumping station receives flows from the District's Breckenridge station (3-7), but does not have sufficient hydraulic capacity to accept increased sewage flows from the projected developments. Similarly, the District's existing mains that carry flows from the vicinity of Ranson's Flowing Springs Run station lack the capacity to accept additional flows from the Breckenridge station. It should be noted that Pump Stations 3-6 and 4-2 are very important; in addition to accepting one third of the District's flows back from Ranson's pump station, Pump Station 3-6 receives all the flow from the Jefferson Crossing Shopping Center and Holiday Inn Express, and Pump Station 4-2 accepts all these flows and also flows from Sheets, The Turf, and a few commercial customers on Washington Street.

All three of the pumping stations (3-6, 3-7 (Breckenridge), and 4-2) in the Flowing Springs Run Basin require significant upgrading or decommissioning and replacement if they are to deliver adequate service into the future without interruption.

VI. OTHER WASTEWATER TREATMENT FACILITIES

In addition to Charles Town's Evitts Run, Tuscawilla and Willow Springs treatment plants, other sewage treatment facilities are also located within the Jefferson County Public Service District. The three larger ones include the Old Standard MBR plant that serves the Sheridan subdivision (50,000 GPD current capacity), the Shenandoah Junction re-circulating sand filter plant (18,000 GPD current capacity) and the PNGI Charles Town Gaming Sequencing Batch Reactor (SBR) plant (348,000 GPD capacity) that serves the Hollywood Casino and Charles Town Races in Charles Town.

The Old Standard plant is designed to treat 125,000 GPD, with space being left at the site to double that capacity. The District briefly studied the use of the facility for treating some flows from the Flowing Springs Run Basin. Questions surrounding the ownership of the facility have not been fully answered. Should available treatment capacity at Charles Town become an issue in the future, the District might consider re-evaluating the acquisition, upgrading and use of the Old Standard treatment plant.

The Shenandoah Junction facility is located near Jefferson High School and was designed to serve the Village of Shenandoah Junction; it has a permitted capcity of 18,000 gpd. It is not known if any additional capacity exists, but it is believed that the facility is in compliance with its WV NPDES permit. It would not provide the District with any significant treatment capacity and the NPDES permit for this plant directs it to be decommissioned when there is sufficient capacity by a publicly own utility. The District hopes to eventually take over possession of this system and its 200 or so additional customers.

The plant serving the Hollywood Casino and Charles Town Race Track is a state of the art Sequencing Batch Reactor (SBR) plant with effluent filtration that is Chesapeake Bay compliant. Since the facility serves a private business and is not a regulated utility, it is not known if any unused capacity exists and whether or not the owners would have any interest in selling some or all of that capacity. Should the need for treatment capacity arise the District will consider this as an option.

Other, smaller package type treatment plants exist within the Public Service District's boundaries. The Cave Quarter's wastewater treatment facility should be replaced. The owner has previously asked the District to purchase the system but it was deemed to be unfeasible. The City of Charles Town, according to their 2015 Strategic Plan, is evaluating the possibility of treating the sewage generated by this facility. While the specifics of some of these facilities are unknown, their limited capacities would offer few, if any, benefits to the District in terms of additional treatment capacity. Affiliating the District with these facilities is likely to bring significant operational and maintenance liabilities with limited opportunities for positive rate impact for customers. If such situations arise, they will each be evaluated on their own merits and on the impact that such acquisition would have on existing District customers.

VII. CHARLES TOWN WASTEWATER TREATMENT FACILITIES

The City of Charles Town has three wastewater treatment plants with a combined hydraulic treatment capacity of 2.35 MGD. The Evitts Run Plant has a permitted capacity of 1.75 MGD, and will be Chesapeake Bay compliant by the end of 2015. According to the ***Charles Town 2015 Strategic Wastewater Plan***, the Evitts Run plant received the following flows since 2010 (see Table 1 on the following page).

TABLE 1

Charles Town Flow Data

Year	Total Annual Flow (in MG)	Average Daily Flow (in MGD)	Average Peak Flow (in MGD)*
2010	386	1.06	1.50
2011	386	1.06	1.58
2012	381	1.04	1.46
2013	379	1.04	1.40
2014	355	0.97	1.55

*Maximum monthly day / 12 months

Source: Charles Town's 2015 Strategic Wastewater Plan

Charles Town has also completed the replacement of their Tuscawilla treatment system with a 0.5 MGD Membrane Bioreactor that is Chesapeake Bay compliant. Historic flows to the Tuscawilla plant are shown below.

TABLE 2

Tuscawilla Flow Data

Year	Total Annual Flow (in MGD)	Average Daily Flow (in MDG)	Average Peak Flow (in MGD)*
2010	50	0.14	0.19
2011	50	0.14	0.22
2012	52	0.14	0.17

*Maximum monthly day/ 12 months

Data for 2013 and 2014 are excluded due to start-up of the new facility.

The Tuscawilla plant was designed to be expanded to a capacity of 1 MGD when conditions warrant.

Source: Charles Town's 2015 Strategic Wastewater Plan

The two treatment facilities have been connected via a pumping station and force mains, which provide the City with a combined hydraulic capacity of 2.25 MGD. In addition to the Evitts Run and Tuscawilla plants, Charles Town also has a 0.1 MGD facility at Willow Springs, bringing the total hydraulic capacity of the Charles Town wastewater system to 2.35 MGD. The Willow Springs facility, however, is slated to be decommissioned in 2016, with flows being sent to the other two treatment facilities for processing and disposal.

The ***Charles Town 2015 Wastewater Strategic Plan*** shows that significant hydraulic capacity currently exists at their wastewater treatment plants to serve future customers:

TABLE 3

Forecast of Daily Volumetric Flows

Volumetric Flow	Permitted Daily Flow (MGD)	Average Daily Flow (MGD)	Available Daily Flow (MGD)
Charles Town	1.75	1.03	0.72
Tuscawilla	0.50	0.14	0.36
Willow Spring	0.10	0.06	0.04
Total	2.35	1.23	1.12

"Using the water gallons per day of 150 per EDU from the Capacity Improvement Fee (Charles Town Sewer Tariff No. 15, Schedule III), the available capacity in EDUs would be over 7,000 (1,120,000 / 150). More appropriately, an allowance for inflow and infiltration would use 180 gallons per day. In order to safeguard future NPDES Permit compliance, this available annual capacity is being reduced to 0.75 MGD. The available capacity in EDUs is therefore 4,166 EDUs (750,000 / 180) based on the following factors:

1. Weather events,
2. Loss of nitrification caused by a plant upset or severe cold,
3. Inflow and Infiltration,
4. Design criteria and plant expansions are based on maximum daily flow data and,
5. Limited operational data on the improvements to the Tuscawilla and pending Charles Town WWTP nutrient projects.

Forecasted capacity must now also be based on nutrient limitations; however, limited data is available. The 4,166 EDUs will likely be adjusted in future Strategic Plan Updates as nutrient history is collected."

Source: Charles Town 2015 Wastewater Strategic Plan

Beyond the availability of hydraulic capacity, Charles Town also forecasts that they will have available nutrient capacity (total nitrogen and total phosphorous) for projected flows through 2045, after additional nutrient removal capacity is installed at the Evitts Run plant. See Table 4, Treatment Upgrades Chart for Charles Town, from the ***Charles Town Utility Board 2015 Wastewater Strategic Plan and Ten Year Wastewater Capital Plan***, on the following page.

TABLE 4

Charles Town Treatment Upgrades*

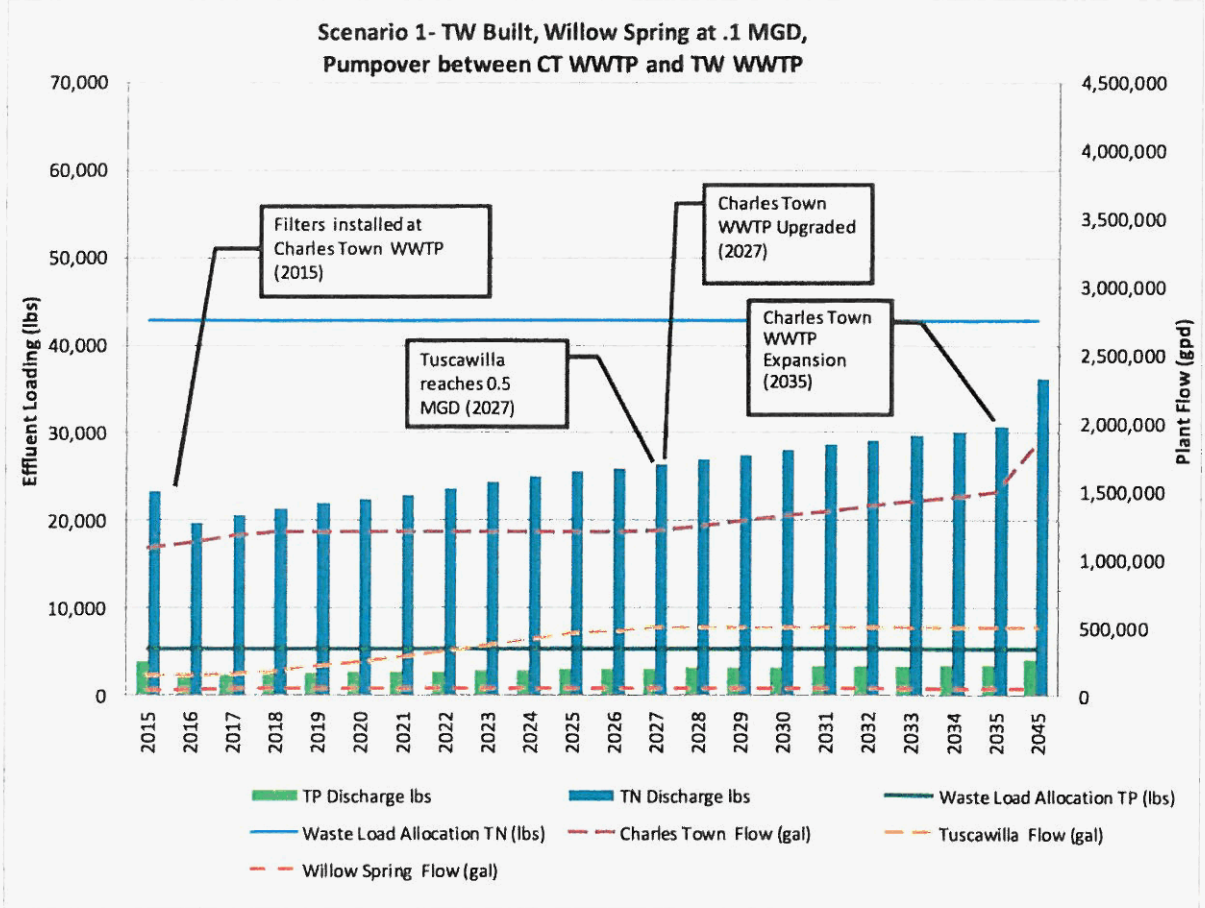


***Figure 4-2 - Treatment Upgrades, page 26, Charles Town Utility Board 2015 Wastewater Strategic Plan**

"Charleston Town has completed the Tuscawilla WWTP Phase 1 project to accept flow from the Southwest region, with the plant being brought online in September 2013. Charles Town has also completed the Huntfield force main and pump over station to allow for transfer of flows from the Charles Town WWTP to the Tuscawilla WWTP. This pump over could continue until flow at Tuscawilla WWTP reaches the expansion capacity of 1.0 mgd."

Source: Charles Town 2015 Wastewater Strategic Plan

The actual availability of future treatment capacity at Charles Town's treatment facilities will depend on a variety of factors, including the rate of development in the District, Charles Town and Ranson in addition to the capacity in the Charles Town

wastewater treatment facilities. It will be necessary to regularly monitor the remaining capacity at Charles Town with each update of the Strategic Plan to verify that sufficient treatment capacity will be available for the next planning periods (5 to 10 years).

Should actual growth exceed that projected in Charles Town's Strategic Plan, the District will need to verify that Charles Town will be able to meet the District's treatment needs, or the District may need to explore additional treatment capacity options at some point in the future (that need, however, should it ever occur, would almost certainly occur beyond the 20 year planning period envisioned for this Strategic Plan).

VIII. ENVISION JEFFERSON 2035 COMPREHENSIVE PLAN

The Jefferson County Commission and the Jefferson County Planning Commission completed work on the ***Envision Jefferson 2035 Comprehensive Plan*** early in 2015, and the Jefferson County Commission adopted the Plan on January 14, 2015. While the Comprehensive Plan contains few specifics relative to the delivery of water and sewer service throughout Jefferson County, it establishes framework upon which such services can be planned. Growth and development is directed toward Urban Growth Boundaries (UGBs) and Preferred Growth Areas (PGAs). Designating where public utilities are to be delivered, enables public utility providers to properly size the infrastructure needed as development occurs, while considering the ability of current and future customer base to assume the debt for the infrastructure.

The relevant sections of the Comprehensive Plan outlining the UGBs and PGAs, as well as those discussing water and sewer infrastructure are included in Appendix A.

The District's current sewage collection system infrastructure is generally located in the designated growth areas and planned improvements should reinforce service for the District's customers in those areas.

Areas of the county that currently have no public sewer service or rely on septic tanks and leach fields and have been identified for additional development (such as the village districts) may lend themselves to alternative or "green" sewage collection and treatment alternatives, should development become a realistic possibility. Alternatives such as Septic Tank Effluent Pumping (STEP), re-circulating filter treatment facilities and subsurface effluent disposal could provide "village scale" sewer service at affordable costs for these areas without impacting nutrient loadings on existing treatment facilities.

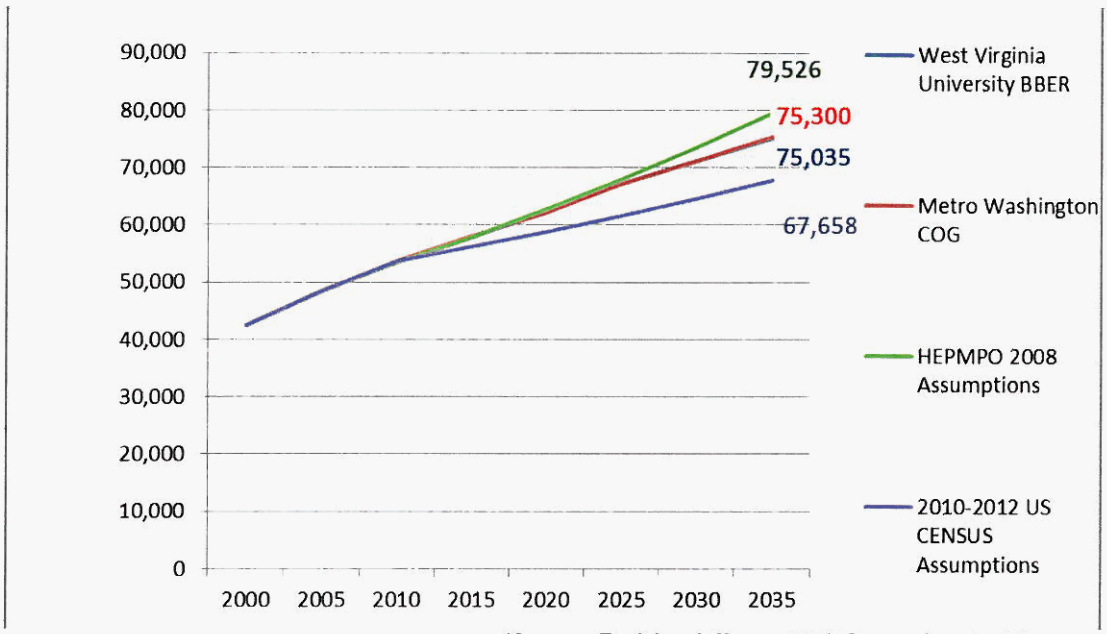
IX. FUTURE GROWTH PROJECTIONS

GROWTH AND WASTEWATER MANAGEMENT NEEDS

Jefferson County is projected to have significant growth over the next 50 years. ***The Envision Jefferson 2035 Comprehensive Plan*** projected that the population of Jefferson County would increase from 53,498 in 2010 to between 68,000 and 75,000 by 2035, as shown in the graph below.

TABLE 5

Population Projections for Jefferson County, 2010 - 2035*



***Source: *Envision Jefferson 2035 Comprehensive Plan*, page 164**

Note: The WVU and Metro-Washington amounts are so close that the lines representing them overlap and appear to be nearly a single line.

The plan notes:

"It is expected that the largest portion of population growth will take place in Charles Town and Ranson and the surrounding areas. Ranson is expecting to gain an additional 2,000 to 4,500 residents by 2035 and Charles Town is projected to grow by 13,000 residents by 2023. It should be noted that Charles Town's Comprehensive Plan was completed in 2006, during the height of the housing market and before the 2007 - 2009 recession. It is anticipated that Shepherdstown will add nearly 1,000 residents between now and 2035, with growth consisting primarily of the approximately 825 new beds to be constructed in residential facilities on the Shepherd University campus."

*~ **Envision Jefferson 2035 Comprehensive Plan**, page 163.*

Clearly, significant growth is projected for the Jefferson County Public Service District's service area which includes all of those areas surrounding the Municipalities. In particular, it should be further noted that there is a huge growth probability in the Flowing Springs Basin. There is a new apartment complex under construction in Jefferson Crossing which the District serves and there are some empty lots remaining there with potential for large flow amounts.

UNCERTAINTY OF FUTURE GROWTH

Starting around 2001, Jefferson County experienced unprecedented growth, which continued until the current economic slowing. On March 24, 2004, the District suspended the issuance of "commitments to serve" letters in response to Charles Town Utility Board's allocation of remaining capacity at its plant, which resulted in the District having no capacity to release to its prospective customers. After the upgrades to the Charles Town Wastewater Treatment Plant were completed in December of 2005, the District began issuing service commitments.

In the past five years, a nationwide "recession" has caused a significant drop in growth. Since 2010, the District has increased its residential customer base by 180 and its commercial base by 27, for an average of 41 new customers per year (less than 2% per year). Data is based upon figures in 2010 and 2014 PSC Annual Reports for Jefferson County PSD.

With American Public University's decision to make Ranson and Charles Town the center of their business location, Hollywood Casino at Charles Town Races, expansion to include table games, and the planned construction of two new schools for Jefferson County, the outlook for continued growth in the area is very positive. Jefferson County Planning Department is currently in the process of planning what type and density of growth will occur in the Route 340 corridor, and there have been discussions about the possibility that the new Route 9 corridor could also be an area of dense development.

Jefferson County Board of Education is planning for growth, which is evidenced in their recently released document, ***Jefferson County Comprehensive Education Facility Plan.*** They are planning to build two new schools in the next few years as well as additions to and upgrades of many of the existing schools. The proximity to major highways and federal government employment in Jefferson County, Northern Virginia and Washington DC, enables Jefferson County to be a choice for business and the corresponding residences.

Growth in the District's service area will be dictated, to a large degree, by zoning regulations that prescribe the nature and density of the development that occurs. ***The Envision Jefferson 2035 Comprehensive Plan*** outlined Urban Growth Boundaries (UGB) for Charles Town and Ranson and Preferred Growth Areas (PGAs) for Shepherdstown, US 340 East, US 340 South, Route 9, Middleway, and Shenandoah Junction; a Residential Preferred Growth Area was also established. Many of the District's current requests for sewer service are located in these areas. As long as these areas remain in the County, they are the responsibility of the District to provide service.

Requests for sewer service from development interests have resulted in the preparation of Alternate Mainline Extension Agreements (AMEAs), through which developers design and construct required sewage collection infrastructure and then deed ownership of the infrastructure to the District. The District has acquired infrastructure for seven developments to date (Breckenridge, County Green / Green Meadows, Jefferson Avenue, Robelei, Greenfield / Hillside, Jefferson Co. BOE (Drissworld Elementary and Crosswinds), and has finalized AMEA's for ten others. Information concerning the AMEAs is shown in the Table 6 provided on page 28.

Prior to 2002, per WV standard agreements, the District's AMEAs included a reimbursement to developers for infrastructure for each customer that was provided by the developer. This contributed to the high rates of the District. In many areas of WV the State wanted to encourage development so this reimbursement was an enticement to developers to "come to WV and bring us residents". Since about 2002 the District has actively sought alternatives to this situation; they have fought to secure a Capacity

Improvement Fee from Developers and in our AMEAs we no longer include a reimbursement unless the Developer installs infrastructure "over and beyond" his or her needs which were requested by the District; even then, the reimbursement is only for the difference between what the developer needs and what the District has asked the developer to enlarge for future needs of the District. This will be done only when the savings for the District can be verified and will be substantial.

Based on those projections, the District could expect to double its current customer base by 2026 to approximately 5,000 customers or approximately 250 new residential customers per year. That rate is much greater than the District's historic average, and more than twice as great as the District's most robust expansions. The actual build out rate cannot be known until it occurs so we need to make a reasonable assumption for current projections and be prepared to expand when necessary.

Charles Town, in their 2015 Wastewater Strategic Plan heavily discounted the developers' projections when calculating their available treatment capacity; for years 1 - 6, the proposed customer additions were discounted by 85%, for years 7-11 by 75%, and for years 12 - 30 by 50%. For years 1 - 6, the District's projected customer increase would be essentially what it has been during the past seven years, or approximately 49 per year.

Because the District is primarily a sewage collection and transportation utility, and because sewer systems are long term investments that are expected to deliver decades of service, care must be exercised when estimating capacity requirements. Gravity sewer mains, in particular, must be designed to transport future flows, as well as to serve existing needs, because of their relatively high cost of installation.

Sewage pumping stations, and to a lesser degree, force mains, can be designed to be upgraded (or in the case of force mains, replaced) to accommodate changing flow conditions.

The District has committed to providing sanitary sewage capacity to multiple developments and entities (see Table 6, on page 28) through Alternate Mainline Extension Agreements (AMEAs), and numerous engineering studies have identified these developments as the basis for the design of improvements to the existing collection

system. It must be noted that some of the commitments have been dropped but the land is still in the planned growth area of Flowing Springs Basin and will someday be developed. The District has dropped AMEAs for Thorn Hill, Butler Farms, Stone Crest and Kings Crossing. The Thorn Hill and Kings Crossing developments should be considered part of the Southern Route 9 area.

The collection system will need to be upgraded to accommodate the additional flows that result from the developments listed in Table 7 on page 29.

TABLE 6

Alternate Mainline Extension Agreements (AMEAs)

for Jefferson County Public Service Commission

JEFFERSON COUNTY PUBLIC SERVICE DISTRICT Alternate Mainline Extension Agreements (AMEAs)*								
Development	AMEA PSC Case No.	Date Initiated	Date Approved	Status	Development Complete?	Total Development EDU's	Total EDU's Used	Total EDU's Remaining
Breckenridge	97-1468-PSD-ECN	N/A	2/26/1998	Final	Yes	282	282	0
Briar Run	97-1468-PSD-ECN	N/A	2/26/1998	Final	No	436	305	131
Briar Run Addenda	07-0294-PSD-PC	3/07	1/14/2009	Final				
Cambridge	97-1468-PSD-ECN	N/A	2/26/1998	Final	No	151	74	77
Cambridge Addenda	07-0294-PSD-PC	3/07	1/14/2009	Final				
Spruce Hill North	05-1487-PSD-PC	11/05	8/1/2006	Final	No	119	115	4
Harvest Hills	05-0908-PSD-PC	6/05	11/18/2005	Final	No	392	0	392
Beallair	02-1791-PSD-PC	11/02	3/2/2004	Final	No	304	69	235
Jefferson Crossing	94-0739-PSWD-PC	8/94	4/11/1995	Final	No	247	148	99
Green Meadows/County Green	02-0650-PSD-PC	5/02	7/17/2002	Final	Yes	77	77	0
Jefferson Avenue	02-0069-PSD-PC	1/02	7/1/2002	Final	Yes	7	7	0
Norborne Glebe	00-1272-PSD-PC	6/05	11/18/2005	Final	No	1000	163	837
Robelei	95-0563-PSD-PC	6/95	10/12/1995	Final	Yes	34	34	0
Greenfield/Hillside	01-1694-PSD-PC	1/02	7/7/2002	Final	Yes	47	47	0
Jefferson County BOE (Drisswood Elementary School)	09-2056-PSD-PC	12/09	1/25/2010	Final	Yes	17	17	0
Aspen Greens	12-1567-PSD-PC	11/12	6/6/2013	Final	No	203	0	203
Breckenridge East	N/A	N/A	N/A	Drafted, not submitted	No	694	0	694
Crosswinds	94-0753-PSD-PC	8/94	3/14/1995	Final	Yes	147	147	0
Burns Street	N/A	N/A	N/A	Signed 3/11/2005 but not submitted	no	16	11	5
Beallair West (Planning letter 8/8/2007)	N/A	N/A	N/A	N/A	no	137	0	137
Burr Business Park-Phase II (Planning Ltr 1/11/2007)	N/A	N/A	N/A	N/A	no	200	26	174

*Table provided by the Jefferson County Public Service District, as of June 30, 2015

Charles Town obtained developer projections from fourteen existing or proposed developments in the District as part of their 2015 Strategic Plan, and these projections are shown in the table below.

