Proposal for

Development of a Wastewater Facilities Plan

Submitted to:
Brookfield Water Pollution Control Authority

October 1, 2018
Re: Request for Qualifications
Development of a Wastewater Facilities Plan

Dear Mr. Malwitz:

The Brookfield sewer collection system is the main component of the Town’s overall wastewater management program, transmitting flow to the City of Danbury’s wastewater treatment facility. The WPCA is proactively seeking to evaluate the condition of this system and develop a long-term program to provide for the maintenance of these facilities, along with a plan for how to finance needed maintenance and improvements.

The WPCA intends to engage an engineering firm with the experience and know-how to assist them with this work. Tighe & Bond understands the challenges associated with the evaluation of infrastructure. We are pleased that Municipal & Financial Services Group (MFSG) will be teaming with us on this project. MFSG is a specialized management consulting firm that can focus on the financial aspects of this project. The Tighe & Bond/ MFSG team stands ready to support you by providing the following critical services:

- Evaluation of the Town’s 14 pump stations and development of a capital improvement plan that includes immediate, short range, and long-term recommendations for improvements, along with a financial plan to ensure that the WPCA has the financial means to pay for them.
- Update the Town’s Water Pollution Control Plan and Sanitary Sewer Service map in conformity with the requirements of State and Local Regulatory agencies.
- Work with the WPCA on obtaining a 55% Planning Grant for this project from the Connecticut Department of Energy and Environmental Protection (CTDEEP).

Tighe & Bond’s team is capable of performing all tasks contemplated in this RFP. As listed in the Experience Section of this package, we have an ongoing relationship with the CTDEEP regulators through grant/loan request packages submitted for many of our existing clients.

As our references will confirm, Tighe & Bond works hard to make every assignment a success and maximize the benefit that our clients get for their investment. Our team looks forward to discussing our approach and qualifications with you in the form of an interview.

Very truly yours,

TIGHE & BOND, INC.

Lori A. Carriero, P.E., BCEE
Project Manager

Stephen E. Seigal, P.E., BCEE
Vice President
Letter of Transmittal

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Section 1  Firm Overview

1.1  Tighe & Bond

Founded in 1911, Tighe & Bond is a professional corporation based out of Westfield Massachusetts. Today, Tighe & Bond is one of the most experienced, continuously operating engineering firms in the northeastern United States. Our employee owned firm provides consulting services to hundreds of public and private clients from our nine offices located across the region. All work on this project will be managed out of our office in Shelton, CT.

Our full service firm has built a solid reputation upon the technical knowledge, experience and capabilities we bring to each project we undertake and the services that we provide. Seasoned project managers supported by project directors and experienced engineers, scientists and planners assure continuity, accountability, and high quality service on each project we undertake.

Tighe & Bond is staffed by over 370 dedicated professionals across the region, including professional engineers, environmental scientists, planners and hydrogeologists. Working in teams, our staff share diverse expertise to benefit our clients. Professional registrations cover a wide range of disciplines, including:

- Architectural Design
- Civil Engineering
- Coastal & Dam Engineering
- Demolition Engineering & Hazardous Building Material Assessment
- Electrical Engineering
- Energy Generation and Conservation
- Environmental Permitting
- Geographic Information Systems (GIS)
- Geotechnical Engineering
- Health & Safety
- Instrumentation & Control
- Landscape Architecture
- Mechanical/HVAC Engineering
- Parking Consultancy
- Regulatory Compliance & Permitting
- Remediation
- Site Assessment & Development
- Solid Waste Management
- Structural Engineering
- Sustainable Design
- Traffic Engineering
- Transportation Planning
- Wastewater Management
- Water Resources Engineering
- Wetlands and Ecological Services
1.2 Municipal & Financial Service Group

Municipal & Financial Services Group (MFSG) is a specialized management consulting practice that focuses on the financial and management needs of municipal infrastructure (specializing in environmentally-related areas such as water, wastewater, stormwater and solid waste utilities).