TABLE 7

Development Projections*

Development	Total EDUs	Total Flow	2015	Year 1 2016	Year 2 2017	Year 3 2018	Year 4 2019	Year 5 2020	Year 6 2021	Year 7 2022	Year 8 2023	Year 9 2024	Year 10 2025	Years 11-15	Years 16-20	Years 20-30	TOTALS
Spruce Hill North	4	720	2	0	0	0	0	0	0	0	0	0	0	0	0	1	4
Aspen Green	203	36,540	25	45	50	53	0	0	0	0	0	0	0	5	5	5	183
Beallair	235	42,300	0	0	0	40	40	40	30	40	40	0	0	0	0	2	235
Beallair West	137	24,660	0	0	0	20	20	20	20	20	20		1	5	5	8	137
Breckenridge East	694	124,920	72	100	100	100	87	99	100	0	0	0	0	0	0	0	658
Briar Run	131	23,580	12	12	10	10	10	10	10	10	10	10	14	0	0	0	119
Burr Industrial Park & Bardane	174	31,320	10	10	20	20	10	10	20	20	20	13	4	0	0	4	164
Cambridge	77	13,860	0	0	0	0	0	0	0	0	0	0	0	20	20	39	77
Daniels Forest	192	34,560	25	25	25	25	20	20	20	20	0	0	0	0	0	0	180
Jefferson Crossing II	99	17,820	10	10	10	30	0	0	0	0	0	0	0	5	5	15	89
Norborne Glebe	837	150,660	40	40	40	40	40	50	50	50	50	50	50	75	75	149	797
Harvest Hills	392	70,560	20	20	20	20	20	20	20	20	20	20	20	40	40	76	372
Stonecrest	225	40,500	10	10	10	10	10	10	10	10	10	10	10	25	25	53	215
Butler Farms	71	12,780	4	4	2	2	4	4	4	4	4	4	4	5	5	14	67
SUBTOTALS	3,471	624,780	230	276	287	370	261	283	284	194	174	107	103	180	180	366	3,297

Above table extracted and reformatted from Appendix D of the *Charles Town 2015 Wastewater Strategic Plan

It should be noted that Daniel's Forest, Stone Crest, and Butler Farms should not anticipate growth for at least 2 or 3 years; Harvest Hills will not have 20 either, even though this was their projection.

Several areas of Jefferson County have not been included in the growth projections, either because the District has no existing collection facilities in these areas or because development plans have not been presented to the District. These areas include:

- Shepherdstown Preferred Growth Area (PGA)
- Route 9 PGA
- Route 340 South PGA
- Middleway PGA
- Lands east of the Shenandoah River

As development plans for these areas materialize, the Strategic Plan will need to be modified accordingly.

X. NEEDS & ALTERNATIVES

Constraints to providing a continuing level of acceptable sewer service to existing customers and to providing service to new customers were indentified in the Northern Route 9, Flowing Springs Run Basin, and Southern Route 9 areas; only the Spruce Hill North area is able to support the expected level of service without upgrades or improvement. Removing those constraints will require existing pumping facilities to be replaced or upgraded and also require the installation of new piping to provide additional hydraulic capacity.

Over a dozen engineering studies have been commissioned by the District since 1997 to evaluate the condition of its existing sewage collection infrastructure, and to analyze numerous alternatives for providing needed sewage transmission and treatment capacity. These studies concluded that capacity enhancements were required if sewage flows generated by new development in the Northern Route 9 area were to be accepted by the District.

Similarly, as developments in the Flowing Springs Run Basin proliferated, sewer system capacity became a significant issue in this area, as did sewage treatment capacity. Problems with permit compliance at the Charles Town sewage treatment plant, in addition to the sewer capacity problems, led the District to plan and design a large project that would address both issues. The project was slated to be funded in part by grant funds made available through the American Recovery and Reinvestment Act (ARRA), and it had received approvals and permits from the WV Department of Environmental Protection (WV DEP) and a Certificate of Convenience and Necessity from the Public Service Commission of West Virginia (WV PSC). However, the District was not ready to proceed with the project and the ARRA funds were rescinded. The District presented a revised funding package that would have resulted in user rates that exceeded those for the ARRA funded project. When the revised funding package was presented to the PSC for approval, the PSC revoked the previously issued Certificate of Convenience and Necessity and concluded that the District's sewage flows (exclusive of those generated by

the Deerfield subdivision) could be more cost-effectively treated by Charles Town and directed the District deliver its sewage flows to Charles Town for treatment. Because of the PSC's determination, further analysis of alternatives for the District providing its own sewage treatment capability would be fruitless at this time and unwarranted. The one possible exception to this is the Old Standard wastewater treatment plant: a review of the PSC's order might support the view that the PSC, in directing the District to send flows to Charles Town, was not thereby directing the District to scuttle its plans for use of the Old Standard Plant. This remains to be investigated.

Alternatives for providing additional sewage transmission capacity have been studied at length. These alternatives, particularly for the Northern Route 9 area that includes the Burr and Bardane Industrial Parks, Jefferson High School, Wildwood Middle School, TA Lowery Elementary School, the Job Corps, Drisswood Elementary School and the Harvest Hills Subdivision, can generally be categorized as pumping or gravity alternatives. Similar alternatives also exist for the Flowing Springs Run Basin area.

NORTHERN ROUTE 9

As previously noted, the Northern Route 9 area includes 11 sewage pumping stations, a number that will increase with the development of the Harvest Hills Subdivision. Eliminating the capacity constraints for new customers in this area will require a flow path that bypasses Ranson's existing 10 inch diameter gravity mains in Old Town Ranson (through which the sewage from the Northern Route 9 area flows) which severely limits the amount of flow that the District can deliver to Charles Town for treatment; it will also require significant upgrades to Pump Stations 1-10 and 1-12A, replacement of their associated force mains, and the installation of approximately one mile of new gravity sewers to be installed through Ranson and on to Charles Town.

An alternative to upgrading the two pumping stations and force mains would involve diverting sewage flows through a new gravity interceptor that would be

constructed through the Flowing Springs Run basin, which would bypass the Ranson gravity sewer constraints. Flows piped through the Flowing Springs Run Basin would be delivered to the Breckenridge pumping station (improvements for the pump station to be discussed in a later paragraph). These two alternatives would provide the long term wastewater transmission capacity enhancements that are required to serve the District's existing customers as well as provide the "backbone" for future upgrades for anticipated new customers that will connect to the system as development occurs.

Shorter-term alternatives to providing additional capacity, such as increasing pump sizes without increasing force main sizes and extending the existing force main from Pump Station 1-12A (by the Moose on Route 115) to bypass the Ranson gravity sewer restrictions certainly exist, but these would have very finite useful lives, would require the same regulatory and funding constraints as the long term alternatives and would be of little use once their maximum capacities were reached. Most importantly, they would not address existing problematic facilities and future needs for District customers in the Flowing Springs Basin. Once that capacity for Northern Route 9 area was reached, one of the long-term alternatives would have to be undertaken. Such alternatives would result in higher long-term costs and provide less flexibility to the District, and should not be considered further.

In evaluating the two alternatives, consideration must be given to the results achieved, capital and operation and maintenance costs, and flexibility. The results (in terms of fixing known issues and increasing available sewage transmission capacity) that can be achieved by the two alternatives should be similar, as both would substantially increase the amounts of flow that can be transported to Charles Town for treatment. Capital costs* for the pumped alternative would be significantly higher than the gravity alternative because more pipe is required for the pumped alternative (*see Appendix C - Preliminary Engineering Report Revised 04-09-2015, prepared by Pentree, Inc. / The Thrasher Group).

TABLE 8

Northern Route 9 Capacity Improvements

Alternatives	Projected Costs
Pumped *Alternative*	$4,737,000
Gravity Interceptor *Alternative*	$1,450,585*

*includes costs for gravity interceptor and Ranson pump station upgrade
Source: Preliminary Engineering Report, The Thrasher Group, dated 4-10-15

Operation and maintenance costs and considerations also favor the gravity alternative. The pumped alternative will require the District to continue to maintain its existing 11 pumping stations while the gravity alternative would allow four of the stations (30 percent of those currently in the Northern Route 9 system) to be eliminated. Even with the new equipment that would be installed at Pump Stations 1-10 and 1-12A, the stations would still require daily inspection, and equipment will still require repair or replacement on a regular basis and, most importantly, the pumped alternative does not address the current and long term issues in the Flowing Springs Basin.

The gravity alternative will provide the District with the added benefit of resolving the problematic facilities and capacity restrictions that currently exist in the developer installed gravity sewers in the Flowing Springs Run Basin. The gravity interceptor alternative is the least costly alternative, solves the most problems and should be pursued.

If the gravity alternative is adopted, the Northern Route 9 area will still have seven pumping stations that will need to be upgraded in order to provide reliable, long term service (Pump Station 5-3 was recently upgraded and is in good condition); Pump Station 3-9 will also have to have its capacity increased in order to accommodate flows from the Harvest Hills Subdivision. Because the cost of upgrading Pump Station 3-9 has been estimated to cost less than $200,000, serious consideration should be given to including this work in the gravity interceptor project to ensure that all of the identified capacity needs of the Northern Route 9 area are met for long term use.

FLOWING SPRINGS RUN BASIN

The constraints limiting the District's ability to deliver high quality service in the Flowing Springs Run Basin include developer installed gravity sewer mains appropriately sized for their developments, continuing problems with the existing "temporary" Breckenridge pumping station and pipeline capacity constraints that limit the amount of flow that can be delivered to Charles Town for treatment.

Alternatives for enhancing the capacities of the existing gravity sewer mains are very limited. While it would be possible to construct pumping stations and force mains to bypass the undersized gravity mains, such an alternative would be very costly and would burden the District with additional operation and maintenance costs in perpetuity. The previously noted gravity alternative would provide the needed capacity without an appreciable increase in operating and maintenance costs, and is the only alternative worthy of support.

TABLE 9

Flowing Springs Run Basin Gravity Interceptor Capacity Improvements

Project	Projected Costs
Flowing Springs Run Basin Gravity Interceptor Project	$1,075,585

Source: Preliminary Engineering Report, The Thrasher Group, dated 4-10-15

Providing additional capacity for delivering sewage flows to Charles Town for treatment can be addressed in two ways; one would upgrade the capacity of the Ranson Flowing Springs pump station, and the other would require the District to upgrade or replace its existing mains that currently carry flows to the Charles Town treatment plant.

Flows from the District's Breckenridge station are currently pumped to the Ranson station for transportation to Charles Town. One third of this flow is sent back to the District's Pump Station 3-6 where it continues to Pump Station 4-2 and down to the Charles Town System where it is eventually treated. While the pumps in the existing Ranson Flowing Springs pump station lack capacity to receive additional flows from the

District, its existing 12 inch diameter force main should have sufficient capacity to accommodate the District's projected flows for many years. Should conditions warrant, the capacity of the Ranson station could be further increased in the future by replacing some or all of the existing 12 inch diameter force main with a larger main. The second alternative would involve replacing 6,300 LF of gravity sewer mains, 11,900 LF of force mains and two pump stations (PS 3-6, 4-2) to allow the additional flows to reach the Charles Town treatment plant.

TABLE 10

Flowing Springs Run Basin Capacity Enhancement

Project	Projected Costs
Upgrade Ranson Flowing Springs Pump Station	$375,000*
Gravity Sewer / Force Main to Charles Town	$2,883,000**

*Source: *Preliminary Engineering Report, The Thrasher Group, dated 4-10-15*
** Source: *Preliminary Engineering Report, Pentree Inc., dated 5-30-14*

When capital costs are compared, upgrading the Ranson pumping station is projected to cost less than 15% of the cost of installing new piping to the Charles Town plant, a savings of approximately $2.5 million. If we consider the additional soft costs of the construction to the line to Charles Town, we add approximately 1/3 of the construction costs creating a savings of approximately $3.8 to $4.0 by using the Ranson Pump Station option. The District will have to pay a fee of $3,540 per month to Ranson for the use of the station, making the operation and maintenance costs for the pump station alternative more expensive than the pipe replacement alternative. This $3,540 is based on current proportional flows of the District and Ranson to the Ranson Flowing Springs Pump Station. (See ***Sewer Transportation Agreement***, Appendix G.)

When all costs are considered, the Ranson Flowing Springs pump station is the most cost effective alternative, and makes maximum use of existing infrastructure. This alternative should be adopted.

BRECKENRIDGE PUMP STATION

The third constraint that exists in the Flowing Springs Run Basin is the Breckenridge pump station (PS 3-7). The existing station was installed as a 'temporary' facility that was to be eliminated when the District's planned treatment plant project was constructed. The station's wetwell is very deep, but has a very limited working depth that would make the installation of larger pumps problematic. Various operational difficulties have plagued the station since it became operational, including backups that have created environmental and health threats to the Breckenridge residents. The station is also poorly located in the subdivision, and its current location also limits its usefulness in providing service to the areas east of the station that have been designated as the Route 340 East Preferred Growth Area. Two alternatives, dealing more with location than equipment, are available to the District to alleviate the operational and capacity problems that exist at the Breckenridge pumping station.

The first alternative would be to replace the station on its current site with a new, suitably designed station of sufficient capacity to handle current and projected future flows. This alternative would require a temporary pumping facility to be installed before work on the new station could be initiated. It would also result in a very deep wetwell that would complicate future maintenance and capacity enhancements. At the current location, the new station could only serve as a relay station for new flows that will occur as the result of development in the Route 340 East Preferred Growth Area. It should be noted that the small gravity lines that go to this station would not be suitable to accept flows from this area; it will still be very limited without larger gravity lines feeding it.

The second alternative would be to construct a new station approximately one mile southeast near Halltown. Sewage from the Northern Route 9 area, Flowing Springs Run Basin area and from the Route 340 East PGA will flow to the new station; the existing Breckenridge station would be abandoned. This alternative will also allow the Beallair pump station (PS 3-13) to be eliminated. The new pumping station would be designed to easily accommodate future capacity upgrades, would be easier to maintain

because of a shallower wetwell and would provide the District with the flexibility to divert sewage flows to the Old Standard treatment plant if that is needed in the future.

TABLE 11

Breckenridge Pump Station

Project	Projected Costs
Replace at Existing Site	$2,000,000
Construct New Pump Station at Halltown (including 5,900 LF of 12" diameter force main)	$1,613.500

Source: *Preliminary Engineering Report, The Thrasher Group, dated 4-10-15*

The Halltown alternative would have a lower capital cost than the Breckenridge site alternative (even when the cost of the additional force main is considered). It will also minimize the need for additional pumping station construction as the Route 340 East PGA develops. Operational flexibility would be greater at the Halltown site, offering less complex maintenance and upgrading capability than the Breckenridge site. The Halltown alternative is the most cost effective and beneficial alternative, and should be adopted.

SOUTHERN ROUTE 9

The constraints facing the District in the Southern Route 9 area are associated with one of the existing pumping stations. Pump Station 4-5 is operating at maximum capacity (> 15 hours per day), and requires larger pumps, new controls, and a larger force main. The other stations also require significant upgrades to existing equipment.

TABLE 12

Southern Route 9 Pump Station Upgrades

Project	Projected Costs
Upgrade Pump Station 4-5, Replace Force Main	$722,700*

* Source: *Preliminary Engineering Report, Pentree Inc., dated 5-30-14*

WASTEWATER IMPROVEMENTS PROJECT

In order for the District to continue to adequately serve its existing sewer customers, comply with its operating permits, and fulfill expectations to provide sewer service to developments with which it has negotiated Alternate Mainline Extension Agreements (AMEAs), improvements and capacity enhancements must be undertaken in the very near future. The District has engaged Thrasher Engineering to plan and design the most cost effective alternatives discussed above and combine them into a single project. That project will include construction of the Flowing Springs Run Interceptor (AKA the Northern Route 9 Interceptor), and Halltown pumping station, upgrading the Ranson Flowing Springs Pumping Station and the upgrading of Pump Stations 3-6 and 4-2. That project, identified as WV Infrastructure and Jobs Development Council (IJDC) Project #2014S-1538, has a total estimated cost of $7,150,000 and was approved by the IJDC at its June 3, 2015 meeting. Funding is currently being sought for the project. Implementing the project is necessary if the District is to continue to serve its existing and future customers.

XI. FINANCING PLANS

The Jefferson County Public Service District has undertaken a strategy for funding improvements and expansions of its sewage collection facilities that minimizes the financial burden on rate payers, given the financing tools available to it.

For the Flowing Springs interceptor / Halltown Pumping Station project, the District has requested low interest loans from the US Department of Agriculture's Rural Utility Service (RUS) and the WV Department of Environmental Protection (WV DEP). Because Jefferson County has the highest Median Household Income (MHI) in West Virginia ($65,603 in the 2010 US Census), the District is not eligible for most (if not all) of the grant funding available to many other sewer utilities in West Virginia. Other system improvements, including the replacement of existing pumping equipment and additional capacity enhancement projects will also likely require funding through low interest loans.

The rates charged by the District for sewer service can be expected to rise in the future as the cost of providing that service increases. Operation and maintenance costs, including those associated with power, chemicals, replacement parts and labor, will increase as electric rates rise, equipment ages and the size of the collection system increases. Debt incurred for future improvements will lead to increases for debt service and associated reserve accounts.

Separate and apart from costs associated with the District's collection system, the costs of utilizing Ranson's Flowing Springs Pump Station and force main and the cost of treatment by Charles Town are likely to increase as upgrades to these facilities take place.

The magnitude of these cost increases will be dependent on the pace of development (which will drive the need to upgrade facilities) and on the costs of power, chemicals, parts and labor. Regulatory changes could also result in the need to increase sewer rates. There is a positive aspect to having quality infrastructure, capable of allowing for new customers and rate stabilization in the years ahead.

CAPACITY IMPROVEMENT FEES

To help offset the costs of upgrading and expanding sewer facilities that are driven by new development, Charles Town and Ranson charge Capacity Improvement Fees (CIF) to developers as new customers are connected to their sewer systems. The Jefferson County Public Service District (District) had been authorized by the Public Service Commission (PSC) to charge a CIF of $7,500 per EDU from 2006 until 2013. In 2012, when the Public Service Commission had comprehensive rate jurisdiction over all public service districts, it revoked the CIFs in effect for the Berkeley County Public Service Districts. While that order did not directly apply to Jefferson County Public Service District, it was clear that the PSC had adopted a policy to revoke CIFs where it had the authority to do so. The Jefferson County Public Service District's CIF was reduced to $1,127 (the amount the District pays to Charles Town). The PSC has only limited jurisdiction over municipal rates; consequently municipal CIFs persist.

As a public utility, the District has an obligation to extend service where it can do so commensurate with its historical costs to serve existing customers. Many (if not most) of the improvements that have been studied by the District will be necessary. Despite regular and attentive maintenance and care, aging equipment and technology no longer provide needed performance due to wear, expiring service life of existing facilities, and the exhaustion of capacity levels below regulatory standards; it is sound long term, cost effective asset management strategy to update the technology to meet current standards, ensure that replacement parts are still in manufacture and will be available, and to increase capacity of these facilities to meet current demands and serve future growth. These will be expensive to design and construct; the Flowing Springs Interceptor / Halltown Pumping Station project alone is expected to cost $7.15 million. Additional improvements to that infrastructure (including replacing 5,200 LF of existing 8 inch diameter force main and the replacement of the 12 inch diameter Ranson force main) will also be needed in order to have reliable facilities in place, meet regulatory standards, accommodate the District's projected development driven increases to its customer base, and address the necessary upgrades to Pump Stations 4-5 in the Southern Route 9 system and which is at capacity.

If it becomes possible to restore the Capacity Improvement Fees (CIF) to the previous level, this would likely generate sufficient funds to underwrite much, if not all, of the costs of making the continued improvements to the District's collection system that will be required to replace exhausted facilities and serve projected development. A CIF of $7,500 per EDU would generate a net of $4,748 per EDU for the District ($1,127 would be paid to Charles Town and $1,625 would be paid to Ranson) to fund system upgrades and improvements. At the current rate of EDU increases (approximately 40 per year), the District would generate approximately $200,000 per year; a more robust growth rate of 100 new customers per year would generate $500,000. That revenue stream would allow the District to directly fund improvements on a "pay as you go" basis without the need for borrowing, and to borrow far less for others.

Capacity Improvement Fees (CIFs) are commonly used throughout the United States to reduce the amount of rate increases for all needed sewer improvements related to growth. At some point, the State of West Virginia must recognize CIFs as the best option to protect existing customers from continually rising rates where growth is a prime factor. Used correctly, CIFs can achieve funding levels for use to upgrade capacity or add facilities deemed the direct result of growth, thus sparing existing customers from rate increases.

Distributing the costs of developer driven improvements to existing customers, while not an uncommon practice in West Virginia, is very difficult to justify if a mechanism can be established to have those benefitting from the improvements pay for them directly.

XII. RECOMMENDATIONS

ONGOING ACTIVITIES

1. Update and Revise Strategic Plan

Update and revise Strategic Plan on a triennial basis to allow the District to respond to changes in development patterns and rates, changes in regulatory requirements, to changes in available capacities in the Ranson Flowing Springs pump station and force main, and to changes in available treatment capacity at Charles Town. The District's updates should follow updates to Charles Town's 2015 Wastewater Strategic Plan by six to nine months so that changing conditions with the Charles Town system that affect the District can be addressed in a timely manner. Depending upon when the Charles Town Wastewater Strategic Plan is released, it would also be helpful for the District to consider necessary upgrades before the budget for the next fiscal year is approved.

2. Standardize Pumping Equipment

Standardize pumping equipment (pumps, controls, emergency generation for pumping equipment, telemetry, flow metering) for all District facilities to minimize parts inventory and to simplify pump repair and replacement procedures. Standardization should also apply to developer constructed pumping stations.

3. Revise Alternate Mainline Extension Agreements (AMEAs)

Revise Alternate Mainline Extension Agreements to reflect standardized pumping equipment and design details, and to reflect the District's potential needs for larger piping and / or pumping facilities to meet the District's overall capacity needs.

4. Implementation of a Capacity Improvement Fee

Pursue the implementation of a Capacity Improvement Fee through a Public Service Commission filing or, if necessary, through the Legislature, to fund sewer main and pumping capacity enhancements necessitated by continuing development.

5. Alternative "Green" Technologies

Investigate and study the use of alternative "green" technologies to serve existing homes and businesses with failing onsite treatment systems and to serve lower density developments and villages that will require sewage collection and treatment systems.

IMMEDIATE NEEDS

6. Flowing Springs Run / Halltown Pumping Station Project

The District should continue with its current Flowing Springs Run / Halltown Pumping Station Project that will eliminate the problematic Breckenridge pump station (PS 3-7) and replace it with a new station near Halltown, construct 15 inch diameter and 24 inch diameter interceptor sewers, upgrade Ranson's Flowing Springs pump station, upgrade the District's pump stations PS 3-6 and 4-2 pump stations, and eliminate pump stations PS 1-10, 1-11, 1-12, 1-157, and 3-13 to provide more reliable service and create additional capacity in the Northern Route 9 and Flowing Springs Run Basin areas.

7. Existing Pump Stations

Most of the existing pump stations that remain after the Flowing Springs Run / Halltown project is completed should be replaced and / or upgraded through a capital improvements project.

FUTURE NEEDS

There are several projects that will need to be implemented after the completion of the Flowing Springs Run Interceptor / Halltown Pump Station project to increase system capacity. These include:

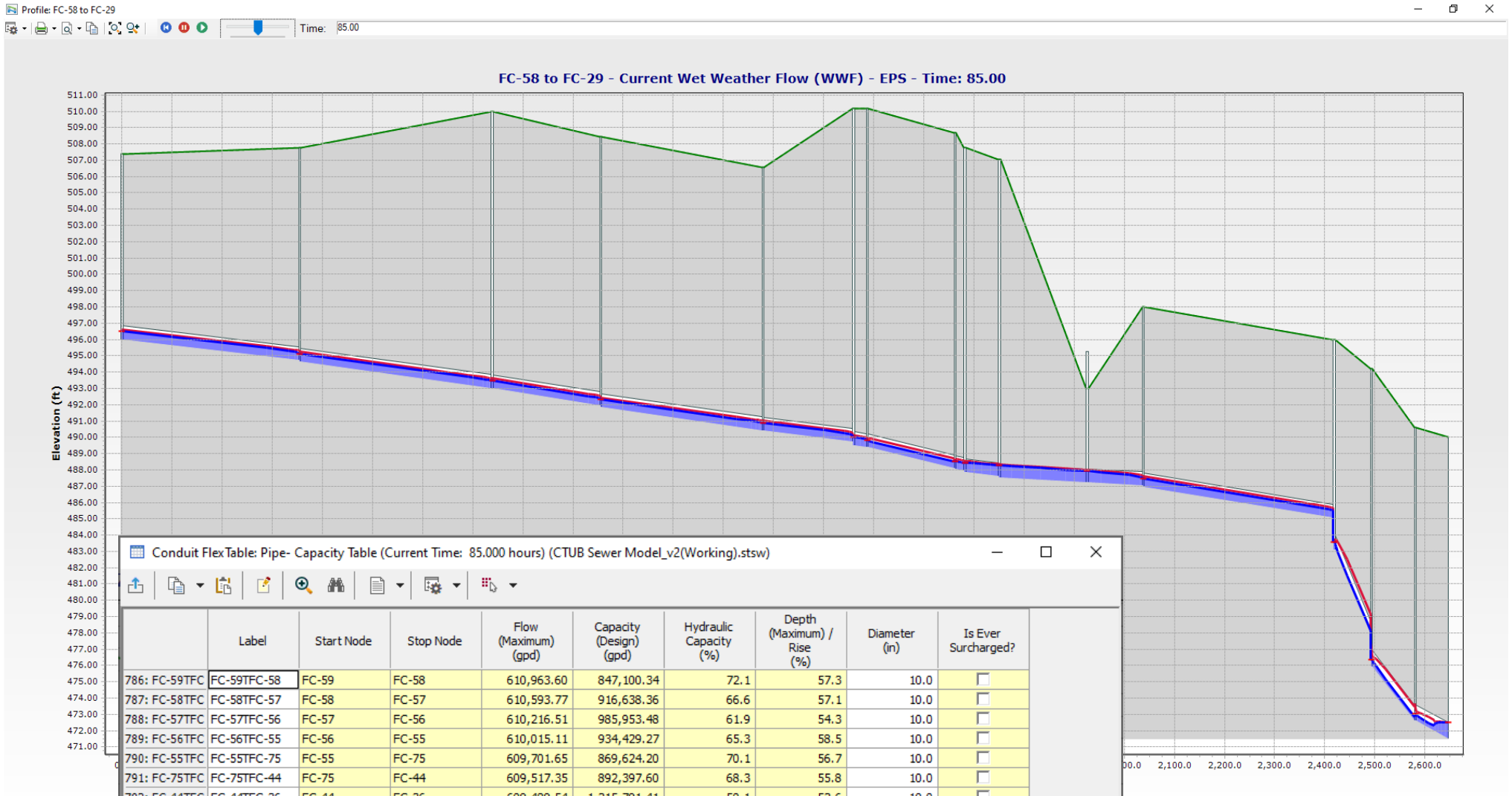
- Upgrade Halltown Pump Station (larger pumps) and Replace existing 8" diameter force main utilized by the Breckenridge Pump Station (and the Halltown Pump Station in the future) with 12" diameter force main
- Replace or parallel Ranson's Flowing Springs Pump Station's 12" diameter force main with 16" diameter force main (to be done in conjunction with Ranson)
- Construct force main from Harvest Hills pump station to Breckenridge East gravity sewers, and connect Job Corps and Drisswood pump stations to the new main.

None of these projects will be started until sufficient development has occurred to warrant them, which will be outside of the three year life of this Strategic Plan. Therefore, costs and implementation schedules for these future projects will be evaluated in future updates of the Plan.

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

APPENDIX T
FAIRFAX CROSSING SEWER MODEL OUTPUT



Conduit FlexTable: Pipe- Capacity Table (Current Time: 85.000 hours) (CTUB Sewer Model_v2(Working).stsw)

	Label	Start Node	Stop Node	Flow (Maximum) (gpd)	Capacity (Design) (gpd)	Hydraulic Capacity (%)	Depth (Maximum) / Rise (%)	Diameter (in)	Is Ever Surcharged?
786: FC-59TFC	FC-59TFC-58	FC-59	FC-58	610,963.60	847,100.34	72.1	57.3	10.0	☐
787: FC-58TFC	FC-58TFC-57	FC-58	FC-57	610,593.77	916,638.36	66.6	57.1	10.0	☐
788: FC-57TFC	FC-57TFC-56	FC-57	FC-56	610,216.51	985,953.48	61.9	54.3	10.0	☐
789: FC-56TFC	FC-56TFC-55	FC-56	FC-55	610,015.11	934,429.27	65.3	58.5	10.0	☐
790: FC-55TFC	FC-55TFC-75	FC-55	FC-75	609,701.65	869,624.20	70.1	56.7	10.0	☐
791: FC-75TFC	FC-75TFC-44	FC-75	FC-44	609,517.35	892,397.60	68.3	55.8	10.0	☐
792: FC-44TFC	FC-44TFC-36	FC-44	FC-36	609,489.54	1,215,791.41	50.1	52.6	10.0	☐
793: FC-36TFC	FC-36TFC-35	FC-36	FC-35	668,800.87	1,008,684.41	66.3	60.0	10.0	☐
794: FC-35TFC	FC-35TFC-34	FC-35	FC-34	668,780.77	836,340.63	80.0	77.5	10.0	☐
795: FC-34TFC	FC-34TFC-33	FC-34	FC-33	668,699.79	555,933.28	120.3	89.3	10.0	☐
796: FC-33TFC	FC-33TFC-32	FC-33	FC-32	668,412.94	567,646.58	117.8	69.1	10.0	☐
797: FC-32TFC	FC-32TFC-31	FC-32	FC-31	668,297.91	997,926.54	67.0	57.1	10.0	☐
798: FC-31TFC	FC-31TFC-30	FC-31	FC-30	668,285.43	3,737,214.06	17.9	41.4	10.0	☐
799: FC-30TFC	FC-30TFC-29	FC-30	FC-29	668,279.11	4,509,404.62	14.8	42.7	12.0	☐
815: FC-37TFC	FC-37TFC-36	FC-37	FC-36	59,472.00	331,683.99	17.9	54.9	8.0	☐

FACILITY PLAN

CHARLES TOWN UTILITY BOARD
2021 COLLECTION SYSTEM PROJECT

APPENDIX U
2017 BINDING COMMITMENT

west virginia department of environmental protection

Division of Water and Waste Management
601 57th Street SE
Charleston, WV 25304
Phone: (304) 926-0495
Fax: (304) 926-0496

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
dep.wv.gov

June 29, 2017

Ms. Sue Lawton, General Manager
Jefferson County Public Service District
340 Edmond Road, Suite A
Kearneysville, West Virginia 25430

RE: Jefferson County PSD
SRF Number C-544546
Binding Commitment

Dear Ms. Lawton:

This letter is to confirm our intention of providing the long-term financing through the Clean Water State Revolving Fund Program for the District's sewer transmission upgrade.

As stated in the Funding Notification letter dated January 17, 2017, we are hereby committing an amount of $3,344,984 which contains two loan components. A repayable loan of $2,844,984 will be issued at 0.25% interest, 0.25% annual administrative fee for a term of up to 40 years. A forgivable loan in the amount of $500,000 may also be assumed because the project qualifies for a "green" designation under the CWSRF program. The District qualifies for these terms as long as the 4,000 gallon average sewer rate is equal to or greater than 1.75% of the median household income (MHI). The final loan amount may be adjusted after receipt of bids and a formal application is submitted.

If the District's bonds have not been issued to the Fund prior to December 29, 2017, it is understood that the Fund reserves the right to discontinue processing the District's application on that day, and will have no further responsibilities or obligations hereunder.

Should you have any questions, please do not hesitate to contact me at (304) 926-0499, extension 1596 or at Katheryn.D.Emery@wv.gov.

Sincerely,

Katheryn Emery, P.E.
Program Manager
Clean Water SRF Program

KE/jc

cc: Ms. Samme Gee, Esq., Jackson Kelly
Mr. Dan Ferrell, P.E. The Thrasher Group
Mr. Jonathan Fowler, P.E., WV PSC, 16-0616-PSD-PC
Ms. Jennifer Wishmyer, Region 9 Planning & Development Council

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SEWER CAPACITY IMPROVEMENT FEES:
FUNDING CAPITAL PROGRAMS TO ADDRESS GROWTH

Martin A. Kazmierczak, P.E., PMP | Dewberry
Michael S. Dewberry II, E.I.T. | Dewberry

October 13, 2021, Charles Town Utility Board

Agenda

- Growth Projections
- Capital Improvement Fees (CIFs), Theory and Methods
- CIF Model Input and Output
- CIF Calculation
- Benchmarking Information
- Example Rate Approaches by Others
- Questions and Answers

Jefferson County Growth Projections

West Virginia Population Forecast by County

- Rapid growth forecasted in Berkeley, Jefferson and Monongalia Counties
- Approx. 0.76% growth per year in Jefferson County (2010-2019)
- Capital improvements plan (CIP) being implemented to support both ongoing growth and Strategic Sewer Plan (SSP)
- 284 New connections per year anticipated

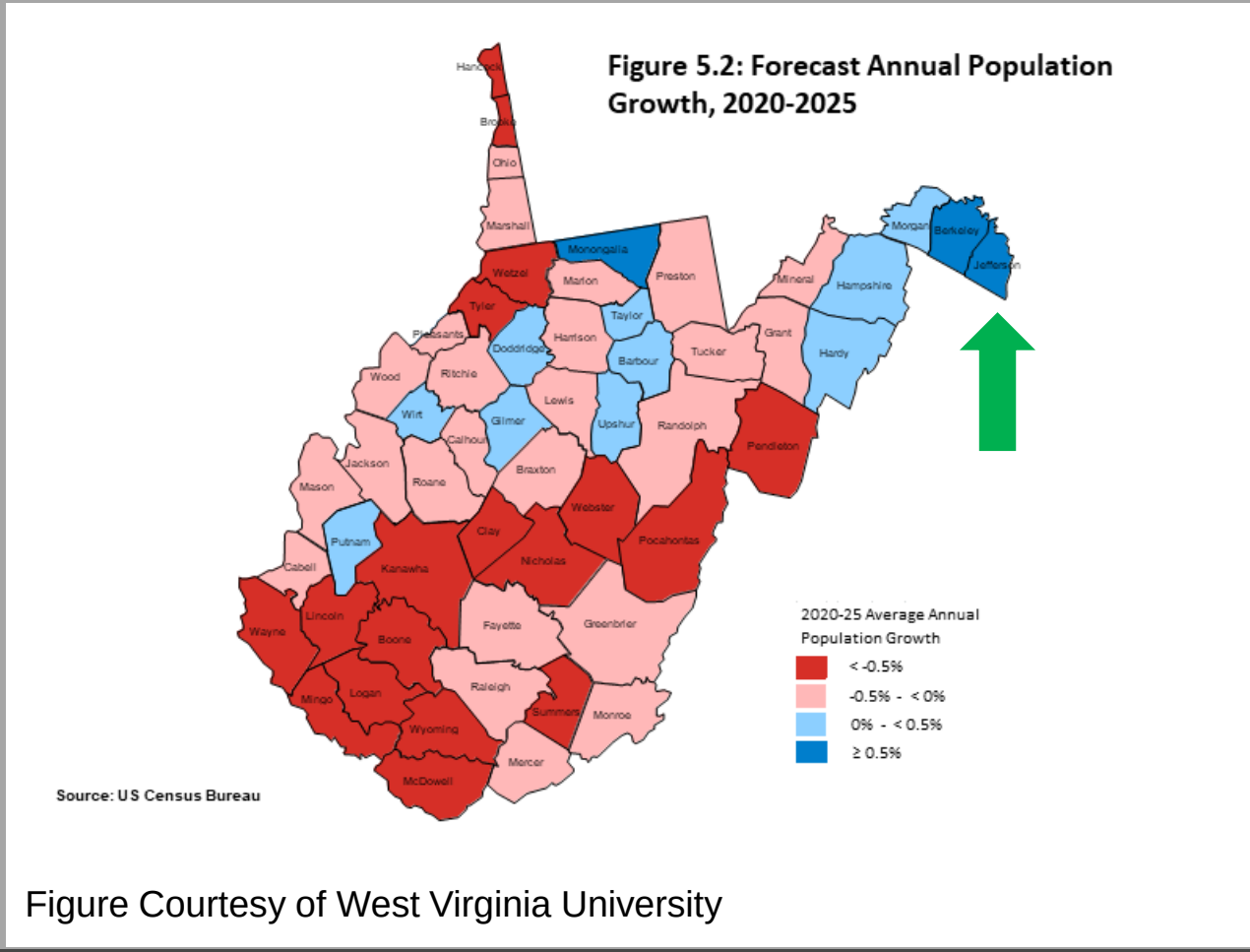
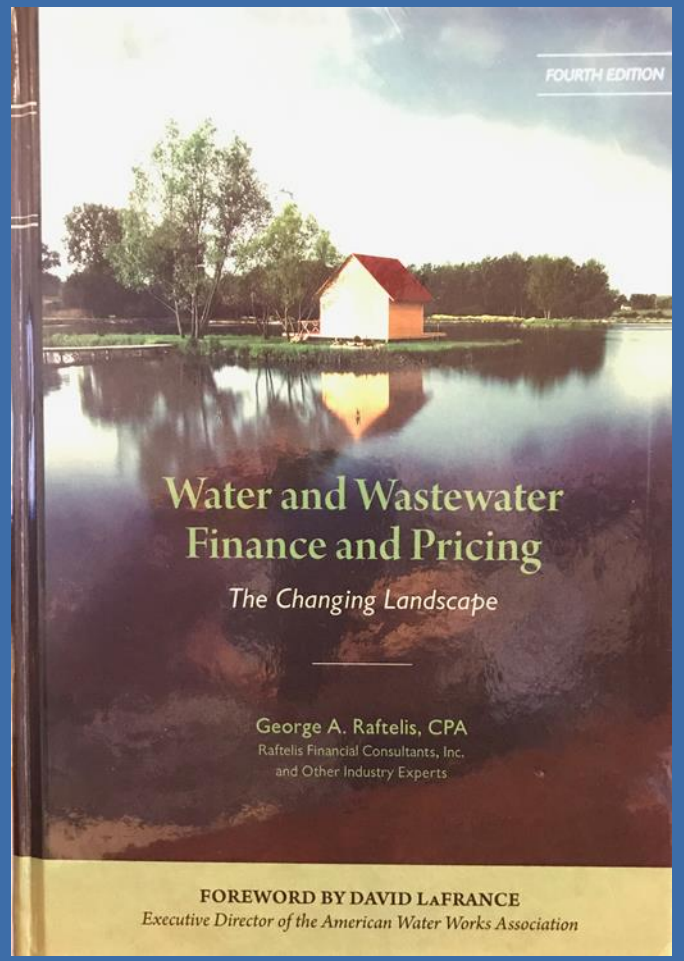


Figure Courtesy of West Virginia University

CIF Theory and Methods

Theory Behind CIFs

- Basic Principle*:*
  Growth pays for growth
- Applicable to expenditures attributable to expanding facilities to meet new customer demand *
- Referred to in many states as system development charges or water & sewer availability fees
- Generally excludes non-growth related capital expenses



* Source: Water and Wastewater Finance and Pricing, The Changing Landscape, Fourth Edition, CRC Press, c. 2015.

Potential CIF Revenue

Revenue at Various Customer Growth Rates (EDUs per Year)							
CIF per EDU	100	150	200	250	300	350	400
$ 1,000	$ 100,000	$ 150,000	$ 200,000	$ 250,000	$ 300,000	$ 350,000	$ 400,000
$ 1,250	$ 125,000	$ 187,500	$ 250,000	$ 312,500	$ 375,000	$ 437,500	$ 500,000
$ 1,500	$ 150,000	$ 225,000	$ 300,000	$ 375,000	$ 450,000	$ 525,000	$ 600,000
$ 1,750	$ 175,000	$ 262,500	$ 350,000	$ 437,500	$ 525,000	$ 612,500	$ 700,000
$ 2,000	$ 200,000	$ 300,000	$ 400,000	$ 500,000	$ 600,000	$ 700,000	$ 800,000
$ 2,250	$ 225,000	$ 337,500	$ 450,000	$ 562,500	$ 675,000	$ 787,500	$ 900,000
$ 2,500	$ 250,000	$ 375,000	$ 500,000	$ 625,000	$ 750,000	$ 875,000	$ 1,000,000
$ 2,750	$ 275,000	$ 412,500	$ 550,000	$ 687,500	$ 825,000	$ 962,500	$ 1,100,000
$ 3,000	$ 300,000	$ 450,000	$ 600,000	$ 750,000	$ 900,000	$ 1,050,000	$ 1,200,000

When growth pays for growth, user fees can be better managed.

Common CIF Methodologies *

- **Marginal Incremental Cost Approach:** Focus is on adding new facilities to serve new customers. Costs of capacity are tied to a Capital Improvements Plan.
- **System Buy-In Methodology:** Existing customers through service charges have developed a valuable public facility. Excess capacity is available. New customers should "buy-into" that excess capacity.
- **Hybrid or Combined Methodology:** New customers benefit both from facilities already in place and future expansions. Combines the above two methods.

The hybrid methodology was used for CTUB's CIF determination.

* Source: Water and Wastewater Finance and Pricing, The Changing Landscape, Fourth Edition, CRC Press, c. 2015.

Legal Implications

- Dewberry is not in a position to provide legal advice. CTUB should consult appropriate legal counsel.
- Rational Nexus Test *:
  - The need for CIF is the result of new growth.
  - The amount of the CIF does not exceed the reasonable cost to provide capacity to accommodate growth.
  - The funds collected must be adequately earmarked for the sufficient benefit of new customers required to pay the fee.
- West Virginia may have state-specific legislation.

* Source: Water and Wastewater Finance and Pricing, The Changing Landscape, Fourth Edition, CRC Press, c. 2015.

Debt Principal Credit

- If Capital Expenditures are debt financed, an adjustment is made for relevant principal payments that would be recovered from customers through future utility rates (monthly user fees).
- Avoids new customers paying for the same capacity twice: Once up-front with the CIF and then again later through user fees.
- Requires net present cost of future growth-related debt principal payments be evaluated.

The debt principal credit can help mitigate objections to the CIF.

* Source: Water and Wastewater Finance and Pricing, The Changing Landscape, Fourth Edition, CRC Press, c. 2015.

CIF Model Input and Output

Key Input Parameters

Parameter	Model Value	Impact on CIF
Capital Cost of Projects and Year Built	See Attachment A	
Growth-Related Percentage for each Project	See Attachment A (0-100%)	↑ Growth Percentage → CIF ↑
Cost Adjustments to 2021	Based on Engineering News Record (ENR) Index Values for each of the last 20 years	
Excess Treatment Capacity	1.79 Million Gallons per Day	↑ Excess Capacity → CIF ↓
Cost Adjustments to Future Years	3.43% per year (Based on ENR Values over the last 5 years)	↑ ENR Index Increase → CIF ↑
Useful Life of Asset (for Depreciation)	30-40 years depending on asset	↑ Useful Life → CIF ↑
Connection Rate per Year (Equivalent Dwelling Units, EDUs)	284 EDUs per Year	↑ EDUs/Year → CIF ↑
Flow per Equivalent Dwelling Unit	159 gallons per day per EDU	↑ Flow/EDU → CIF ↑
Weighted Average Bond Rate—Historical	Ranges From 0% (e.g., Tuscawilla) To 2.75% (2016 Sewer Projects)	↑ Bond Rate → CIF ↑
Projected Bond Rate—Future Projects	4.0%	↑ Flow/EDU → CIF ↑

Historical Projects

Project Name	Year Completed	Useful Life (Years)	Total Cost
Tuscawilla Project	2011	30	$ 15,147,192
Huntfield Project	2013	30	$ 1,500,000
CTWWTP Phase 1 and Tuscawilla Effluent Line	2014	40	$ 5,140,290
2016 Sewer Projects	2016	40	$ 3,895,000
		Sub Total	**$ 25,682,482**

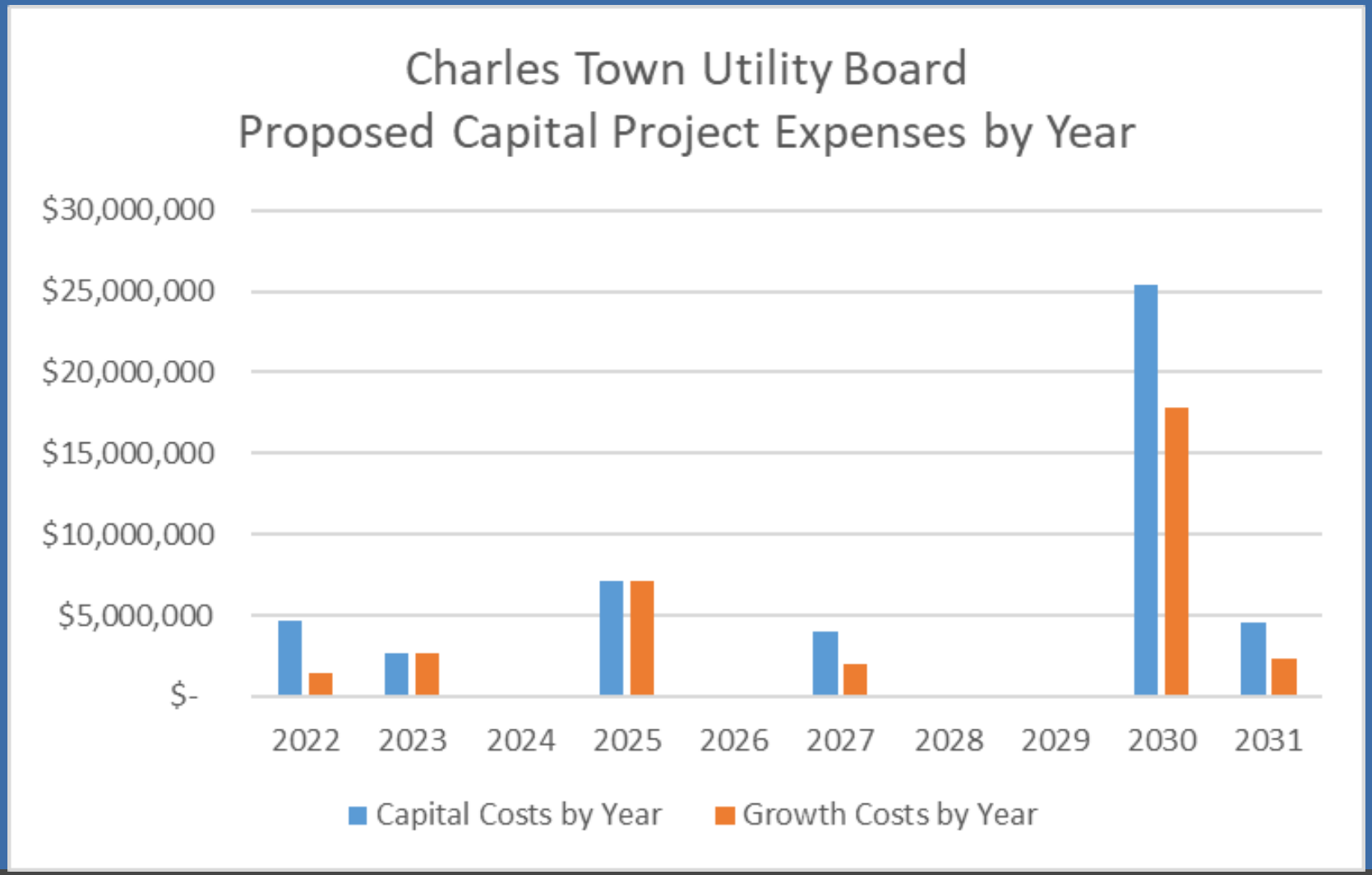
Current & Future Projects

Project Name	Year Completed	Useful Life (Years)	Total Cost
Collections System Project	2022	40	$ 4,861,000
Fairfax Parallel Line	2023	40	$ 2,500,000
Evitts Run Collector Line	2025	40	$ 6,250,000
Collections System Upgrade	2027	40	$ 3,250,000
CTWWTP Upgrades	2030	30	$ 18,750,000
Collections Project & Pump Stations Project	2031	40	$ 3,250,000
		Sub Total	**$ 38,861,000**