The Municipal and Financial Services Group (MFSG) is a specialized management consulting practice that focuses on the financial and management aspects of infrastructure and environmental programs. The practice was established in 1976 and was for many years part of the Management Consulting Department of KPMG Peat Marwick CPAs or other national and regional accounting or engineering firms. MFSG was organized as a Maryland-based limited liability company in 1996 and became an independent women-owned firm during 2002. MFSG is composed of professional staff members with the appropriate functional and programmatic skills, whose services are focused on clients involved in capital-intensive infrastructure and environmental activities, especially in the public sector and utilities. In addition to the traditional functional services provided to clients, the specialized services MFSG offers include:

- Formation/Consolidation of Authorities, Commissions and Districts
- Organizational, Staffing and Management Studies
- Cost of Service / Rate Studies
- Water Conservation Studies
- Financial Feasibility Studies
- System Development Charges / Impact Fee Studies
- Benchmarking and Competitiveness Studies
- Strategic Financial Planning
- Management Reviews/Audits
- Asset Management Programs
- GASB 34 Compliance Programs
- Bond-Related Studies
- Grant Audit Assistance
- Litigation Support / Expert Witness Testimony
- Construction Claims Assistance
- Specialized Accounting Studies and Procedures
- Financial and Economic Impact Studies and Models

In summary, MFSG is well-versed in virtually every management and financial aspect of utility and infrastructure operations. They can and have provided virtually every type of management advice which does not require professional engineering certification. The firm’s client base stretches from Alaska to the Florida Keys, from Southern California to Maine. Their clients provide water, sewer, stormwater or solid waste services to more than 45% of the nation’s population, and range in size from New York City to utilities serving a few dozen customers. Recent clients have included municipal and investor-owned utilities, law firms, investment banking and financial advisory firms and real estate developers. Current clients are in Alaska, California, Connecticut, Delaware, Florida, Illinois, Kansas, Maryland, Massachusetts, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania and Virginia.
Section 2  Project Team

Our project team will be structured as demonstrated on the organizational chart shown below. Services for this project will be based primarily out of our Shelton and Middletown offices. A brief description of the role of each of our key team members is shown on the following pages, followed by their resumes.
2.1 Tighe & Bond

The key personnel for this project consist of Steve Seigal, Lori Carriero, and Fred Mueller. These individuals have been selected for this project team because of their previous work as a team on similar projects in Southington, Stratford, Vernon, and New Milford. Their proven successes on these projects will help to insure a similar outcome for Brookfield.

**Principal-In-Charge:** Stephen Seigal, P.E., BCEE, a registered Professional Engineer and Board Certified Environmental Engineer, will be responsible for leading Tighe & Bond in providing engineering services for this project. Steve will provide contractual authority with the Town of Brookfield and ensure that the project team has all required resources needed to complete this work.

**Project Manager:** Lori Carriero, P.E., BCEE has over 30 years of experience in the planning and design of sewerage systems and collection systems throughout the state of Connecticut. As Project Manager, Lori will be responsible for day-to-day communication with the Town of Brookfield and will direct project team members accordingly throughout the duration of the project. Lori is based out of our Shelton office and lives in Newtown, CT. Because of this, she can be at the WPCA offices in less than ½ hour.

**Technical Advisor:** Frederick Mueller, P.E. has over 25 years of experience managing and implementing projects related to wastewater treatment plants, pump stations, and regulatory compliance. Fred’s experience includes serving as process and team leader for the inspection of numerous pump stations in Southington, Stratford and Vernon, as well as the design and construction of the upgrade of the Queen Street Pump station in Southington. He also served as project manager and lead process engineer for the capital improvement assessment and rehabilitation of six pump stations for the Town of Stratford CT. An expert in the wastewater planning field, Fred will serve as a resource to the project team and provide detailed information and advice as needed throughout the duration of the project.