Model Output Information

- Replacement cost new less depreciation (RCNLD)
- Forecasted capital expenses by year
- Forecasted growth-related capital expenses by year
- CIF without debt principal credit
- Debt principal credit calculation
- CIF with debt principal credit

Model Output – Capital Expenses by Year



CIF Calculation

DRAFT CIF Calculation Summary
(See Attachment A)

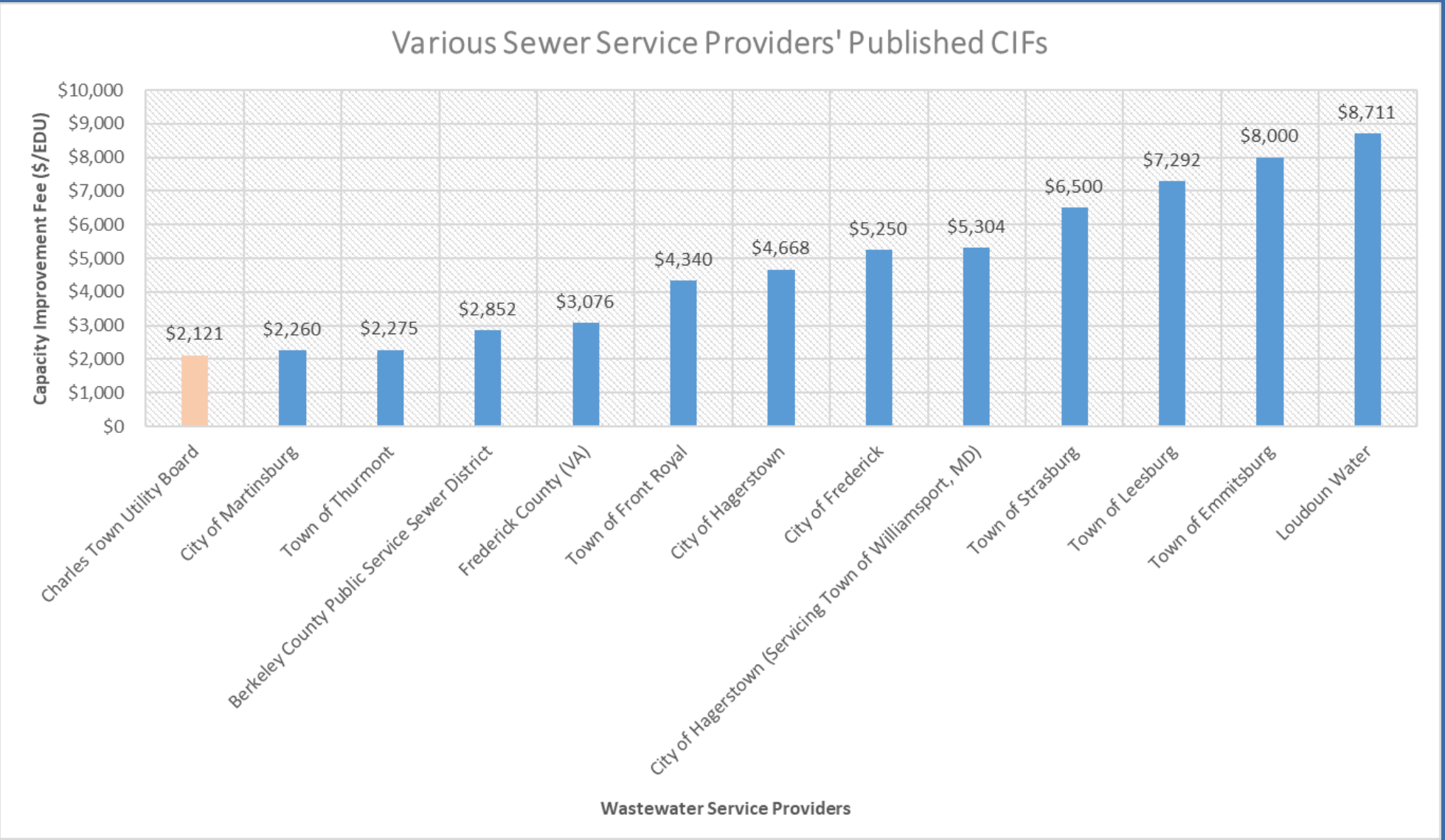
Capacity Improvement Fee Determination			
Current Sewer & Treatment System Flow		1.46	MGD
Sewer System & Treatment System Design Capacity		3.25	MGD
Excess Capacity Available		1,790,000	gpd
Flow per Equivalent Dwelling Unit (EDU)		159	gpd/EDU
EDUs Supported by Excess Capacity		11,258	EDUs
Growth Related Costs per Capital Improv. Plan	$	44,704,354	
Debt Principal Credit	$	(20,826,804)	(See Attachment B)
Net Growth Related Costs	$	23,877,549	
Calculated Capacity Improvement Fee	**$**	**2,121**	per EDU
Calculated Capacity Improvement Fee	**$**	**13.34**	per gpd

DRAFT Debt Principal Credit (Attachment B)

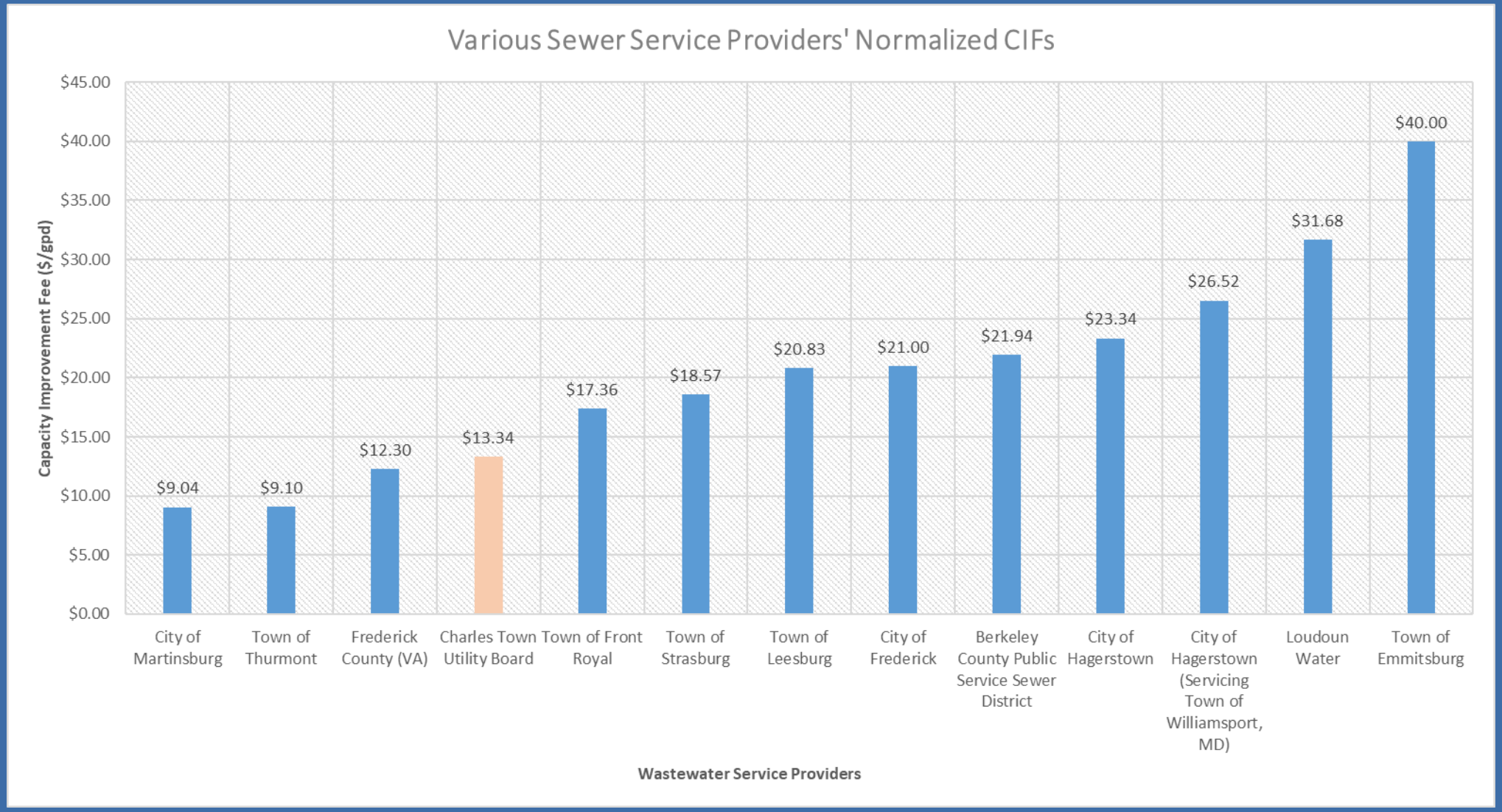
Year	Total Existing Debt Principal (Growth-Related Portion)	Projected New Debt Principal (Growth-Related Portion)	Total Projected Debt Service (Growth-Related Portion)	Present Value of Net Debt Service (Growth-Related Portion)
2022	$ (392,858)	$ (17,936)	$ (410,795)	$ (410,795)
2023	$ (394,060)	$ (55,590)	$ (449,651)	$ (437,021)
2024	$ (395,290)	$ (57,814)	$ (453,104)	$ (428,008)
2025	$ (396,549)	$ (166,107)	$ (562,655)	$ (516,563)
2026	$ (397,836)	$ (172,751)	$ (570,587)	$ (509,131)
2027	$ (399,154)	$ (193,581)	$ (592,735)	$ (514,037)
2028	$ (400,503)	$ (201,324)	$ (601,827)	$ (507,262)
2029	$ (401,883)	$ (209,377)	$ (611,260)	$ (500,742)
2030	$ (403,295)	$ (502,352)	$ (905,648)	$ (721,064)
2031	$ (404,741)	$ (552,292)	$ (957,033)	$ (740,574)
2032	$ (406,221)	$ (574,384)	$ (980,605)	$ (737,501)
2033	$ (407,736)	$ (597,359)	$ (1,005,096)	$ (734,687)
2034	$ (409,288)	$ (621,254)	$ (1,030,541)	$ (732,129)
2035	$ (410,876)	$ (646,104)	$ (1,056,980)	$ (729,820)
2036	$ (412,502)	$ (671,948)	$ (1,084,450)	$ (727,755)
2037	$ (414,168)	$ (698,826)	$ (1,112,994)	$ (725,931)
2038	$ (415,873)	$ (726,779)	$ (1,142,652)	$ (724,341)
2039	$ (417,620)	$ (755,850)	$ (1,173,470)	$ (722,983)
2040	$ (419,408)	$ (786,084)	$ (1,205,493)	$ (721,851)
2041	$ (128,395)	$ (817,528)	$ (945,923)	$ (550,510)
2042	$ (130,272)	$ (850,229)	$ (980,501)	$ (554,606)
2043	$ (114,639)	$ (884,238)	$ (998,877)	$ (549,130)
2044	$ (63,768)	$ (919,607)	$ (983,375)	$ (525,424)
2045	$ (65,521)	$ (956,392)	$ (1,021,913)	$ (530,678)
2046	$ -	$ (994,647)	$ (994,647)	$ (502,011)
2047	$ -	$ (1,034,433)	$ (1,034,433)	$ (507,427)
2048	$ -	$ (1,075,811)	$ (1,075,811)	$ (512,901)
2049	$ -	$ (1,118,843)	$ (1,118,843)	$ (518,434)
2050	$ -	$ (1,163,597)	$ (1,163,597)	$ (524,027)
2051	$ -	$ (1,210,141)	$ (1,210,141)	$ (529,681)
2052	$ -	$ (1,200,372)	$ (1,200,372)	$ (510,647)
2053	$ -	$ (1,128,587)	$ (1,128,587)	$ (466,624)
2054	$ -	$ (1,173,731)	$ (1,173,731)	$ (471,658)
2055	$ -	$ (876,944)	$ (876,944)	$ (342,497)
2056	$ -	$ (912,022)	$ (912,022)	$ (346,192)
2057	$ -	$ (903,354)	$ (903,354)	$ (333,271)
2058	$ -	$ (939,488)	$ (939,488)	$ (336,866)
2059	$ -	$ (977,068)	$ (977,068)	$ (340,500)
2060	$ -	$ (93,079)	$ (93,079)	$ (31,526)
Total Debt Principal Credit (Growth Related Portion)				**$ (20,826,804)**

Benchmarking Information

Benchmarking Data—Published CIFs



Benchmarking Data—Normalized CIFs



Rate Approaches by Others

Meter Size Approach

- Uses AWWA Max. Flow Ratio to Determine Fee

Meter Size	Maximum Flow (gpm)	Ratio Of Demand	Capacity Improvement Fee (CIF)
5/8"	20	1.0	$2,121
3/4"	30	1.5	$3,182
1"	50	2.5	$5,303
1-1/2"	100	5.0	$10,605
2"	160	8.0	$16,968
3"	300	15.0	$31,815
4"	500	25.0	$53,025
6"	1,000	50.0	$106,050

Fixture Unit Method

FIXTURE TYPE	DRAINAGE FIXTURE UNIT VALUE AS LOAD FACTORS	MINIMUM SIZE OF TRAP (inches)
Automatic clothes washers, commercial[a,g]	3	2
Automatic clothes washers, residential[g]	2	2
Bathroom group as defined in Section 202 (1.6 gpf water closet)[f]	5	-
Bathroom group as defined in Section 202 (water closet flushing greater than 1.6 gpf)[f]	6	-
Bathtub[b] (with or without overhead shower or whirpool attachments)	2	1 1/2
Bidet	1	1 1/4
Combination sink and tray	2	1 1/2
Dental lavatory	1	1 1/4
Dental unit or cuspidor	1	1 1/4
Dishwashing machine, [c] domestic	2	1 1/2
Drinking fountain	1/2	1 1/4
Emergency floor drain	0	2
Floor drains	2	2
Kitchen sink, domestic	2	1 1/2
Kitchen sink, domestic with food waste grinder and/or dishwasher	2	1 1/2
Laundry tray (1 or 2 compartments)	2	1 1/2
Lavatory	1	1 1/4
Shower	2	1 1/2

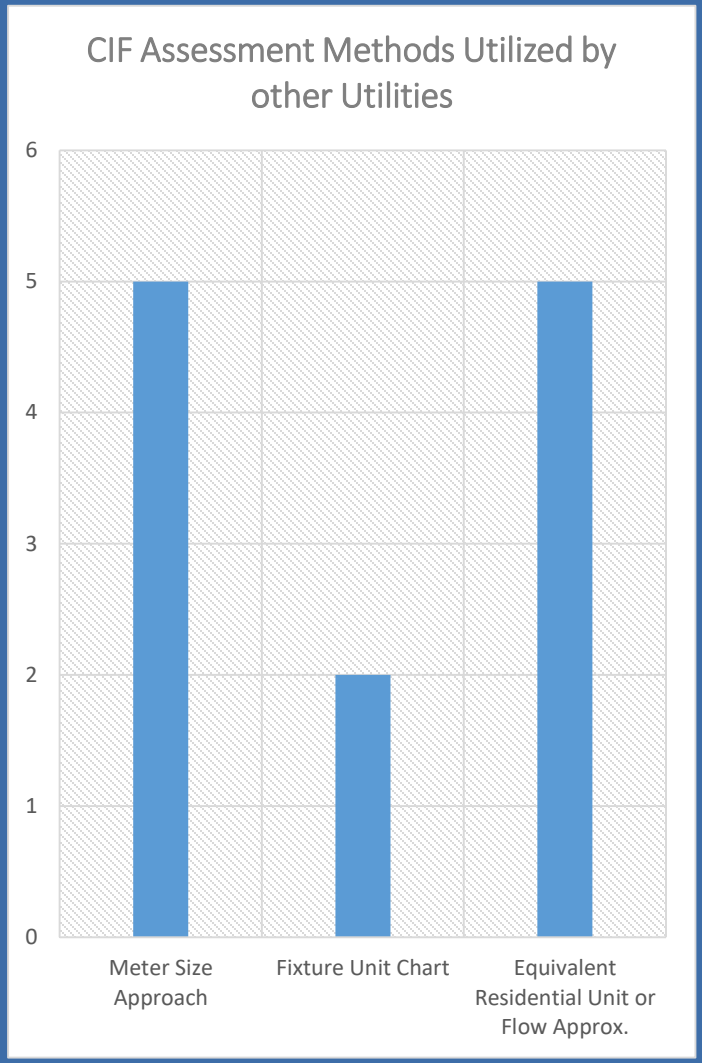
WV DEP – Flow Projection Method

Facility Description	Unit Sewage Design Flow (gpd)
Airports	
Each employee	15
Each passenger	5
Assembly Halls	
Per seat	2
Bowling Alleys (No Food Service)	
Per Alley	75
Per Alley with Bar	225
Churches	
Per Member with Kitchen	5
Per Member without Kitchen	2
Clinics	
Per Staff	20
Per Patient	5
Country Clubs	
Per Member (non-resident)	25
Per Member (resident)	70
Domestic Sewage	
Residences (per resident -a-)	
New Collection System	70
Summer Cottages, etc., per resident	50
Apartment Houses--one bedroom	140
--two	210
--three	280

Facility Description	Unit Sewage Design Flow (gpd)
Restaurants	
24 hour service, per seat	50
Ordinary, not 24 hour service, per seat	30
Curb service (drive-in), per car space	50
Fast food (single service), per seat	25
Schools	
Elementary, each staff or student	8
High school, each staff or student	10
Boarding school	70
Service stations	
Ordinary, not 24 hour service	500
24 hour service	1000
Shopping mall per l00 sq.ft.	15
Shopping Center	Based on individual store occupancy
Swimming Pools	
Per swimmer	5
Add for shower facilities, per swimmer	2
Taverns and Bars, Little or no food service	
Per seat	20
Theaters	
Drive-in, per car space	4
Movie, per seat	2

What Your Neighbors are Doing

Charles Town Utility Board			
Capacity Improvement Fee Analysis and Benchmarking Study			
CIF Assessment Methods Utilitzed by other Utilitites			
Utilities	Meter Size Approach	Fixture Unit Chart	Equivalent Residential Unit or Flow Approx.
Town of Purcellville	X		
Town of Front Royal	X		
Loudoun Water	X		X
Town of Leesburg			X
Town of Berryville	X		
Clarke County Sanitation Autority			X
Frederick County		X	
Town of Emmitsburg		X	
City of Frederick			X
City of Martinsburg	X		



Pros and Cons – Water Meter Method

Advantages	Disadvantages
Easy to Understand*	Major Steps in CIF Calculated
Easy to Implement*	Significant flow differences can exist among customers in the same meter size class*
	Customers may ask for a small meter and then use more flow later
	Meters size ratios are based on peak flow but most CIFs are based on average flow
	Appears to under-value the true cost of capacity for larger customers
	Water meter and wastewater loading may be unrelated*

* Source: Water and Wastewater Finance and Pricing, The Changing Landscape, Fourth Edition, CRC Press, c. 2015.

Broad Ranges of Flows for Water Meters

OPERATING CHARACTERISTICS

Meter Size	Normal Operating Range @100% Accuracy (±1.5%)	Maximum Intermittent Flow	AWWA Standard
1½″	4 to 160 US gpm 0.91 to 36.3 m^3/h	200 US gpm 45.4 m^3/h	4 to 120 US gpm 0.91 to 27.3 m^3/h
2″	4 to 200 US gpm 0.91 to 45.4 m^3/h	250 US gpm 56.8 m^3/h	4 to 190 US gpm 0.91 to 43.2 m^3/h
3″	5 to 450 US gpm 1.14 to 102.2 m^3/h	560 US gpm 127.2 m^3/h	8 to 435 US gpm 1.8 to 98.8 m^3/h
4″	10 to 1200 US gpm 2.27 to 272.5 m^3/h	1500 US gpm 340.7 m^3/h	15 to 750 US gpm 3.4 to 170.3 m^3/h
6″	20 to 2500 US gpm 4.55 to 567.8 m^3/h	3100 US gpm 704.1 m^3/h	30 to 1350 US gpm 6.8 to 306.6 m^3/h
8″	35 to 4000 US gpm 7.95 to 908.5 m^3/h	5000 US gpm 1135.6 m^3/h	50 to 2800 US gpm 11.4 to 635.9 m^3/h
10″	50 to 6500 US gpm 11.36 to 1476.3 m^3/h	8000 US gpm 1817 m^3/h	75 to 4200 US gpm 17.0 to 953.9 m^3/h

Pros and Cons – Fixture Unit Method

Advantages	Disadvantages
Is based on unique plumbing configuration of each customer*	Costly to implement since each building plan must be individually reviewed; administratively burdensome*
Works well for both water and sewer*	Complicated to understand
	Capacity Adjustment Factors may need to be made for larger facilities

* Source: Water and Wastewater Finance and Pricing, The Changing Landscape, Fourth Edition, CRC Press, c. 2015.

Pros and Cons – Equivalent Residential Unit or Flow Approximation Method

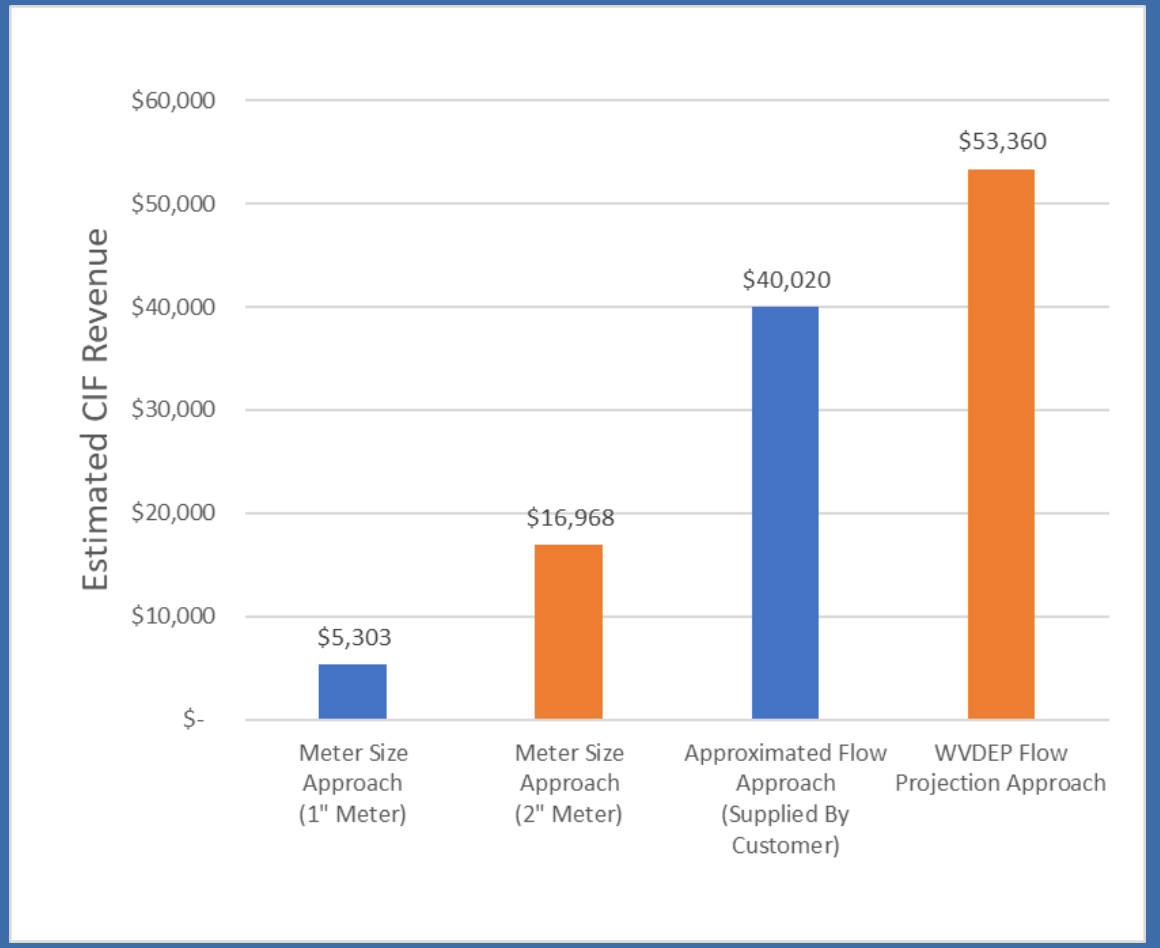
Advantages	Disadvantages
Seeks to recognize flow differences between different classes of customers*	More difficult to explain than the meter method (but easier than fixture units)*
Can be used equally well for water or wastewater*	
Can be tied to State Regulated Unit Flow-rates used by WVDEP	
Customers can submit alternative calculations for special cases	

* Source: Water and Wastewater Finance and Pricing, The Changing Landscape, Fourth Edition, CRC Press, c. 2015.

Comparison of Calculations

Example for a 50 room motel:

- WVDEP Regs amount to 80 gpd per room
- Actual usage is more like 60 gpd per room based on customer records
- CTUB Staff/Engineer Recommends 2” Meter
- Motel owner wants to use a 1” water meter despite your objections he should go larger
- CIF revenues based on $2,121 per EDU ($13.34 per gpd) & 159 gpd/EDU



Next Steps

- Draft Sewer CIF Calculation presented to Charles Town Utility Board 10/13/2021
- Draft Water CIF Calculation to be completed by End Of Year 2021
- Draft Water CIF Status:
  - Capital Improvement Planning (CIP) in production
  - Water Plant Capacity Evaluation
- CTUB Board Approval
- CTUB Legal Counsel Drafts the Rate Ordinance
- City Council Approval

Questions and Answers

Charles Town
Utility Board
661 S. George Street, Suite 101 Charles Town, WV 25414
Phone: (304) 725-2316 ♦ Fax: (304) 725-7150 ♦ Web: www.ctubwv.com

MEMORANDUM TO THE BOARD OF DIRECTORS

FROM: Kristen Stolipher, Utility General Manager
SUBJECT: Utility General Manager's Report
DATE: October 13, 2021

ADMINISTRATIVE

- Customer Counts
  - Sewer 8,083 (1,980 billed by JUI)
  - Water 6,358

WATER

- Well/Spring Evaluation

SEWER

- Renewal and Replacement Project application to WVDEP submitted October 1, 2021
- Cave Quarter Estates request

INFORMATION

- **Capacity Improvement Fee collection: See attached.**
- **Water and Sewer Treatment Plant Flows: See attached.**

Customer Name	Location	Lot Number	CIF Date Paid	Number of Sewer EDUs	Sewer CIF Amount Paid	Number of Water EDU's	Water CIF Amount Paid	
Dan Ryan Builders	Tate Manor	1-6	1/4/2021	6	$ 6,762.00	6	$ 15,456.00	
Dan Ryan Builders	Briar Run	387-389, 391	1/4/2021	4	$ 12,828.00			
Dan Ryan Builders	Tate Manor	7-12	1/25/2021	6	$ 6,762.00	6	$ 15,456.00	
Dan Ryan Builders	Tate Manor	13-18	1/25/2021	6	$ 6,762.00	6	$ 15,456.00	
Stanley Martin	Presidents Pointe	51-56	2/12/2021	6	$ 16,512.00			
DRH	Magnolia Springs	38-41	2/17/2021	4	$ 4,508.00	4	$ 10,304.00	$ 38,640.00
Dan Ryan Builders	Tate Manor	19-24	2/24/2021	6	$ 6,762.00	6	$ 15,456.00	
Dan Ryan Builders	Tate Manor	25-29	2/24/2021	5	$ 5,635.00	5	$ 12,880.00	
DRH	Magnolia Springs	21,23, 32-35, 42-48	3/5/2021	13	$ 14,651.00	13	$ 33,488.00	
DRH	Magnolia Springs	22	3/12/2021	1	$ 1,127.00	1	$ 2,576.00	
DRH	Magnolia Springs	8-10, 18-20, 24-28, 36-37, 66-70	3/17/2021	18	$ 20,286.00	18	$ 46,368.00	
Rockwool	Rockwool		3/31/2021	104.7	$ 117,959.33			
R&D Investments	17 Clems Drive		4/21/2021	1	$ 3,207.00			
Salgato	West Washington Street	45	5/28/2021	1	$ 1,127.00	1	$ 2,576.00	
Lutman	2 Sunlite Dr- Tuscawilla		6/15/2021	1	$ 1,127.00	1	$ 2,576.00	
Uniwest	Jefferson Xing Apartments	7	6/23/2021	36	$ 115,452.00	36	$ 92,736.00	
Jenkins	100 Center Street		6/30/2021	1	$ 1,127.00	1	$ 2,576.00	
Jenkins	203 E 7th Ave		6/30/2021	1	$ 1,127.00	1	$ 2,576.00	
DRH	Magnolia Springs	71-73, 101-102, 114-122, 125-133, 135, 138, 140-149	7/29/2021	35	$ 39,445.00	35	$ 90,160.00	
Wormald	Beallair	142	7/30/2021	1	$ 3,207.00			
Wormald	Beallair	67	7/30/2021	1	$ 3,207.00			
Sudhir Rana	West Burr Industrial Park	5	8/2/2021	1.8	$ 5,772.60			
DHR	Magnolia Springs	134, 139	8/4/2021	2	$ 2,254.00	2	$ 5,152.00	
Wormald	Beallair	149	8/13/2021	1	$ 3,207.00			
McGuire	71 Jefferson Crossing Way (Laundromat)		8/30/2021	7.42	$ 23,795.94	7.42	$ 19,113.92	
Wormald	Beallair	157	9/8/2021	1	$ 3,207.00			
Wormald	Beallair	144	9/17/2021	1	$ 3,207.00			
DRH	Magnolia Springs	74-75, 91-99, 100, 103-113, 123-124, 136-137, 150-164	9/22/2021	42	$ 47,334.00	42	$ 108,192.00	
			Total	**313.92**	$ 478,357.87	**191.42**	$ 493,097.92	

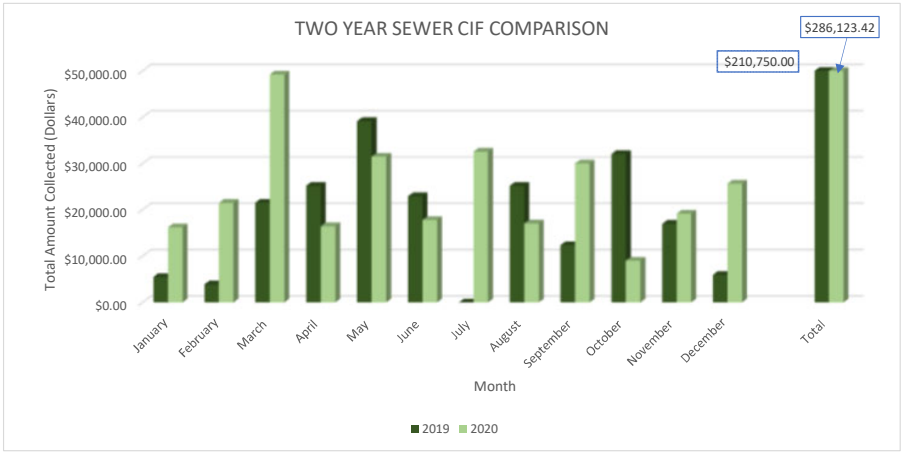
Charles Town Utility Board
2021 Capacity Improvement Fee Collections/EDU for Sewer

Month	Commercial	Residential	Total Number of EDU's	Total Sewer CIF Collected	CIF Paid to Ranson	Total
Jan-21		22	22	$ 33,114.00		$ 33,114.00
Feb-21		21	21	$ 33,417.00	$ 9,750.00	$ 23,667.00
Mar-21		32	136.7	$ 154,023.33		$ 154,023.33
Apr-21		1	1	$ 3,207.00		$ 3,207.00
May-21		1	1	$ 1,127.00		$ 1,127.00
Jun-21	36	3	39	$ 118,833.00		$ 118,833.00
Jul-21		37	37	$ 45,859.00		$ 45,859.00
Aug-21	9.22	3	12.22	$ 35,029.54		$ 35,029.54
Sep-21		44	44	$ 53,748.00		$ 53,748.00
Oct-21						$ -
Nov-21						$ -
Dec-21						
Total 2021	**45.22**	**117**	**313.92**	**$ 478,357.87**	**$ 9,750.00**	**$ 468,607.87**

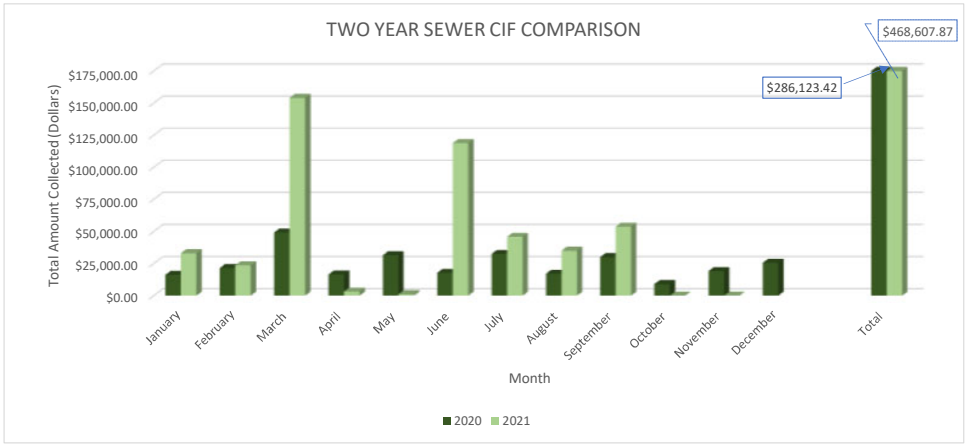
Charles Town Utility Board
2021 Capacity Improvement Fee Collections/EDU for Water

Month	Commercial	Residential	Total Number of EDU's	Total Water CIF
Jan-21		18	18	$ 46,368.00
Feb-21		15	15	$ 38,640.00
Mar-21		32	32	$ 82,432.00
Apr-21		0	0	$ -
May-21		1	1	$ 2,576.00
Jun-21	36	3	39	$ 100,464.00
Jul-21		35	35	$ 90,160.00
Aug-21	7.42	2	9.42	$ 24,265.92
Sep-21		42	42	$ 108,192.00
Oct-21				
Nov-21				
Dec-21				
Total 2021	**43.42**	**106**	**191.42**	**$ 493,097.92**

Charles Town Utility Board 2020 Capacity Improvement Fee Collections/EDU for Sewer						
Month	**Commercial**	**Residential**	**Total Number of EDU's**	**Total Sewer CIF Collected**	**CIF Paid to Ranson**	**Total**
Jan-20		7	7	$21,084.00	$4,875.00	$16,209.00
Feb-20		8	8	$24,746.00	$3,250.00	$21,496.00
Mar-20		16	16	$49,232.00		$49,232.00
Apr-20		21	21	$58,702.00	$42,250.00	$16,452.00
May-20		16	16	$44,487.00	$13,000.00	$31,487.00
Jun-20	1	6	7	$17,803.40		$17,803.40
Jul-20		11	11	$32,547.00		$ 32,547.00
Aug-20		5.31	5.31	$17,040.00		$ 17,040.00
Sep-20		19.26	19.26	$39,776.02	$9,750.00	$ 30,026.02
Oct-20		8	8	$18,766.00	$9,750.00	$ 9,016.00
Nov-20		17	17	$45,159.00	$26,000.00	$ 19,159.00
Dec-20		8	8	$25,656.00		$ 25,656.00
Total 2020	**1**	**137**	**143.57**	**$394,998.42**	**$108,875.00**	**$286,123.42**

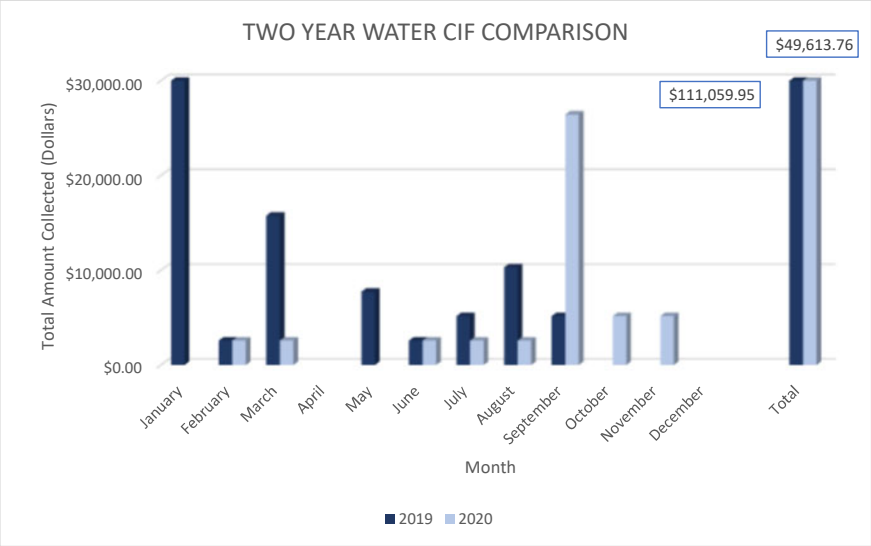


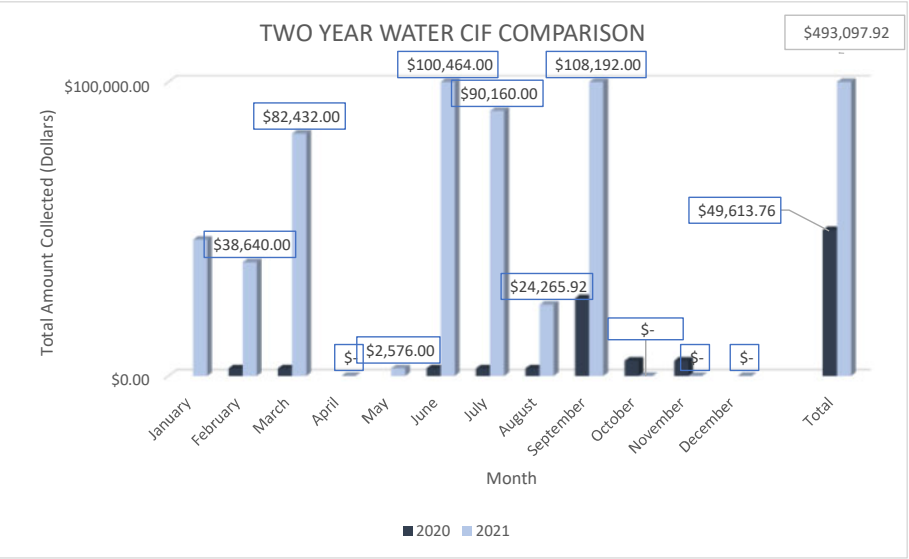
Charles Town Utility Board 2021 Capacity Improvement Fee Collections/EDU for Sewer						
Month	**Commercial**	**Residential**	**Total Number of EDU's**	**Total Sewer CIF Collected**	**CIF Paid to Ranson**	**Total**
Jan-21		22	22	$ 33,114.00		$ 33,114.00
Feb-21		21	21	$ 33,417.00	$ 9,750.00	$ 23,667.00
Mar-21		32	136.7	$ 154,023.33		$ 154,023.33
Apr-21		1	1	$ 3,207.00		$ 3,207.00
May-21		1	1	$ 1,127.00		$ 1,127.00
Jun-21	36	3	39	$ 118,833.00		$ 118,833.00
Jul-21		37	37	$ 45,859.00		$ 45,859.00
Aug-21	9.22	3	12.22	$ 35,029.54		$ 35,029.54
Sep-21		44	44	$ 53,748.00		$ 53,748.00
Oct-21						$ -
Nov-21						$ -
Dec-21						
Total 2021	**45.22**	**117**	**313.92**	**$478,357.87**	**$9,750.00**	**$468,607.87**



Charles Town Utility Board 2020 Capacity Improvement Fee Collections/EDU for Water				
Month	**Commercial**	**Residential**	**Total Number of EDU's**	**Total Water CIF**
Jan-20				
Feb-20		1	1	$ 2,576.00
Mar-20		1	1	$ 2,576.00
Apr-20				
May-20				
Jun-20		1	1	$ 2,576.00
Jul-20		1	1	$ 2,576.00
Aug-20		1	1	$ 2,576.00
Sep-20		10.26	10.26	$ 26,429.76
Oct-20		2	2	$ 5,152.00
Nov-20		2	2	$ 5,152.00
Dec-20				
Total 2020	**0**	**19**	**19.26**	**$ 49,613.76**

Charles Town Utility Board 2021 Capacity Improvement Fee Collections/EDU for Water				
Month	**Commercial**	**Residential**	**Total Number of EDU's**	**Total Water CIF**
Jan-21		18	18	$ 46,368.00
Feb-21		15	15	$ 38,640.00
Mar-21		32	32	$ 82,432.00
Apr-21				$ -
May-21		1	1	$ 2,576.00
Jun-21	36	3	39	$ 100,464.00
Jul-21		35	35	$ 90,160.00
Aug-21	7.42	2	9.42	$ 24,265.92
Sep-21		42	42	$ 108,192.00
Oct-21				$ -
Nov-21				$ -
Dec-21				$ -
Total 2021	**43.42**	**106**	**191.42**	**$ 493,097.92**





CHARLES TOWN UTILITY BOARD
WASTEWATER TREATMENT PLANT FLOW DATA

CHARLES TOWN WASTEWATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily	Total Available (gpd)	Total Available (EDU's)
2015	1.75	384	1.05	0.7	700,000	4,667
2016	1.75	419	1.14	0.61	610,000	4,067
2017	1.75	393	1.08	0.67	670,000	4,467
2018	1.75	491	1.34	0.41	410,000	2,733
2019	1.75	459	1.26	0.49	490,000	3,267
2020	1.75	419.7	1.15	0.60	603,333	4,022
2021	1.75	306.3	1.13	0.62	620,000	4,133

TUSCAWILLA WASTEWATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily	Total Available (gpd)	Total Available (EDU's)
2015	0.5	48	0.13	0.37	370,000	2,467
2016	0.5	49	0.13	0.37	370,000	2,467
2017	0.5	48	0.14	0.36	360,000	2,400
2018	0.5	78	0.21	0.29	290,000	1,933
2019	0.5	55.24	0.15	0.35	350,000	2,333
2020	0.5	1.09	0.16	0.34	340,000	2,267
2021	0.5	24.37	0.096666667	0.403333333	403,333	2,689

Total EDU's available between CT and Tuscawilla	
2015	7,133
2016	6,533
2017	6,867
2018	4,667
2019	5,600
2020	6,289
2021	

2019		
	Total	AVERAGE
JANUARY	51.37	1.66
FEBRUARY	43.72	1.56
MARCH	44.32	1.43
APRIL	37.29	1.24
MAY	45.1	1.45
JUNE	33.83	1.13
JULY	39.09	1.26
AUGUST	33.33	1.08
SEPTEMBER	30.89	1.03
OCTOBER	32.86	1.06
NOVEMBER	30.65	1.02
DECEMBER	36.55	1.18
Annual Total	459	1.26

2020		
	Total	AVERAGE
JANUARY	39.05	1.26
FEBRUARY	36.74	1.27
MARCH	36.76	1.19
APRIL	33.32	1.11
MAY	35.50	1.15
JUNE	33.44	1.11
JULY	34.45	1.11
AUGUST	32.65	1.05
SEPTEMBER	32.43	1.08
OCTOBER	33.91	1.09
NOVEMBER	33.49	1.12
DECEMBER	37.96	1.22
Annual Total	419.7	1.15

2021		
	Total	AVERAGE
JANUARY	35.83	1.22
FEBRUARY	32.98	1.18
MARCH	36.39	1.17
APRIL	34.33	1.18
MAY	33.24	1.07
JUNE	36.24	1.21
JULY	30.99	1.00
AUGUST	29.94	0.97
SEPTEMBER	36.36	1.17
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	306.3	1.13

2019		
	Total	AVERAGE
JANUARY	6.25	0.2
FEBRUARY	4.98	0.18
MARCH	7.53	0.24
APRIL	5.28	0.18
MAY	7.88	0.25
JUNE	3.75	0.12
JULY	4.2	0.14
AUGUST	3.75	0.12
SEPTEMBER	3.64	0.12
OCTOBER	3.97	0.13
NOVEMBER	3.66	0.12
DECEMBER	0.35	0.01
Annual Total	55.24	0.15

2020		
	Total	AVERAGE
JANUARY		
FEBRUARY		
MARCH		
APRIL		
MAY		
JUNE		
JULY		
AUGUST	1.09	0.16
SEPTEMBER		
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	1.09	0.16

2021		
	Total	AVERAGE
JANUARY	0.52	0.07
FEBRUARY	2.22	0.08
MARCH	4.22	0.14
APRIL	1.12	0.04
MAY	0.89	0.03
JUNE	3.37	0.11
JULY	3.9	0.13
AUGUST	3.6	0.12
SEPTEMBER	4.53	0.15
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	24.37	0.10

CHARLES TOWN UTILITY BOARD
WATER TREATMENT PLANT FLOW DATA

CHARLES TOWN WATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily	Total Available (gpd)	Total Available (EDU's)
2019	2.8	644.32	1.77	1.03498	1,034,980	6,900
2020	2.8	615.64	1.68	1.12	1,117,946	7,453
2021	2.8	459.64	1.67	1.13	1,129,296	7,529

2019		
	Total	AVERAGE
JANUARY	52,264,325	1,685,946
FEBRUARY	48,901,884	1,746,496
MARCH	52,112,735	1,681,056
APRIL	51,316,538	1,710,551
MAY	56,973,829	1,837,865
JUNE	55,111,832	1,837,061
JULY	57,587,563	1,857,663
AUGUST	58,291,878	1,880,383
SEPTEMBER	53,642,580	1,788,086
OCTOBER	54,262,184	1,750,393
NOVEMBER	50,656,056	1,688,535
DECEMBER	53,202,360	1,716,205
Annual Total	644,323,764	1,765,020

2020		
	Total	AVERAGE
JANUARY	53,689,445	1,731,918
FEBRUARY	49,700,448	1,713,809
MARCH	51,009,216	1,645,459
APRIL	46,966,864	1,565,562
MAY	50,753,036	1,637,195
JUNE	52,587,142	1,752,905
JULY	54,394,477	1,754,661
AUGUST	54,972,785	1,773,316
SEPTEMBER	50,996,141	1,699,871
OCTOBER	51,222,251	1,652,331
NOVEMBER	49,014,344	1,633,811
DECEMBER	50,338,278	1,623,815
Annual Total	615,644,427	1,682,054

2021		
	Total	AVERAGE
JANUARY	50,030,727	1,613,894
FEBRUARY	45,304,029	1,618,001
MARCH	50,881,983	1,641,354
APRIL	49,098,224	1,636,607
MAY	53,910,537	1,739,050
JUNE	53,051,728	1,711,346
JULY	53,198,248	1,716,073
AUGUST	54,959,872	1,772,899
SEPTEMBER	49,200,580	1,587,115
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	459,635,928	1,670,704

GLEN HAVEN WATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily	Total Available (gpd)	
2020	0.0216	1.04	0.01	0.01	13,120	
2021	0.0216	2.35	0.01	0.01	12,976	-

2020		
	Total	AVERAGE
JANUARY		
FEBRUARY		
MARCH		
APRIL		
MAY		
JUNE		
JULY		
AUGUST		
SEPTEMBER	283,900	9,158
OCTOBER	265,000	8,548
NOVEMBER	250,800	8,360
DECEMBER	243,500	7,855
Annual Total	1,043,200	8,480