These individuals will be assisted by the remaining individuals shown on the organizational chart, along with others from the more than 370 individuals that are part of our firm. We have suggested project staffing based upon the tasks presented in your RFP. Staff members will be modified if needed once a final scope of work has been agreed upon.
2.2 **Subconsultant: Municipal & Financial Services Group**

MFSG will lead the financial analyses portion of this project. Tighe & Bond has worked with MFSG on similar projects in Beacon and Fishkill, NY. Key individuals from MFSG who will work on this project are as follows:

**Financial Analyst:** Michael Maker is a Senior Manager in the Municipal & Financial Services Group, with more than fifteen years of experience in the financial and management consulting industry. Mike will lead MFSG’s effort on this project.

![Michael Maker](image1)

**Technical Advisor:** Edward Donohue, CMC established the Municipal & Financial Services Group almost 40 years ago and has served as its director ever since. Ed’s role on this project will as Technical Advisor, providing oversite and project resources as needed to insure all work is completed within project deadlines.

![Edward Donohue](image2)

2.3 **Additional Subconsultants**

Tighe & Bond has working relationships with several MBE/WBE firms who can be added to our project team if necessary to meet the participation goals of the CTDEEP Funding Requirements. We can discuss the need to add additional subcontractors once a formal scope of work has been established.
Lori Carriero is a project manager who has 32 years of experience in the evaluation of sanitary sewer collection systems through the management of Infiltration/Inflow Studies, Sewer System Evaluation Surveys, and Sewer Rehabilitation Contracts. These projects have included various forms of field investigations, including continuous and instantaneous flow monitoring, smoke testing, building inspections, manhole inspections, and CCTV inspections of mainline sewer mains and lateral connections. Most projects have also included extensive public notification programs tailored to meet the needs of each client.

Professional Experience

- **Town of Southington Facilities Planning:** Project Manager for a Phase I Infiltration/Inflow Study of the Town’s existing collection system, and development of a hydraulic model to evaluate the capacity of the Town’s trunk sewers. Also responsible for the preparation of an updated Sanitary Sewer Service Area Map and Water Pollution Control Plan as part of an overall Wastewater Facilities Plan.

- **Town of Vernon Facilities Planning:** Project Manager responsible for the preparation of an updated Sanitary Sewer Service Area map and Water Pollution Control Plan as part of an overall Wastewater Facilities Plan.

- **Town of New Milford Water Pollution Control Plan:** Project Manager responsible for the preparation of an updated Sanitary Sewer Service Area map and Water Pollution Control Plan for the New Milford WPCA.

- **Darien Facilities Planning.** Managed an infiltration/inflow study of the entire Darien, CT collection system. The project included an evaluation of all existing sewage pumping stations, a review of existing operation and maintenance procedures, and a study of areas of potential sewer extensions.

- **Town of Stratford Infiltration/Inflow Study:** Project Manager for project involving a Phase I Infiltration/Inflow Study of the Town’s existing collection system, development of a hydraulic model to evaluate the capacity of the Town’s trunk sewers, and updating the collection system mapping into GIS format.

- **Stamford Collection System Facilities Planning.** Managed an infiltration/inflow study of the entire Stamford, CT collection system including a cost-effective analysis, an evaluation of existing sewage pumping stations, and review of existing O&M procedures.

- **Town of Stratford EPA Administrative Order Assistance:** Project Manager responsible for developing a response to an Administrative Order issued by the USEPA regarding the operation and maintenance of the Town’s collection system. Tasks included development of a Collection System Operation and Maintenance Manual, Sewer Overflow Response Plan, and Annual Reports submitted to the EPA.