2021		
	Total	AVERAGE
JANUARY	242,200	7,813
FEBRUARY	203,500	7,268
MARCH	241,800	8,636
APRIL	262,300	8,743
MAY	289,700	9,345
JUNE	276,500	8,919
JULY	302,900	9,771
AUGUST	302,900	9,771
SEPTEMBER	227,800	7,348
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	2,349,600	8,624

CAVALAND WATER PLANT FLOW DATA						
YEAR	Total Design (MGD)	TOTAL ANNUAL FLOW (MG)	AVERAGE DAILY (MGD)	Total Design minus Average Daily	Total Available (gpd)	
2020	0.036	0.59	0.00	0.03	31,210	
2021	0.036	1.44	0.01	0.03	30,707	

2020		
	Total	AVERAGE
JANUARY		
FEBRUARY		
MARCH		
APRIL		
MAY		
JUNE		
JULY		
AUGUST		
SEPTEMBER	141,900	4,577
OCTOBER	140,300	4,526
NOVEMBER	151,500	5,050
DECEMBER	155,200	5,006
Annual Total	588,900	4,790

2021		
	Total	AVERAGE
JANUARY	150,900	4,868
FEBRUARY	132,900	4,746
MARCH	145,800	5,207
APRIL	152,900	5,097
MAY	177,900	5,739
JUNE	159,000	5,129
JULY	169,600	5,471
AUGUST	177,300	5,719
SEPTEMBER	175,600	5,665
OCTOBER		
NOVEMBER		
DECEMBER		
Annual Total	1,441,900	5,293

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT	AMOUNT
			TOTAL:	68.79
ALASKA DEPARTMENT OF REVENUE	UNCLAIMED PROPERTY	WATER FUND	NON-DEPARTMENTAL	72.16
			TOTAL:	72.16
DEPT OF FINANCIAL SERVICES	UNCLAIMED PROPERTY	WATER FUND	NON-DEPARTMENTAL	44.90
			TOTAL:	44.90
UTAH OFFICE OF THE STATE TREASURER	UNCLAIMED PROPERTY	WATER FUND	NON-DEPARTMENTAL	44.14
			TOTAL:	44.14
WEST VIRGINIA STATE TREASURER'S OFFICE	UNCLAIMED PROPERTY RY 2021	WATER FUND	NON-DEPARTMENTAL	6,415.07
			TOTAL:	6,415.07
US PAVING, LLC	8/2/21 PAVING	WATER FUND	WATER	3,990.00
	8/3/21 PAVING & CONCRETE	WATER FUND	WATER	6,300.00
	8/3/21 PAVING	WATER FUND	WATER	1,280.00
	7/2/21 PAVING	SEWER FUND	SEWER	7,050.00
	8/2/21 PAVING	SEWER FUND	SEWER	3,000.00
	8/3/21 PAVING & CONCRETE	SEWER FUND	SEWER	1,050.00
	8/4/21 PAVING	SEWER FUND	SEWER	5,035.00
			TOTAL:	27,705.00
USA BLUEBOOK	COUPLING PIPES, MASKS, GLO	SEWER FUND	SEWER	172.31
	COUPLING PIPES	SEWER FUND	SEWER	72.60
	HYMAX REDUCER COUPLING	SEWER FUND	SEWER	393.95
			TOTAL:	638.86
WIRELESS NETWORKS GROUP, INC.	MISC SVCS, SEPT	WATER FUND	WATER	652.50
			TOTAL:	652.50

FUND TOTALS	
50 WATER FUND	76,876.82
60 SEWER FUND	111,272.54
GRAND TOTAL:	188,149.36

TOTAL PAGES: 5

APPROVED BY: _____

APPROVED BY: _____

This Packet: $ 188,149.36
Security Deposit refunds: 7,516.75

Total: $ 195,666.11

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT		AMOUNT
ROSS H BARE	FORREST AVE PS: SVC CALL	SEWER FUND	SEWER		300.00
	BRECKENRIDGE PS SOFT START	SEWER FUND	SEWER		1,326.80
	CTWWTP & TRCTRSPPLY	SEWER FUND	SEWER		100.00
	CTWWTP & TRCTRSPPLY	SEWER FUND	SEWER		865.00
				TOTAL:	2,591.80
SG PLUMBING, INC.	331 N MILDRED ST: SWR LN	SEWER FUND	SEWER		5,463.66
				TOTAL:	5,463.66
LAW OFFICES OF HOY SHINGLETON, L.C.	GENERAL 9/2 - 9/30/21	SEWER FUND	SEWER		1,755.00
	SJEN JCT SWR 8/31 - 9/20/2	SEWER FUND	SEWER		1,408.00
				TOTAL:	3,163.00
SPRINT	MONTHLY CELL SERVICE	WATER FUND	WATER		196.71
	MONTHLY CELL SERVICE	SEWER FUND	SEWER		722.08
				TOTAL:	918.79
STEPTOE & JOHNSON PLLC	GENERAL EMPLOYER COUNSELIN	WATER FUND	WATER		101.25
	GENERAL ENVIRONMENTAL	SEWER FUND	SEWER		5,737.50
	GENERAL EMPLOYER COUNSELIN	SEWER FUND	SEWER		101.25
				TOTAL:	5,940.00
GERALD TAYLOR CO., INC.	VAC / TRANSPORT	WATER FUND	WATER		251.75
	VAC / TRANSPORT	WATER FUND	WATER		719.88
	VAC / TRANSPORT	WATER FUND	WATER		210.08
	VAC / TRANSPORT	WATER FUND	WATER		210.08
	SUPERVAC LIFT STATIONS	SEWER FUND	SEWER		1,866.98
	PUMP / DISPOSE	SEWER FUND	SEWER		979.77
				TOTAL:	4,238.54
TEAMVIEWER GERMANY GMBH	SUBSCRIPTION: 9/2021 - 9/2	SEWER FUND	SEWER		2,483.00
				TOTAL:	2,483.00
THE CI THORNBURG CO, INC.	METER BOX, METER BOX COVR	WATER FUND	WATER		2,012.46
	CHLORINE	WATER FUND	WATER		1,013.00
	SEWER TEE, ELL, COUPLING	SEWER FUND	SEWER		242.01
	SEWER ELL	SEWER FUND	SEWER		65.75
				TOTAL:	3,333.22
TYLER TECHNOLOGIES	ANNUAL FEES INCODE	WATER FUND	WATER		1,543.51
	ANNUAL FEES INCODE	SEWER FUND	SEWER		1,543.50
				TOTAL:	3,087.01
ARIZONA DEPARTMENT OF REVENUE	UNCLAIMED PROPERTY	WATER FUND	NON-DEPARTMENTAL		95.11
				TOTAL:	95.11
COLORADO DEPT OF TREASURY	UNCLAIMED PROPERTY	WATER FUND	NON-DEPARTMENTAL		33.03
				TOTAL:	33.03
GEORGIA DEPARTMENT OF REVENUE	UNCLAIMED PROPERTY RY 2021	WATER FUND	NON-DEPARTMENTAL		4.52
				TOTAL:	4.52
OHIO DEPARTMENT OF COMMERCE	UNCLAIMED PROPERTY RY 2021	WATER FUND	NON-DEPARTMENTAL		93.30
				TOTAL:	93.30
TREASURER OF VIRGINIA	UNCLAIMED PROPERTY	WATER FUND	NON-DEPARTMENTAL		68.79

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT		AMOUNT
HATCH ASSOCIATES CONSULTANTS, INC.	TO11 H-364168 CNNCTCNS MAG	SEWER FUND	SEWER		601.00
				TOTAL:	601.00
CHRIS HUTZLER	PER DIEM 10/17-10/22/21	WATER FUND	WATER		275.00
				TOTAL:	275.00
PROTOUCH COMMUNICATIONS, LLC	SEPT SVCS: AFTER-HOURS EME	WATER FUND	WATER		208.87
				TOTAL:	208.87
INWOOD QUARRY, INC.	I10 & C1 PICKUPS: 9/17/21	WATER FUND	WATER		382.82
	I8 PICKUPS: 9/20/21	WATER FUND	WATER		614.71
	C1 & C2 PICKUPS: 9/21/21	WATER FUND	WATER		617.50
	C1 PICKUPS: 9/22/21	WATER FUND	WATER		614.77
	C1 PICKUPS: 9/23/21	WATER FUND	WATER		867.33
	I8 PICKUPS: 9/24/21	WATER FUND	WATER		233.05
				TOTAL:	3,330.18
IRON MOUNTAIN, INC	SHREDDING, STORAGE	WATER FUND	WATER		249.52
	SHREDDING, STORAGE	SEWER FUND	SEWER		249.52
				TOTAL:	499.04
JNO S SOLENBERGER & CO., INC	GALVMALL, MI3, PRTBCMLCK,	SEWER FUND	SEWER		300.00
				TOTAL:	300.00
KABLE EXCAVATING, LLC	EXCAVATOR: 8/18 & 8/19/21	SEWER FUND	SEWER		2,525.00
				TOTAL:	2,525.00
DONALD MICKEY	MOWING SUMMIT PT&PLYGROUND	WATER FUND	WATER		125.00
	MOWING SUMMIT PT&PLYGROUND	SEWER FUND	SEWER		125.00
				TOTAL:	250.00
MICRO-TECH DESIGNS, INC.	ENGNRG HRS: SCADA & BLWRBL	SEWER FUND	SEWER		1,665.00
				TOTAL:	1,665.00
MISS UTILITY OF WV, INC.	MESSAGE FEES: SEPT	WATER FUND	WATER		243.60
				TOTAL:	243.60
THOMAS NALLS	SEPT TANK LOT RENT	WATER FUND	NON-DEPARTMENTAL		3,518.48
				TOTAL:	3,518.48
PACE ANALYTICAL SERVICES, LLC	TESTING: WV3301909 & 33019	WATER FUND	WATER		311.10
	TESTING: CT WEEKLY	SEWER FUND	SEWER		173.19
	TESTING: CT WEEKLY	SEWER FUND	SEWER		173.19
	TESTING: TUSC WEEKLY	SEWER FUND	SEWER		85.85
	TESTING: TUSC MONTHLY	SEWER FUND	SEWER		85.85
	TESTING: ROCKWOOL MONTHLY	SEWER FUND	SEWER		214.27
	TESTING: CT WEEKLY	SEWER FUND	SEWER		173.19
	TESTING: OUTFALL 002	SEWER FUND	SEWER		2,175.82
	TESTING: OUTFALL 001	SEWER FUND	SEWER		2,175.82
				TOTAL:	5,568.28
POLY COATING SOLUTIONS LLC	MH CT: 314, 313, 312, 362,	SEWER FUND	SEWER		13,358.00
				TOTAL:	13,358.00
RAILROAD MGMT CO, IV LLC	CT, PIPE WATER LICENSE FEE	WATER FUND	WATER		562.26
				TOTAL:	562.26

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT		AMOUNT
CSX TRANSPORTATION, INC	ANNUAL PIPELINE FEES	WATER FUND	WATER		100.00
				TOTAL:	100.00
DENNIS SALES & SERVICE, INC	PUMP REPLACEMENT	WATER FUND	WATER		1,203.35
	EMERGNCY CALL HOOKUP #150C	WATER FUND	WATER		2,600.00
				TOTAL:	3,803.35
DEWBERRY ENGINEERS INC	TO2 ONCLL WA MODL & RELTD	WATER FUND	NON-DEPARTMENTAL		600.00
	TO3 CAPITAL IMPVMNT PLANNI	SEWER FUND	SEWER		6,195.00
				TOTAL:	6,795.00
WV DEPT OF HEALTH & HUMAN SERVICES	BACTERIOLOGICAL TESTING	WATER FUND	WATER		80.00
	BACTERIOLOGICAL TESTING	WATER FUND	WATER		100.00
	BACTERIOLOGICAL TESTING	WATER FUND	WATER		60.00
	BACTERIOLOGICAL TESTING	WATER FUND	WATER		120.00
	BACTERIOLOGICAL TESTING	WATER FUND	WATER		60.00
	BACTERIOLOGICAL TESTING	WATER FUND	WATER		120.00
	BACTERIOLOGICAL TESTING	WATER FUND	WATER		20.00
				TOTAL:	560.00
ENCOVA INSURANCE	INSTALLMENT	WATER FUND	WATER		2,943.36
	INSTALLMENT	SEWER FUND	SEWER		2,312.64
				TOTAL:	5,256.00
FIFTH THIRD BANK	PCARD 4726	WATER FUND	WATER		3,645.98
	PCARD 4726	WATER FUND	WATER		14.49
	PCARD 4726	WATER FUND	WATER		226.86
	PCARD 4726	WATER FUND	WATER		643.18
	PCARD 4726	WATER FUND	WATER		98.40
	PCARD 4726	WATER FUND	WATER		360.00
	PCARD 4726	WATER FUND	WATER		811.66
	PCARD 4726	SEWER FUND	SEWER		4,308.83
	PCARD 4726	SEWER FUND	SEWER		1,371.28
	PCARD 4726	SEWER FUND	SEWER		256.00
	PCARD 4726	SEWER FUND	SEWER		1,648.00
	PCARD 4726	SEWER FUND	SEWER		32.90
	PCARD 4726	SEWER FUND	SEWER		458.40
	PCARD 4726	SEWER FUND	SEWER		150.00
				TOTAL:	14,025.98
GUTTMAN ENERGY	W/E 9/5/21	WATER FUND	WATER		650.29
	W/E 9/19/21	WATER FUND	WATER		689.32
	W/E 9/26/21	WATER FUND	WATER		1,264.30
	W/E 10/03/21	WATER FUND	WATER		537.09
	W/E 9/5/21	SEWER FUND	SEWER		1,060.12
	W/E 9/19/21	SEWER FUND	SEWER		763.13
	W/E 9/19/21	SEWER FUND	SEWER		38.38
	W/E 9/26/21	SEWER FUND	SEWER		908.66
	W/E 9/26/21	SEWER FUND	SEWER		30.75
	W/E 10/03/21	SEWER FUND	SEWER		715.19
	W/E 10/03/21	SEWER FUND	SEWER		31.46
				TOTAL:	6,688.69
HACH COMPANY	AA	WATER FUND	WATER		646.50
	AA KTO	WATER FUND	WATER		546.00
				TOTAL:	1,192.50

VENDOR SORT KEY	DESCRIPTION	FUND	DEPARTMENT		AMOUNT
AMERIGAS	TANK RENTAL: ODEN DR	SEWER FUND	SEWER		139.00
				TOTAL:	139.00
APPLE VALLEY TIRE	NEW TIRES SEWER TRUCK	SEWER FUND	SEWER		869.40
				TOTAL:	869.40
JP & RF BURNS PARTNERSHIP	SEPT LOADS - 26	SEWER FUND	SEWER		4,654.00
				TOTAL:	4,654.00
CHARLES TOWN UTILITY BOARD	SEPTEMBER FUNDING	WATER FUND	NON-DEPARTMENTAL		10,660.71
				TOTAL:	10,660.71
CITY NATIONAL BANK	LOCKBOX SERVICES: SEPT	WATER FUND	WATER		1,689.56
	LOCKBOX SERVICES: SEPT	WATER FUND	WATER		719.72
	LOCKBOX SERVICES: SEPT	SEWER FUND	SEWER		1,689.55
	LOCKBOX SERVICES: SEPT	SEWER FUND	SEWER		719.72
				TOTAL:	4,818.55
CITY OF CHARLES TOWN	AUG UTILITIES@ 661 S GEORG	WATER FUND	WATER		626.50
	OCT RENT@ 661 S GEORGE ST	WATER FUND	WATER		1,275.00
	AUG UTILITIES@ 661 S GEORG	SEWER FUND	SEWER		626.50
	OCT RENT@ 661 S GEORGE ST	SEWER FUND	SEWER		1,275.00
				TOTAL:	3,803.00
CLIFFS CLEANING SERVICE	SEPT CLEANING	WATER FUND	WATER		125.00
	SEPT CLEANING	WATER FUND	WATER		365.00
	SEPT CLEANING	SEWER FUND	SEWER		200.00
	SEPT CLEANING	SEWER FUND	SEWER		100.00
	SEPT CLEANING	SEWER FUND	SEWER		365.00
				TOTAL:	1,155.00
COMCAST BUSINESS	8299 31 008 0138502	WATER FUND	WATER		116.07
	8299 31 008 0138502	SEWER FUND	SEWER		116.06
				TOTAL:	232.13
CORE & MAIN	CLARENCE DR	WATER FUND	WATER		483.15
	HYMAX 2 FLIP CPLG	WATER FUND	WATER		1,264.00
	RUBBR MTR GSKT	WATER FUND	WATER		210.00
	RESETTR	WATER FUND	WATER		3,060.24
	CPLGS	SEWER FUND	SEWER		2,166.00
	4TH AVE PS	SEWER FUND	SEWER		606.88
	PVC SDR13.5 PR315 PIPE	SEWER FUND	SEWER		204.00
	PVC SDR13.5 PR315 PIPE	SEWER FUND	SEWER		306.00
				TOTAL:	8,300.27
COYNE CHEMICAL	CP - 837	WATER FUND	WATER		2,760.00
	AMMONIUM SULFATE 40%	WATER FUND	WATER		1,157.00
	ZETAG 8868FS	SEWER FUND	SEWER		7,405.74
	CESPACL2040, MICROC2000	SEWER FUND	SEWER		2,495.24
	CESPACL 2000	SEWER FUND	SEWER		1,191.00
				TOTAL:	15,008.98
CRYSTAL SPRINGS	MONTHLY SVC@ 661 S GEORGE	WATER FUND	WATER		47.84
	MONTHLY SVC@ 661 S GEORGE	SEWER FUND	SEWER		47.85
				TOTAL:	95.69

CHARLES TOWN UTILITY BOARD

WASTEWATER OPERATION

COST OF SERVICE ALLOCATION STUDY AS OF JUNE 30, 2022

AND PROPOSED CUSTOMER RATES

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

Camp Hill, Pennsylvania

CONTENTS

PART I. INTRODUCTION

CHARLES TOWN UTILITY BOARD

WASTEWATER OPERATION

COST OF SERVICE ALLOCATION STUDY AS OF JUNE 30, 2022
AND PROPOSED CUSTOMER RATES

PART I. INTRODUCTION

PLAN OF REPORT

The report sets forth the results of the cost of service allocation study for Charles Town Utility Board (the Board) Wastewater Operation on pro forma costs as of June 30, 2022. Part I, Introduction, contains statements with respect to the basis of the study, the procedures employed, and a summary of the results of the study. Schedule A summarizes the cost allocation for the wastewater operations and total revenues under present and proposed rates, Options A and B. Part II, Cost of Service by Customer Classification - Wastewater Operations, presents detailed schedules of the allocation of costs to customer classifications, as well as the basis for the allocations. Part III, Comparisons of Present and Proposed Customer Rates, sets forth the proposed rate schedules for wastewater service.

BASIS OF STUDY

The method used for the allocation of wastewater cost of service incorporates the functional cost allocation methodology described in the text “Financing and Charges for Wastewater Systems”, Manual of Practice No. 27, published by the Water Environment Federation. This method is recognized for allocating the cost of providing wastewater service to customer classifications in proportion to the classifications' use of the commodity, facilities, and services. It is generally accepted as a sound method for allocating the cost of wastewater service. Under the functional cost method, costs are

assigned to cost components using predominant operational purposes as cost-causative factors.

Each element of the cost of service is allocated to customer classifications according to the functional categories. The cost functions are wastewater treatment, collection, infiltration and inflow (I&I), customer facilities and customer accounting. The functional costs are allocated to customer classifications based on the amount of flow contributed to the system, the amount of I&I allocated to each class, and the number and relative size of customers.

The results of the allocation of wastewater cost of service are summarized on Schedule A, column 2. The cost allocation results can be compared with revenues under present rates in column 4 Schedule A. The proposed rates under proposed rates, Option A and B are shown in columns 6 and 7.

Part II shows the detailed allocation study. The allocation from function to customer class is shown in Schedule B. The factors used in this schedule were developed on Schedule C. The cost of service by function is developed in Schedule D. The allocation factors referenced in column 2 are applied to the costs by account in column 3. The allocation factors are set forth in Schedule E.

Part III shows the proposed wastewater rates, Option A and B in Schedule F. The Board's direction for wastewater rates included the eventual consolidation of wastewater rates across the Board's various rate zones including Charles Town, Ranson and Jefferson County. Presently, the Charles Town and Ranson areas have rates that include a $29.58 minimum charge which includes 2,000 gallons of usage. The next 8,000 gallons per month is charged a volumetric rate of $10.64 (per 1,000 gallons) and over 10,000 gallons is charged a volumetric rate of $9.67 (per 1,000 gallons). Jefferson

County rates include a $30.72 minimum charge which include 2,000 gallons of usage. The next 8,000 gallons per month is charged a volumetric rate of $14.29 (per 1,000 gallons) and over 10,000 gallons is charged a volumetric rate of $13.98 (per 1,000 gallons). Rate Options A and B are similar as both options consolidate rates as of the 2028/2029 fiscal year. However, Option A maintains the current rate design and Option B revises the rate design to decrease the minimum to 1,000 gallons per month, instead of the current 2,000 gallons per month. Included as Schedules G and H are the bill analysis schedules for Options A and B showing the proof of revenue. Schedules I and J show an average bill comparison and comparative bills under Options A and B.

PART II. COST OF SERVICE STUDY

CHARLES TOWN UTILITY BOARD - WASTEWATER

COMPARISON OF COST OF SERVICE WITH REVENUES UNDER PRESENT RATES
FOR THE YEAR ENDING JUNE 30, 2022

Customer Classification	Cost of Service		Revenues, Present Rates		Proposed Rates	
	Amount	Percent	Amount	Percent	Option A	Option B
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Residential	$ 4,286,378	72.2%	$ 4,294,116	72.4%	4,315,640	4,330,396
Non Residential	1,646,713	27.8%	1,638,975	27.6%	1,615,889	1,603,663
Total Sales	5,933,091	100.0%	5,933,090	100.0%	5,931,529	5,934,060
Other Revenues	218,000		218,000			
Total	$ 6,151,091		$ 6,151,090			

CHARLES TOWN UTILITY BOARD - WASTEWATER

ALLOCATION OF COST OF SERVICE BY FUNCTION TO CUSTOMER CLASSIFICATIONS

Description	WWTP	Collection	Infiltration & Inflow	Customer Facilities	Customer Accounting	Total
(1)	(2)		(3)	(4)	(5)	(6)
Total Cost of Service	$ 3,301,951	$ 1,210,773	$ 951,835	$ 89,520	$ 379,011	$ 5,933,090
Factor Reference	A	A	C	B	B	
Residential						
Factor	0.6977	0.6977	0.7754	0.8533	0.8533	
Cost of Service	$ 2,303,771	$ 844,756.43	738,053	76,388	323,410	4,286,378
Non-Residential						
Factor	0.3023	0.3023	0.2246	0.1467	0.1467	
Cost of Service	$ 998,180	$ 366,016.72	213,782	13,133	55,601	$ 1,646,713
Total	3,301,951	1,210,773	951,835	89,521	379,011	5,933,091

CHARLES TOWN UTILITY BOARD - WASTEWATER

FACTORS FOR ALLOCATING COSTS BY FUNCTION TO CUSTOMER CLASSIFICATIONS

FACTOR A. ALLOCATION OF FLOW COSTS.

Factors are based on the pro forma test year average daily consumption for each customer classification.

Classification	Average Daily Consumption, 1,000 Gallons	Allocation Factor
(1)	(2)	(3)
Residential	7,968	0.6977
Non-Residential	3,452	0.3023
Total	11,421	1.0000

CHARLES TOWN UTILITY BOARD - WASTEWATER

FACTORS FOR ALLOCATING COSTS BY FUNCTION TO CUSTOMER CLASSIFICATIONS

FACTOR B. ALLOCATION OF COSTS ASSOCIATED WITH BILLING AND COLLECTING AND CUSTOMER FACILITIES

Factors are based on the number of bills.

Customer Classification	Number of Bills	Allocation Factor
(1)	(2)	(3)
Residential	86,651	0.8533
Non-Residential	14,900	0.1467
Total	101,551	1.0000

CHARLES TOWN UTILITY BOARD - WASTEWATER

FACTORS FOR ALLOCATING COSTS BY FUNCTION TO CUSTOMER CLASSIFICATIONS

FACTOR C. ALLOCATION OF COSTS ASSOCIATED WITH INFILTRATION AND INFLOW.

Factors are based on a 50/50 weighting of flow and number of customers.

Customer Classification	Average Daily Flow		Number of Bills		Allocation Factor
	Factor A	Weight	Factor C	Weight	
(1)	(2)	(3)=(2) x 0.50	(4)	(5)=(4) x 0.50	(6)=(3)+(5)
Residential	0.6977	0.3488	0.8533	0.4266	0.7754
Non-Residential	0.3023	0.1512	0.1467	0.0734	0.2246
Total	1.0000	0.5000	1.0000	0.5000	1.0000

CHARLES TOWN UTILITY BOARD
WASTEWATER COST OF SERVICE
COST OF SERVICE ALLOCATED TO COST FUNCTIONS FOR THE YEAR ENDING JUNE 30, 2022

Account	Factor Ref.	Cost of Service	WWTP	Collection	Infiltration & Inflow	Customer Facilities	Customer Accounting
(1)	(2)	(3)	(4)	(5)	(4)	(5)	(6)
OPERATION AND MAINTENANCE EXPENSES							
Maintenance of Service Connections	4	18,000	-	-	-	18,000	-
Maint. Of Collecting & Trans. Mains	2	350,000	-	294,000	56,000	-	-
Pumping Operations Labor	2	308,000	-	258,720	49,280	-	-
Power & Fuel - Pumping	2	120,000	-	100,800	19,200	-	-
Supplies & Expense - Pumping	2	40,000	-	33,600	6,400	-	-
Maint. Structures & Improvements	2	300,000	-	252,000	48,000	-	-
Treatment Operations Labor	1	213,000	178,920	-	34,080	-	-
Power - CT Plant	1	150,000	126,000	-	24,000	-	-
Power - TUI	1	75,000	63,000	-	12,000	-	-
Chemical Expense - CT	1	190,000	159,600	-	30,400	-	-
Chemical Expense - TUI	1	20,000	16,800	-	3,200	-	-
Laboratory Supplies & Expense - CT	1	30,000	25,200	-	4,800	-	-
Laboratory Supplies & Expense - TUI	1	5,000	4,200	-	800	-	-
Supplies & Expense - Treatment	1	100,000	84,000	-	16,000	-	-
Maint. Pumping Equipment - CT	1	40,000	33,600	-	6,400	-	-
Maint. Pumping Equipment - TUI	1	30,000	25,200	-	4,800	-	-
Maint. Burns Farm	1	125,000	105,000	-	20,000	-	-
Maint. Treatment & Disposal - CT	1	200,000	168,000	-	32,000	-	-
Maint. Treatment & Disposal - TUI	1	50,000	42,000	-	8,000	-	-
Billing, Collecting & Accounting Labor	3	206,000	-	-	-	-	206,000
Billing Fees Expense	3	84,000	-	-	-	-	84,000
Bad Debt Expense - Uncollectible Accounts	3	63,000	-	-	-	-	63,000
Admin. & General Salaries	5	191,000	95,500	35,163	44,255	15,127	955
Employee Insurance & Benefits	6	125,000	43,100	46,150	20,038	2,375	13,338
Employee Pension Expense	6	92,000	31,722	33,966	14,748	1,748	9,816
Payroll Taxes - FICA Tax Expense	6	72,500	24,998	26,767	11,622	1,377	7,736
OPEB (other post empl. benefits)	6	27,000	9,310	9,968	4,328	513	2,881
Office Supplies & Expense	5	135,000	67,500	24,854	31,280	10,692	675
Maint. of General Property	5	35,000	17,500	6,444	8,110	2,772	175
Contractual Services	5	300,000	150,000	55,230	69,510	23,760	1,500
Transportation Expense	5	55,000	27,500	10,126	12,744	4,356	275
Insurance	5	100,000	50,000	18,410	23,170	7,920	500
Workers Comp	5	36,000	18,000	6,628	8,341	2,851	180
Regulatory Commission Expense	7	30,000	16,707	6,126	4,800	441	1,926
Bond Administration Fees	8	71,000	58,540	1,101	11,360	-	-
Misc. General Expense	5	10,000	5,000	1,841	2,317	792	50
TOTAL OPERATION AND MAINTENANCE EXPENSES		3,996,500	1,646,896	1,221,893	641,980	92,725	393,007
DEBT SERVICE	8	1,561,878	1,287,768	24,209	249,900	-	-
TOTAL OPERATING EXPENSE - CASH BASIS		5,558,378	2,934,664	1,246,102	891,881	92,725	393,007

CHARLES TOWN UTILITY BOARD
WASTEWATER COST OF SERVICE
COST OF SERVICE ALLOCATED TO COST FUNCTIONS FOR THE YEAR ENDING JUNE 30, 2022

Account	Factor Ref.	Cost of Service	WWTP	Collection	Infiltration & Inflow	Customer Facilities	Customer Accounting
(1)	(2)	(3)	(4)	(5)	(4)	(5)	(6)
COVERAGE/RESERVE FOR RENEWALS AND REPLACE.	8	592,712	488,691	9,187	94,834	-	-
TOTAL COST OF SERVICE		6,151,090	3,423,356	1,255,289	986,715	92,725	393,007
OTHER REVENUES							
Forfeited Discounts	7	122,000	67,942	24,912	19,520	1,793	7,832
Miscellaneous Revenue	7	83,000	46,223	16,949	13,280	1,220	5,329
Interest Income	7	13,000	7,240	2,655	2,080	191	835
TOTAL OTHER REVENUES		218,000	121,404	44,516	34,880	3,205	13,996
TOTAL COST OF SERVICE RELATED TO SALES OF WASTEWATER SERVICES		5,933,090	3,301,951	1,210,773	951,835	89,520	379,011

CHARLES TOWN UTILITY BOARD - WASTEWATER

FACTORS FOR ALLOCATING COST OF SERVICE TO COST FUNCTIONS

Reference	WWTP	Collection	Infiltration & Inflow	Customer Facilities	Customer Accounting	Total
Factor 1 - Treatment	0.8400		0.1600			1.0000
Factor 2 - Collection & I&I		0.8400	0.1600			1.0000
Factor 3 - Customer Accounting					1.0000	1.0000
Factor 4 - Customer Facilities				1.0000		1.0000
Factor 5 - Administrative and General						-
Factor 6 - Labor Related Expenses	0.3448	0.3692	0.1603	0.0190	0.1067	1.0000
Factor 7 - Total Cost of Service	0.5569	0.2042	0.1600	0.0147	0.0642	1.0000
Factor 8 - Debt Service	0.8245	0.0155	0.1600			1.0000

PART III. RATE DESIGN

CHARLES TOWN UTILITY BOARD
OPTION A
COMPARISON OF PRESENT AND PROPOSED RATES

Charles Town and Ranson

	2021/2022 Rates	2022/2023 Rates	2023/2024 Rates	2024/2025 Rates	2025/2026 Rates	2026/2027 Rates	2027/2028 Rates	2028/2029 Rates
Minimum Charge - All Meter Sizes	$ 29.58	$ 29.86	$ 30.16	$ 30.46	$ 30.76	$ 31.06	$ 31.38	$ 31.66
Consumption Charges (per 1000 gallons)								
First 2,000 gallons	-	-	-	-	-	-	-	-
Next 8,000 gallons	$ 10.640	$ 10.749	$ 10.858	$ 10.967	$ 11.076	$ 11.185	$ 11.294	$ 11.400
Over 10,000 gallons	$ 9.670	$ 9.769	$ 9.868	$ 9.967	$ 10.066	$ 10.165	$ 10.264	$ 10.361

Jefferson County

Minimum Charge - All Meter Sizes	$ 30.72	$ 30.85	$ 30.98	$ 31.11	$ 31.24	$ 31.37	$ 31.50	$ 31.66
Consumption Charges (per 1000 gallons)								
First 2,000 gallons	-	-	-	-	-	-	-	-
Next 8,000 gallons	$ 14.290	$ 13.877	$ 13.464	$ 13.051	$ 12.638	$ 12.225	$ 11.812	$ 11.400
Over 10,000 gallons	$ 13.980	$ 13.463	$ 12.946	$ 12.429	$ 11.912	$ 11.395	$ 10.878	$ 10.361
Flat Rate	$ 49.30	$ 48.89	$ 48.48	$ 48.08	$ 47.67	$ 47.26	$ 46.86	$ 46.48

CHARLES TOWN UTILITY BOARD
OPTION B
COMPARISON OF PRESENT AND PROPOSED RATES

Charles Town and Ranson

	2020/2021 Rates	2021/2022 Rates	2022/2023 Rates	2023/2024 Rates	2024/2025 Rates	2025/2026 Rates	2026/2027 Rates	2027/2028 Rates	2028/2029 Rates
Minimum Charge - All Meter Sizes	$ 28.14	$ 29.58	$ 23.30	$ 22.80	$ 22.35	$ 21.85	$ 21.50	$ 21.00	$ 20.55
Consumption Charges (per 1000 gallons)									
First 2,000 gallons/1000 gallons		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Next 8,000 gallons/9,000 gallons	$ 10.120	$ 10.640	$ 10.861	$ 11.082	$ 11.303	$ 11.524	$ 11.745	$ 11.966	$ 12.185
Over 10,000 gallons	$ 9.200	$ 9.670	$ 9.871	$ 10.072	$ 10.273	$ 10.473	$ 10.674	$ 10.875	$ 11.074

Jefferson County

Minimum Charge - All Meter Sizes	$ 33.22	$ 30.72	$ 16.25	$ 17.00	$ 17.75	$ 18.50	$ 19.00	$ 19.80	$ 20.55
Consumption Charges (per 1000 gallons)									
First 2,000 gallons/1000 gallons		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Next 8,000 gallons/9,000 gallons	$ 16.610	$ 14.290	$ 13.989	$ 13.688	$ 13.387	$ 13.086	$ 12.785	$ 12.484	$ 12.185
Over 10,000 gallons	$ 16.610	$ 13.980	$ 12.714	$ 12.440	$ 12.167	$ 11.893	$ 11.620	$ 11.346	$ 11.074
Flat Rate	$ 58.14	$ 49.30	$ 48.42	$ 48.48	$ 48.54	$ 48.60	$ 48.41	$ 48.51	$ 48.58

CHARLES TOWN UTILITY BOARD - WASTEWATER

SUMMARY OF REVENUE UNDER PRESENT RATES

2019/2020

	Charles Town			Ranson			County			
Class	City	Sani. Assoc.	Total	Area 1	Area 2	Total	Area 1	Area 2	Total	Total
Residential	1,615,789	76,951	1,692,740	525,270	324,647	849,918	869,581	803,964	1,673,545	4,216,203
Flat Rate			-			-	77,913		77,913	77,913
Total Residential	1,615,789	76,951	1,692,740	525,270	324,647	849,918	947,494	803,964	1,751,458	4,294,116
Commercial	492,973	107,996	600,969	304,098	101,124	405,223	410,153	94,809	504,962	1,511,154
Industrial			-			-	9,519	2,008	11,527	11,527
Public			-		922	922		115,372	115,372	116,294
Total	$ 2,108,762	$ 184,947	$ 2,293,709	$ 829,369	$ 426,694	$1,256,063	$ 1,367,165	$1,016,153	$ 2,383,319	$ 5,933,090

SUMMARY OF REVENUE UNDER PROPOSED RATES - OPTION A

2028/2029

	Charles Town			Ranson			County			
Class	City	Sani. Assoc.	Total	Area 1	Area 2	Total	Area 1	Area 2	Total	Total
Residential	1,730,063	82,390	1,812,453	541,009	342,562	883,572	805,706	740,449	1,546,155	4,242,179
Flat Rate			-			-	73,461		73,461	73,461
Total Residential	1,730,063	82,390	1,812,453	541,009	342,562	883,572	879,167	740,449	1,619,616	4,315,640
Commercial	527,920	115,671	643,591	356,980	121,079	478,059	317,113	79,215	396,328	1,517,978
Industrial			-			-	7,256	1,667	8,923	8,923
Public			-		940	940		88,048	88,048	88,988
Total	$ 2,257,983	$ 198,060	$ 2,456,043	$ 897,989	$ 464,582	$1,362,571	$ 1,203,536	$ 909,379	$ 2,112,915	$ 5,931,529
	7.08%	7.09%	7.08%	8.27%	8.88%	8.48%	-11.97%	-10.51%	-11.35%	-0.03%

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
CHARLES TOWN
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rates	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Residential - Monthly			
1 EDUs	34,666	-	$ 29.58	$ 1,025,408	$ 31.66	$ 1,097,512
Subtotal	34,666	-		1,025,408		1,097,512
First 2,000 gallons		59,519	$ -	$ -	$ -	$ -
Next 8,000 gallons		53,223	$ 10.640	566,293	$ 11.400	606,742
Over 10,000 gallons		2,491	$ 9.670	24,088	$ 10.361	25,809
Subtotal		115,233		590,381		632,551
Total Residential	34,666	115,233		$ 1,615,789		$ 1,730,063
			Commercial - Monthly			
1 EDUs	8,270	-	$ 29.58	$ 244,634	$ 31.66	$ 261,837
Subtotal	8,270	-		244,634		261,837
First 2,000 gallons		12,451	$ -	$ -	$ -	$ -
Next 8,000 gallons		7,122	$ 10.640	75,778	$ 11.400	81,191
Over 10,000 gallons		17,845	$ 9.670	172,561	$ 10.361	184,892
Subtotal		37,418		248,339		266,083
Total Commercial	8,270	37,418		$ 492,973		$ 527,920
Total Charles Town	42,936	152,651		$ 2,108,762		$ 2,257,983

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
SANITARY ASSOCIATES
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Residential - Monthly			
1 EDUs	1,764	-	$ 29.58	$ 52,166	$ 31.66	$ 55,834
Subtotal	1,764	-		52,166		55,834
First 2,000 gallons		3,087	$ -	-	$ -	-
Next 8,000 gallons		2,274	$ 10.640	24,195	$ 11.400	25,924
Over 10,000 gallons		61	$ 9.670	590	$ 10.361	632
Subtotal		5,422		24,785		26,556
Total Residential	1,764	5,422		$ 76,951		$ 82,390
			Commercial - Monthly			
1 EDUs	1,240	-	$ 29.58	$ 36,679	$ 31.66	$ 39,258
Subtotal	1,240	-		36,679		39,258
First 2,000 gallons		2,068	$ -	$ -	$ -	$ -
Next 8,000 gallons		1,137	$ 10.640	12,098	$ 11.400	12,962
Over 10,000 gallons		6,124	$ 9.670	59,219	$ 10.361	63,451
Subtotal		9,329		71,317		76,413
Total Commercial	1,240	9,329		$ 107,996		$ 115,671
Total Sanitary Associates	3,004	14,751		$ 184,947		$ 198,060

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
RANSON
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Residential - Monthly			
1 EDUs	12,602	-	$ 29.58	$ 372,757	$ 29.00	$ 365,448
Subtotal	12,602	-		372,757		365,448
First 2,000 gallons		19,740	$ -	-	$ -	-
Next 8,000 gallons		13,596	$ 10.640	144,661	$ 12.185	165,667
Over 10,000 gallons		812	$ 9.670	7,852	$ 12.185	9,894
Subtotal		34,148		152,513		175,561
Total Residential	12,602	34,148		$ 525,270		$ 541,009
			Commercial - Monthly			
1 EDUs	2,693	-	$ 29.58	$ 79,656	$ 29.00	$ 78,095
Subtotal	2,693	-		79,656		78,095
First 2,000 gallons		3,355	$ -	-	$ -	-
Next 8,000 gallons		3,039	$ 10.640	32,335	$ 12.185	$ 37,030
Over 10,000 gallons		8,541	$ 9.670	82,591	$ 12.185	104,072
Subtotal		14,935		114,926		141,102
Subtotal	2,693	14,935		$ 194,582		$ 219,197

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
RANSON
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Race Course- Monthly			
1 EDUs	12	-	$ 29.58	$ 355	$ 29.00	$ 348
Subtotal	12	-		355		348
First 2,000 gallons		24	$ -	-	$ -	-
Next 8,000 gallons		96	$ 10.640	1,021	$ 12.185	$ 1,170
Over 10,000 gallons		11,183	$ 9.670	108,140	$ 12.185	136,265
Subtotal		11,303		109,161		137,435
Total Race Track	12	11,303		$ 109,516		$ 137,783
Total Commericial	2,705	26,238		$ 304,098		$ 356,980
Total Ranson	15,307	60,386		$ 829,369		$ 897,989

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
RANSON - JEFFERSON COUNTY COLLECTIONS
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Residential - Monthly			
1 EDUs	6,238		$ 29.58	$ 184,510	$ 29.00	$ 180,892
Subtotal	6,238	-		184,510		180,892
First 2,000 gallons		11,485	$ -	-	$ -	-
Next 8,000 gallons		12,202	$ 10.640	129,829	$ 12.185	148,681
Over 10,000 gallons		1,066	$ 9.670	10,308	$ 12.185	12,989
Subtotal		24,753		140,137		161,670
Total Residential	6,238	24,753		$ 324,647		$ 342,562
			Commercial - Monthly			
1 EDUs	486		$ 29.58	$ 14,389	$ 29.00	$ 14,107
Subtotal	486	-		14,389		14,107
		672	$ -	-	$ -	-
Next 8,000 gallons		1,899	$ 10.640	20,205	$ 12.185	$ 23,139
Over 10,000 gallons		6,880	$ 9.670	66,530	$ 12.185	83,833
Subtotal		9,451		86,735		106,972
Total Commercial	486	9,451		$ 101,124		$ 121,079

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
RANSON - JEFFERSON COUNTY COLLECTIONS
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Public - Monthly			
1 EDUs	24		$ 29.58	$ 710	$ 29.00	$ 696
Subtotal	24	-		710		696
		32	$ -	-	$ -	-
Next 8,000 gallons		20	$ 10.640	207	$ 12.185	238
Over 10,000 gallons		1	$ 9.670	5	$ 12.185	6
Subtotal		52		212		244
Total Public	24	52		$ 922		$ 940
Total Ranson	6,748	34,256		$ 426,694		$ 464,582

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
JEFFERSON COUNTY
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Residential - Monthly			
1 EDUs	15,803	-	$ 30.72	$ 485,460	$ 31.66	$ 500,314
Subtotal	15,803	-		485,460		500,314
First 2,000 gallons		27,943	$ -	-	$ -	-
Next 8,000 gallons		25,589	$ 14.290	365,667	$ 11.400	291,715
Over 10,000 gallons		1,320	$ 13.980	18,454	$ 10.361	13,677
Subtotal		54,852		384,121		305,392
Metered Residential	15,803	54,852		869,581		805,706
			Flat Rate - Monthly			
1 EDUs	1,580		$ 49.30	$ 77,913	$ 46.48	$ 73,461
Total Flat Rate	1,580	-		77,913		73,461
Total Residential	17,383	54,852		947,494		879,167
			Commercial - Monthly			
1 EDUs	1,076	-	$ 30.72	$ 33,044	$ 31.66	$ 34,055
Subtotal	1,076	-		33,044		34,055
First 2,000 gallons		1,778	$ -	-	$ -	-
Next 8,000 gallons		4,413	$ 14.290	63,062	$ 11.400	$ 50,308
Over 10,000 gallons		22,464	$ 13.980	314,047	$ 10.361	232,750
Subtotal		28,655		377,109		283,058
Total Commercial	1,076	28,655		$ 410,153		$ 317,113

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
JEFFERSON COUNTY
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Industrial - Monthly			
1 EDUs	14	28	$ 30.72	$ 430	$ 31.66	$ 443
Subtotal	14	28		430		443
First 2,000 gallons		28	$ -	-	$ -	-
Next 8,000 gallons		96	$ 14.290	1,372	$ 11.400	1,094
Over 10,000 gallons		552	$ 13.980	7,717	$ 10.361	5,719
Subtotal		676		9,089		6,813
Total Public	14	704		$ 9,519		$ 7,256
Total Ranson	18,473	84,211		1,367,165		1,203,536

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
JEFFERSON COUNTY
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Residential - Monthly						
1 EDUs	13,999	-	$ 30.72	$ 430,051	$ 31.66	$ 443,210
Subtotal	13,999	-		430,051		443,210
First 2,000 gallons		25,037	$ -	-	$ -	-
Next 8,000 gallons		24,863	$ 14.290	355,292	$ 11.400	283,438
Over 10,000 gallons		1,332	$ 13.980	18,621	$ 10.361	13,801
Subtotal		51,232		373,913		297,239
Total Residential	13,999	51,232		$ 803,964		$ 740,449
Commercial - Monthly						
1 EDUs	868	-	$ 30.72	$ 26,660	$ 31.66	$ 27,476
Subtotal	868	-		26,660		27,476
First 2,000 gallons		1,117	$ -	-	$ -	-
Next 8,000 gallons		1,522	$ 14.290	21,749	$ 11.400	$ 17,351
Over 10,000 gallons		3,319	$ 13.980	46,400	$ 10.361	34,388
Subtotal		5,958		68,149		51,739
Total Commercial	868	5,958		$ 94,809		$ 79,215

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
JEFFERSON COUNTY
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Industrial - Monthly			
1 EDUs	12	-	$ 30.72	$ 369	$ 31.66	$ 380
Subtotal	12	-		369		380
First 2,000 gallons		24	$ -	-	$ -	-
Next 8,000 gallons		88	$ 14.290	1,262	$ 11.400	1,007
Over 10,000 gallons		27	$ 13.980	377	$ 10.361	280
Subtotal		139		1,639		1,287
Total Public	12	139		$ 2,008		$ 1,667
			Public - Monthly			
1 EDUs	205	-	$ 30.72	$ 6,298	$ 31.66	$ 6,490
Subtotal	205	-		6,298		6,490
First 2,000 gallons		340	$ -	-	$ -	-
Next 8,000 gallons		889	$ 14.290	12,704	$ 11.400	10,135
Over 10,000 gallons		6,893	$ 13.980	96,370	$ 10.361	71,423
Subtotal		8,122		109,074		81,558
Total Public	205	8,122		$ 115,372		$ 88,048
Total County	15,084	65,452		$ 1,016,153		$ 909,379

CHARLES TOWN UTILITY BOARD - WASTEWATER

SUMMARY OF REVENUE UNDER PRESENT RATES

2021/2022

	Charles Town			Ranson			County			
Class	City	Sani. Assoc.	Total	Area 1	Area 2	Total	Area 1	Area 2	Total	Total
Residential	1,615,789	76,951	1,692,740	525,270	324,647	849,918	869,581	803,964	1,673,545	4,216,203
Flat Rate			-			-	77,913		77,913	77,913
Total Residential	1,615,789	76,951	1,692,740	525,270	324,647	849,918	947,494	803,964	1,751,458	4,294,116
Commercial	492,973	107,996	600,969	304,098	101,124	405,223	410,153	94,809	504,962	1,511,154
Industrial			-			-	9,519	2,008	11,527	11,527
Public			-		922	922		115,372	115,372	116,294
Total	$ 2,108,762	$ 184,947	$ 2,293,709	$ 829,369	$ 426,694	$ 1,256,063	$ 1,367,165	$ 1,016,153	$ 2,383,319	$ 5,933,090

SUMMARY OF REVENUE UNDER PROPOSED RATES - OPTION B

2028/2029

	Charles Town			Ranson			County			
Class	City	Sani. Assoc.	Total	Area 1	Area 2	Total	Area 1	Area 2	Total	Total
Residential	1,720,272	81,849	1,802,122	538,875	355,384	894,259	809,122	748,121	1,557,242	4,253,623
Flat Rate			-			-	76,773		76,773	76,773
Total Residential	1,720,272	81,849	1,802,122	538,875	355,384	894,259	885,895	748,121	1,634,015	4,330,396
Commercial	517,282	117,676	634,958	338,562	113,078	451,639	334,571	78,628	413,199	1,499,796
Industrial			-			-	7,741	1,768	9,509	9,509
Public			-		891	891		93,467	93,467	94,358
Total	$ 2,237,554	$ 199,525	$ 2,437,079	$ 877,437	$ 469,353	$ 1,346,789	$ 1,228,207	$ 921,984	$ 2,150,191	$ 5,934,060
	6.11%	7.88%	6.25%	5.80%	10.00%	7.22%	-10.16%	-9.27%	-9.78%	0.02%
										$ 969