- **Thomaston Infiltration/Inflow Study and Sewer Rehabilitation:** Assisted in sewer evaluation via television inspection, smoke testing, and building inspections to develop recommendations for sewer rehabilitation. Performed cost effective analysis, prepared written report, and presented findings to client. Served as project manager for design and construction phases of subsequent sewer rehabilitation work, which was completed in two separate contracts.
Stephen Seigal has 40 years of project management and engineering experience in municipal wastewater and has served communities throughout New England. He has planned, designed, and provided construction phase engineering services for a variety of projects that include: secondary and advanced wastewater treatment facilities, pumping stations, biosolids processing and disposal, odor control system improvements, and collection systems. An expert in wastewater management, he has been recognized as a Board Certified Environmental Engineer (BCEE) by the Academy of Environmental Engineers. Stephen has written and presented papers at various regional and national technical conferences, and was a contributing author of a chapter in TR-16 Guides for the Design of Wastewater Treatment Works, a manual prepared by the New England Interstate Water Pollution Control Commission. He was also a contributing author in several chapters of the WEF manual, “Upgrading and Retrofitting Water & Wastewater Treatment Plants.”

Professional Experience

- **Southington Wastewater Treatment Facilities Plan:** Serving as Principal-in-Charge for a facilities planning study of this 7.4 MGD treatment facility in Southington, CT with the goals of modernizing the aging plant, upgrading the plant for 0.1 mg/l phosphorus removal, and improving energy efficiency. The Facilities Plan also included an evaluation of all of the pump stations in the collection system, development of a Sanitary Sewer Service Area Map and a written Water Pollution Control Plan. An infiltration/inflow study and sewer system evaluation survey were also completed as part of this project.

- **Town of New Milford Water Pollution Control Plan:** Principal-in-Charge for the preparation of an updated Sanitary Sewer Service Area map and Water Pollution Control Plan for the New Milford WPCA.

- **Southington Pump Station Upgrades:** Principal-in-Charge for upgrades to the Queen Street and South End Road Pump stations in Southington, CT. Project included design of an innovative suction lift system that will allow the town to upgrade the existing flood prone station (located in a floodway) while also achieving their budgetary goals.

- **Vernon Water Pollution Control Facility:** Serving as Principal-in-Charge for the Wastewater Facilities Planning Study and the design of a comprehensive upgrade of Vernon, CT’s 4.8 mgd WPCF. The upgraded facility is being designed to produce an effluent total nitrogen of 3 mg/l and an effluent total phosphorus of 0.1 mg/l. The Facilities Plan also included an evaluation of all of the pump stations in the collection system, development of a Sanitary Sewer Service Area Map and preparation of a written Water Pollution Control Plan.

- **Stratford Pumping Station Improvements:** Serving as Principal-in-Charge for the study and design of improvements to Stratford CT’s six largest wastewater pumping stations. The primary drivers for this project are the 40-year old age of the stations and the Town’s desire to identify and implement improvements necessary to maintain their reliability. To determine the appropriate upgrades, Tighe & Bond’s structural, mechanical, and electrical engineers evaluated the stations and developed capital improvement recommendations. Based upon these recommendations, the Town is proceeding with station upgrades, with design work expected to be complete in early 2019.
Frederick Mueller has more than 27 years of experience managing and implementing projects related to wastewater, environmental remediation, and regulatory compliance. His expertise includes: municipal and industrial wastewater treatment systems, pumping systems energy conservation and management, SCADA systems, hazardous waste, and petroleum and chemical storage systems. Prior to joining Tighe & Bond, he served as engineer for the Mattabassett District in Cromwell, CT, gaining experience in several aspects of municipal wastewater engineering including operations, maintenance, and designing and managing plant equipment upgrades.

**Professional Experience**

- **Vernon Wastewater Treatment Facility Facilities Plan:** Process and team leader for developing a facilities plan and design for this 7.1 MGD treatment facility in Vernon, CT with the goals of modernizing the aging plant, upgrading the plant for nitrogen removal and low-level phosphorus removal, and improving energy efficiency. The recommended plan with is now under design includes eliminating their unique Zimpro PACT-WAR Process, IFAS activated sludge, installing a new secondary solids handling processes and electrical systems with total upgrade cost of approximately $80M

- **Southington Wastewater Treatment Facility Facilities Plan:** Process and team leader for developing a facilities plan for this 7.4 MGD treatment facility in Southington, CT with the goals of modernizing the aging plant, upgrading the plant for low level phosphorus removal, and improving energy efficiency. The recommended plan included approximately $50M of plant upgrades.