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
CHARLES TOWN
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rates	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Residential - Monthly				
1 EDUs	34,666	-	$ 29.58	$ 1,025,408		$ 20.55	$ 712,378
Subtotal	34,666	-		1,025,408			712,378
First 2,000 gallons/1000 gallons		59,519	$ -	$ -	32,290	$ -	$ -
Next 8,000 gallons		53,223	$ 10.640	566,293	80,452	$ 12.185	980,309
Over 10,000 gallons		2,491	$ 9.670	24,088	2,491	$ 11.074	27,586
Subtotal		115,233		590,381	115,233		1,007,894
Total Residential	34,666	115,233		$ 1,615,789	115,233		$ 1,720,272
			Commercial - Monthly				
1 EDUs	8,270	-	$ 29.58	$ 244,634		$ 20.55	$ 169,954
Subtotal	8,270	-		244,634			169,954
First 2,000 gallons		12,451	$ -	$ -	7,287	$ -	$ -
Next 8,000 gallons		7,122	$ 10.640	75,778	12,286	$ 12.185	149,710
Over 10,000 gallons		17,845	$ 9.670	172,561	17,845	$ 11.074	197,617
Subtotal		37,418		248,339	37,418		347,328
Total Commercial	8,270	37,418		$ 492,973	37,418		$ 517,282
Total Charles Town	42,936	152,651		$ 2,108,762	152,651		$ 2,237,554

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
SANITARY ASSOCIATES
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residential - Monthly							
1 EDUs	1,764	-	$ 29.58	$ 52,166		$ 20.55	$ 36,241
Subtotal	1,764	-		52,166			36,241
First 2,000 gallons		3,087	$ -	-	1,673	$ -	-
Next 8,000 gallons		2,274	$ 10.640	24,195	3,688	$ 12.185	44,933
Over 10,000 gallons		61	$ 9.670	590	61	$ 11.074	676
Subtotal		5,422		24,785	5,422		45,608
Total Residential	1,764	5,422		$ 76,951	5,422		$ 81,849
Commercial - Monthly							
1 EDUs	1,240	-	$ 29.58	$ 36,679		$ 20.55	$ 25,482
Subtotal	1,240	-		36,679			25,482
First 2,000 gallons		2,068	$ -	$ -	$ 1,205	$ -	-
Next 8,000 gallons		1,137	$ 10.640	12,098	2,001	$ 12.185	24,376
Over 10,000 gallons		6,124	$ 9.670	59,219	6,124	$ 11.074	67,818
Subtotal		9,329		71,317	9,329		92,194
Total Commercial	1,240	9,329		$ 107,996	9,329		$ 117,676
Total Sanitary Associates	3,004	14,751		$ 184,947	14,751		$ 199,525

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
RANSON
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Residential - Monthly				
1 EDUs	12,602	-	$ 29.58	$ 372,757		$ 20.55	$ 258,964
Subtotal	12,602	-		372,757			258,964
First 2,000 gallons		19,740	$ -	-	11,102	$ -	-
Next 8,000 gallons		13,596	$ 10.640	144,661	22,234	$ 12.185	270,919
Over 10,000 gallons		812	$ 9.670	7,852	812	$ 11.074	8,992
Subtotal		34,148		152,513	34,148		279,911
Total Residential	12,602	34,148		$ 525,270	34,148		$ 538,875
			Commercial - Monthly				
1 EDUs	2,693	-	$ 29.58	$ 79,656		$ 20.55	$ 55,339
Subtotal	2,693	-		79,656			55,339
First 2,000 gallons		3,355	$ -	-	1,205	$ -	-
Next 8,000 gallons		3,039	$ 10.640	32,335	5,190	$ 12.185	63,234
Over 10,000 gallons		8,541	$ 9.670	82,591	8,541	$ 11.074	94,584
Subtotal		14,935		114,926	14,935		157,818
Subtotal	2,693	14,935		$ 194,582	14,935		$ 213,157

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
RANSON
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Race Course- Monthly				
1 EDUs	12	-	$ 29.58	$ 355		$ 20.55	$ 247
Subtotal	12	-		355			247
First 2,000 gallons		24	$ -	-	12	$ -	-
Next 8,000 gallons		96	$ 10.640	1,021	108	$ 12.185	1,316
Over 10,000 gallons		11,183	$ 9.670	108,140	11,183	$ 11.074	123,842
Subtotal		11,303		109,161	11,303		125,158
Total Race Track	12	11,303		$ 109,516	11,303		$ 125,405
Total Commercial	2,705	26,238		$ 304,098	26,238		$ 338,562
Total Ranson	15,307	60,386		$ 829,369	60,386		$ 877,437

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
RANSON - JEFFERSON COUNTY COLLECTIONS
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residential - Monthly							
1 EDUs	6,238		$ 29.58	$ 184,510		$ 20.55	$ 128,184
Subtotal	6,238	-		184,510			128,184
First 2,000 gallons		11,485	$ -	-	6,010	$ -	-
Next 8,000 gallons		12,202	$ 10.640	129,829	17,677	$ 12.185	215,395
Over 10,000 gallons		1,066	$ 9.670	10,308	1,066	$ 11.074	11,805
Subtotal		24,753		140,137	24,753		227,200
Total Residential	6,238	24,753		$ 324,647	24,753		$ 355,384
Commercial - Monthly							
1 EDUs	486		$ 29.58	$ 14,389		$ 20.55	$ 9,996
Subtotal	486	-		14,389			9,996
		672	$ -	-	364	$ -	-
Next 8,000 gallons		1,899	$ 10.640	20,205	2,207	$ 12.185	26,892
Over 10,000 gallons		6,880	$ 9.670	66,530	6,880	$ 11.074	76,190
Subtotal		9,451		86,735	9,451		103,082
Total Commercial	486	9,451		$ 101,124	9,451		$ 113,078

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
RANSON - JEFFERSON COUNTY COLLECTIONS
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Public - Monthly				
1 EDUs	24		$ 29.58	$ 710		$ 20.55	$ 493
Subtotal	24	-		710			493
		32	$ -	-	20	$ -	-
Next 8,000 gallons		20	$ 10.640	207	32	$ 12.185	392
Over 10,000 gallons		1	$ 9.670	5	1	$ 11.074	6
Subtotal		52		212	52		398
Total Public	24	52		$ 922	52		$ 891
Total Ranson	6,748	34,256		$ 426,694	34,256		$ 469,353

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
JEFFERSON COUNTY
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Residential - Monthly				
1 EDUs	15,803	-	$ 30.72	$ 485,460		$ 20.55	$ 324,746
Subtotal	15,803	-		485,460			324,746
First 2,000 gallons		27,943	$ -	-	14,980	$ -	-
Next 8,000 gallons		25,589	$ 14.290	365,667	38,552	$ 12.185	469,758
Over 10,000 gallons		1,320	$ 13.980	18,454	1,320	$ 11.074	14,618
Subtotal		54,852		384,121	54,852		484,376
Metered Residential	15,803	54,852		869,581	54,852		809,122
			Flat Rate - Monthly				
1 EDUs	1,580		$ 49.30	$ 77,913		$ 48.58	$ 76,773
Total Flat Rate	1,580	-		77,913	-		76,773
Total Residential	17,383	54,852		947,494	54,852		885,895
			Commercial - Monthly				
1 EDUs	1,076	-	$ 30.72	$ 33,044		$ 20.55	$ 22,105
Subtotal	1,076	-		33,044			22,105
First 2,000 gallons		1,778	$ -	-	964	$ -	-
Next 8,000 gallons		4,413	$ 14.290	63,062	5,228	$ 12.185	63,697
Over 10,000 gallons		22,464	$ 13.980	314,047	22,464	$ 11.074	248,769
Subtotal		28,655		377,109	28,655		312,466
Total Commercial	1,076	28,655		$ 410,153	28,655		$ 334,571

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
JEFFERSON COUNTY
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Industrial - Monthly				
1 EDUs	14	-	$ 30.72	$ 430		$ 20.55	$ 288
Subtotal	14	-		430			288
First 2,000 gallons		28	$ -	-	14	$ -	-
Next 8,000 gallons		96	$ 14.290	1,372	110	$ 12.185	1,340
Over 10,000 gallons		552	$ 13.980	7,717	552	$ 11.074	6,113
Subtotal		676		9,089	676		7,453
Total Public	14	676		$ 9,519	676		$ 7,741
Total Ranson	18,473	84,183		1,367,165	84,183		1,228,207

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
JEFFERSON COUNTY
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residential - Monthly							
1 EDUs	13,999	-	$ 30.72	$ 430,051		$ 20.55	$ 287,680
Subtotal	13,999	-		430,051			287,680
First 2,000 gallons		25,037	$ -	-	13,323	$ -	-
Next 8,000 gallons		24,863	$ 14.290	355,292	36,577	$ 12.185	445,690
Over 10,000 gallons		1,332	$ 13.980	18,621	1,332	$ 11.074	14,751
Subtotal		51,232		373,913	51,232		460,441
Total Residential	13,999	51,232		$ 803,964	51,232		$ 748,121
Commercial - Monthly							
1 EDUs	868	-	$ 30.72	$ 26,660		$ 20.55	$ 17,834
Subtotal	868	-		26,660			17,834
First 2,000 gallons		1,117	$ -	-	666	$ -	-
Next 8,000 gallons		1,522	$ 14.290	21,749	1,973	$ 12.185	24,039
Over 10,000 gallons		3,319	$ 13.980	46,400	3,319	$ 11.074	36,755
Subtotal		5,958		68,149	5,958		60,794
Total Commercial	868	5,958		$ 94,809	5,958		$ 78,628

CHARLES TOWN UTILITY BOARD - WASTEWATER BILL ANALYSIS
JEFFERSON COUNTY
APPLICATION OF PRESENT AND PROPOSED RATES TO CONSUMPTION ANALYSIS
FOR THE MONTH ENDED DECEMBER 31, 2020

Rate Block, 1000 Gallons	Number of Bills	Consumption, 1000 Gallons	2021/2022 Rate	2021/2022 Revenue	Proposed Consumption, 1000 Gallons	2028/2029 Rate	2028/2029 Revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Industrial - Monthly				
1 EDUs	12	-	$ 30.72	$ 369		$ 20.55	$ 247
Subtotal	12	-		369			247
First 2,000 gallons		24	$ -	-	12	$ -	-
Next 8,000 gallons		88	$ 14.290	1,262	100	$ 12.185	1,222
Over 10,000 gallons		27	$ 13.980	377	27	$ 11.074	299
Subtotal		139		1,639	139		1,521
Total Public	12	139		$ 2,008	139		$ 1,768
			Public - Monthly				
1 EDUs	205	-	$ 30.72	$ 6,298		$ 20.55	$ 4,213
Subtotal	205	-		6,298			4,213
First 2,000 gallons		340	$ -	-	169	$ -	-
Next 8,000 gallons		889	$ 14.290	12,704	1,060	$ 12.185	12,916
Over 10,000 gallons		6,893	$ 13.980	96,370	6,893	$ 11.074	76,338
Subtotal		8,122		109,074	8,122		89,254
Total Public	205	8,122		$ 115,372	8,122		$ 93,467
Total County	15,084	65,452		$ 1,016,153	65,452		$ 921,984

CHARLES TOWN UTILITY BOARD
OPTION A
COMPARISON OF PRESENT AND PROPOSED RATES

Average Bills	2021/2022 Rates	2022/2023 Rates	2023/2024 Rates	2024/2025 Rates	2025/2026 Rates	2026/2027 Rates	2027/2028 Rates	2028/2029 Rates	Cumulative Change
Charles Town and Ranson:									
Residential at 3,300 gallons	$ 43.41	$ 43.83	$ 44.28	$ 44.72	$ 45.16	$ 45.60	$ 46.06	$ 46.48	$ 46.48
$ Increase		$ 0.42	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.46	$ 0.42	$ 3.07
Percentage Change		0.97%	1.01%	1.00%	0.99%	0.98%	1.01%	0.91%	7.07%
Non-Residential at 8,450 gallons	$ 98.21	$ 99.19	$ 100.19	$ 101.20	$ 102.20	$ 103.20	$ 104.23	$ 105.19	$ 105.19
$ Increase		$ 0.98	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.02	$ 0.96	$ 6.98
Percentage Change		1.00%	1.01%	1.00%	0.99%	0.98%	0.99%	0.92%	7.11%
Race Course at 940,000 Monthly	$ 9,107.80	$ 9,201.02	$ 9,294.26	$ 9,387.51	$ 9,480.75	$ 9,573.99	$ 9,667.25	$ 9,758.59	$ 9,758.59
$ Increase		$ 93.22	$ 93.24	$ 93.24	$ 93.24	$ 93.24	$ 93.26	$ 91.34	$ 650.79
Percentage Change		1.02%	1.01%	1.00%	0.99%	0.98%	0.97%	0.94%	7.15%
Jefferson County:									
Residential at 3,300 gallons	$ 49.30	$ 48.89	$ 48.48	$ 48.08	$ 47.67	$ 47.26	$ 46.86	$ 46.48	$ 46.48
$ Increase		$ (0.41)	$ (0.41)	$ (0.41)	$ (0.41)	$ (0.41)	$ (0.41)	$ (0.38)	$ (2.82)
Percentage Change		-0.83%	-0.83%	-0.84%	-0.85%	-0.85%	-0.86%	-0.80%	-5.71%
Non-Residential at 8,450 gallons	$ 122.89	$ 120.36	$ 117.82	$ 115.29	$ 112.76	$ 110.22	$ 107.69	$ 105.19	$ 105.19
$ Increase		$ (2.53)	$ (2.53)	$ (2.53)	$ (2.53)	$ (2.53)	$ (2.53)	$ (2.50)	$ (17.70)
Percentage Change		-2.06%	-2.11%	-2.15%	-2.20%	-2.25%	-2.30%	-2.32%	-14.40%

CHARLES TOWN UTILITY BOARD

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
CITY - MONTHLY
OPTION A

CONSUMPTION GALLONS		BILLS UNDER 2021/2022 RATES	BILLS UNDER 2028/2029 RATES	INCREASE AMOUNT	INCREASE PERCENT
(1)		(2)	(3)	(4)	(5)
0		$ 29.58	$ 31.66	$ 2.08	7.03%
1,000		29.58	31.66	2.08	7.03%
2,000		29.58	31.66	2.08	7.03%
3,000		40.22	43.06	2.84	7.06%
3,300	*	43.41	46.48	3.07	7.07%
4,000		50.86	54.46	3.60	7.08%
5,000		61.50	65.86	4.36	7.09%
6,000		72.14	77.26	5.12	7.10%
7,000		82.78	88.66	5.88	7.10%
8,000		93.42	100.06	6.64	7.11%
8,450	**	98.21	105.19	6.98	7.11%
9,000		104.06	111.46	7.40	7.11%
10,000		114.70	122.86	8.16	7.11%
11,000		124.37	133.22	8.85	7.12%
12,000		134.04	143.58	9.54	7.12%
13,000		143.71	153.94	10.23	7.12%
14,000		153.38	164.30	10.92	7.12%
15,000		163.05	174.67	11.62	7.12%
20,000		211.40	226.47	15.07	7.13%
30,000		308.10	330.08	21.98	7.13%
40,000		404.80	433.69	28.89	7.14%
50,000		501.50	537.30	35.80	7.14%
60,000		598.20	640.91	42.71	7.14%
70,000		694.90	744.52	49.62	7.14%
100,000		985.00	1,055.35	70.35	7.14%
200,000		1,952.00	2,091.45	139.45	7.14%
300,000		2,919.00	3,127.55	208.55	7.14%
400,000		3,886.00	4,163.65	277.65	7.14%
500,000		4,853.00	5,199.75	346.75	7.15%

* Average Residential Bill.
** Average Non-Residential Bill.

CHARLES TOWN UTILITY BOARD

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
COUNTY - MONTHLY
OPTION A

CONSUMPTION GALLONS		BILLS UNDER 2021/2022 RATES	BILLS UNDER 2028/2029 RATES	INCREASE AMOUNT	INCREASE PERCENT
(1)		(2)	(3)	(4)	(5)
0		$ 30.72	$ 31.66	$ 0.94	3.06%
1,000		30.72	31.66	0.94	3.06%
2,000		30.72	31.66	0.94	3.06%
3,000		45.01	43.06	(1.95)	-4.33%
3,300	*	49.30	46.48	(2.82)	-5.71%
4,000		59.30	54.46	(4.84)	-8.16%
5,000		73.59	65.86	(7.73)	-10.50%
6,000		87.88	77.26	(10.62)	-12.08%
7,000		102.17	88.66	(13.51)	-13.22%
8,000		116.46	100.06	(16.40)	-14.08%
8,450	**	122.89	105.19	(17.70)	-14.40%
9,000		130.75	111.46	(19.29)	-14.75%
10,000		145.04	122.86	(22.18)	-15.29%
11,000		159.02	133.22	(25.80)	-16.22%
12,000		173.00	143.58	(29.42)	-17.00%
13,000		186.98	153.94	(33.04)	-17.67%
14,000		200.96	164.30	(36.66)	-18.24%
15,000		214.94	174.67	(40.28)	-18.74%
20,000		284.84	226.47	(58.37)	-20.49%
30,000		424.64	330.08	(94.56)	-22.27%
40,000		564.44	433.69	(130.75)	-23.16%
50,000		704.24	537.30	(166.94)	-23.70%
60,000		844.04	640.91	(203.13)	-24.07%
100,000		1,403.24	1,055.35	(347.89)	-24.79%

* Average Residential Bill.
** Average Non-Residential Bill.

CHARLES TOWN UTILITY BOARD
OPTION B
COMPARISON OF PRESENT AND PROPOSED RATES

Average Bills	2021/2022 Rates	2022/2023 Rates	2023/2024 Rates	2024/2025 Rates	2025/2026 Rates	2026/2027 Rates	2027/2028 Rates	2028/2029 Rates	Cumulative Change
Charles Town and Ranson:									
Residential at 3,300 gallons	$ 43.41	$ 48.28	$ 48.29	$ 48.35	$ 48.36	$ 48.51	$ 48.52	$ 48.58	$ 48.58
$ Increase		$ 4.87	$ 0.01	$ 0.06	$ 0.01	$ 0.16	$ 0.01	$ 0.05	$ 5.16
Percentage Change		11.21%	0.02%	0.12%	0.02%	0.33%	0.02%	0.11%	11.89%
Non-Residential at 8,450 gallons	$ 98.21	$ 104.21	$ 105.36	$ 106.56	$ 107.70	$ 109.00	$ 110.15	$ 111.33	$ 111.33
$ Increase		$ 6.01	$ 1.15	$ 1.20	$ 1.15	$ 1.30	$ 1.15	$ 1.18	$ 13.12
Percentage Change		6.12%	1.10%	1.14%	1.08%	1.20%	1.05%	1.07%	13.36%
Race Course at 940,000 Monthly	$ 9,107.80	$ 9,300.99	$ 9,489.22	$ 9,677.60	$ 9,865.83	$ 10,054.30	$ 10,242.54	$ 10,429.13	$ 10,429.13
$ Increase		$ 193.19	$ 188.23	$ 188.38	$ 188.23	$ 188.48	$ 188.23	$ 186.59	$ 1,321.33
Percentage Change		2.12%	2.02%	1.99%	1.95%	1.91%	1.87%	1.82%	14.51%
Jefferson County:									
Residential at 3,300 gallons	$ 49.30	$ 48.42	$ 48.48	$ 48.54	$ 48.60	$ 48.41	$ 48.51	$ 48.58	$ 48.58
$ Increase		$ (0.87)	$ 0.06	$ 0.06	$ 0.06	$ (0.19)	$ 0.11	$ 0.06	$ (0.72)
Percentage Change		-1.77%	0.12%	0.12%	0.12%	-0.40%	0.22%	0.13%	-1.46%
Non-Residential at 8,450 gallons	$ 122.89	$ 120.47	$ 118.98	$ 117.48	$ 115.99	$ 114.25	$ 112.81	$ 111.33	$ 111.33
$ Increase		$ (2.42)	$ (1.49)	$ (1.49)	$ (1.49)	$ (1.74)	$ (1.44)	$ (1.48)	$ (11.56)
Percentage Change		-1.97%	-1.24%	-1.25%	-1.27%	-1.50%	-1.26%	-1.31%	-9.41%

CHARLES TOWN UTILITY BOARD

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
CITY - MONTHLY
OPTION B

CONSUMPTION GALLONS		BILLS UNDER 2021/2022 RATES	BILLS UNDER 2028/2029 RATES	INCREASE AMOUNT	INCREASE PERCENT
(1)		(2)	(3)	(4)	(5)
0		$ 29.58	$ 20.55	$ (9.03)	-30.53%
1,000		29.58	20.55	(9.03)	-30.53%
2,000		29.58	32.74	3.16	10.67%
3,000		40.22	44.92	4.70	11.69%
3,300	*	43.41	48.58	5.16	11.89%
4,000		50.86	57.11	6.25	12.28%
5,000		61.50	69.29	7.79	12.67%
6,000		72.14	81.48	9.34	12.94%
7,000		82.78	93.66	10.88	13.14%
8,000		93.42	105.85	12.43	13.30%
8,450	**	98.21	111.33	13.12	13.36%
9,000		104.06	118.03	13.97	13.42%
10,000		114.70	130.22	15.52	13.53%
11,000		124.37	141.29	16.92	13.60%
12,000		134.04	152.36	18.32	13.67%
13,000		143.71	163.44	19.73	13.73%
14,000		153.38	174.51	21.13	13.78%
15,000		163.05	185.59	22.54	13.82%
20,000		211.40	240.96	29.56	13.98%
30,000		308.10	351.70	43.60	14.15%
40,000		404.80	462.44	57.64	14.24%
50,000		501.50	573.18	71.68	14.29%
60,000		598.20	683.92	85.72	14.33%
70,000		694.90	794.66	99.76	14.36%
100,000		985.00	1,126.88	141.88	14.40%
200,000		1,952.00	2,234.29	282.29	14.46%
300,000		2,919.00	3,341.70	422.70	14.48%
400,000		3,886.00	4,449.11	563.11	14.49%
500,000		4,853.00	5,556.52	703.52	14.50%

* Average Residential Bill.
** Average Non-Residential Bill.

CHARLES TOWN UTILITY BOARD

COMPARISON OF BILLS UNDER PRESENT AND PROPOSED RATES
COUNTY - MONTHLY
OPTION B

CONSUMPTION GALLONS		BILLS UNDER 2021/2022 RATES	BILLS UNDER 2028/2029 RATES	INCREASE AMOUNT	INCREASE PERCENT
(1)		(2)	(3)	(4)	(5)
0		$ 30.72	$ 20.55	$ (10.17)	-33.11%
1,000		30.72	20.55	(10.17)	-33.11%
2,000		30.72	32.74	2.02	6.56%
3,000		45.01	44.92	(0.09)	-0.20%
3,300	*	49.30	48.58	(0.72)	-1.46%
4,000		59.30	57.11	(2.19)	-3.70%
5,000		73.59	69.29	(4.30)	-5.84%
6,000		87.88	81.48	(6.40)	-7.29%
7,000		102.17	93.66	(8.51)	-8.33%
8,000		116.46	105.85	(10.62)	-9.11%
8,450	**	122.89	111.33	(11.56)	-9.41%
9,000		130.75	118.03	(12.72)	-9.73%
10,000		145.04	130.22	(14.83)	-10.22%
11,000		159.02	141.29	(17.73)	-11.15%
12,000		173.00	152.36	(20.64)	-11.93%
13,000		186.98	163.44	(23.54)	-12.59%
14,000		200.96	174.51	(26.45)	-13.16%
15,000		214.94	185.59	(29.35)	-13.66%
20,000		284.84	240.96	(43.88)	-15.41%
30,000		424.64	351.70	(72.94)	-17.18%
40,000		564.44	462.44	(102.00)	-18.07%
50,000		704.24	573.18	(131.06)	-18.61%
60,000		844.04	683.92	(160.12)	-18.97%
100,000		1,403.24	1,126.88	(276.36)	-19.69%

* Average Residential Bill.
** Average Non-Residential Bill.