- **Southington Pump Stations:** Acted as process and team leader for developing a facilities plan for the town’s 10 wastewater pumping stations. Designed, and currently managing the construction of, the upgrade of the Queen Street Pump station using an innovative suction lift system that will allow the town to upgrade the existing flood prone station (located in a floodway) while also achieving their budgetary goals.

- **Windsor Locks Pump Stations:** Managed and authored facility plan for the Windsor Lock’s wastewater treatment facility and collection system. The Facility Plan, addressed 10 wastewater pump stations that ranged in capacity from 120 to 4,400 gpm. Also managed the design, bidding, and construction replacement of one of the submersible pump stations.

- **Stratford Pump Station Evaluation and Capital Improvement Plan:** Served as project manager and lead process engineer for the capital improvement assessment of six pumps stations for the Town of Stratford CT. The stations were over 35 years old and ranged in size from 1.7 to 9.4 million gallons per day. Recommended plans included $10,000,000 of electrical/controls, structural, site, HVAC and process equipment improvements to be phased over the next 20 years.

- **Southington Queen Street Pump Station:** Designed, and currently managing the construction of, the upgrade of the Queen Street Pump station in Southington, CT. Design included an innovative suction lift system that will allow the town to upgrade the existing flood prone station (located in a floodway) while also achieving their budgetary goals.
Mr. Maker is a Senior Manager in the Municipal & Financial Services Group, with more than fifteen years of experience in the financial and management consulting industry. His client work includes water and sewer benchmarking and performance metric analyses services for the Washington Suburban Sanitary Commission, Maryland; a water and sewer availability fee study for the Town of Herndon, Virginia; a water and sewer rate study for the City of Portsmouth, Virginia; water rate financial analysis for Fishers Island Water Works, New York; and a water and sewer rate study and consolidation for the City of Franklin and Southampton County, Virginia. Recent rate study work includes a sewer rate study for the Town of Stratford, Connecticut, water and sewer rate studies for the City of Cleveland, Ohio, water rate studies for the Suffolk County Water Authority, NY and the City of Rochester, New York and water and sewer rate studies for the Village of Tivoli, NY, the Town of Exeter, New Hampshire and the City of Lexington, Virginia. Additional consulting experiences includes the development of cost of service cash flow models involving rate design, fee design and customer impact analyses for water, wastewater, stormwater and solid waste utilities across the country. He is an active member of AWWA, WEF and GFOA and a current member of AWWA’s Finance, Accounting & Management Controls Committee and Workforce Strategies Committee.

Mr. Donahue established the Municipal & Financial Services Group almost 40 years ago and has served as its director ever since. His relevant experience includes cost of service, rate and feasibility work for more than 125 clients, including work for cities, counties and special purpose authorities and commissions in Alaska, California, Connecticut, Delaware, the District of Columbia, Illinois, Kentucky, Maine, Maryland, Massachusetts, New York, North Carolina, Ohio, Pennsylvania, Virginia and others. Typical client work includes rate work for the San Diego County Water Authority, Washington Suburban Sanitary Commission, the City of Cleveland, Suffolk County Water Authority (NY), the New York City Water Finance Authority, and the Anchorage Water & Wastewater Utility; establishment of a regional water and sewer authority in New Hanover County, North Carolina; a financial feasibility study for the City of Annapolis, Maryland; negotiation support for several suburban counties negotiating a long-term water purchase contract with the City of Baltimore; and sale of a regional waste-to-energy facility in Chesapeake, Virginia. He has served as chairman of AWWA’s Finance, Accounting and Management Controls Committee and currently chairs that organization’s GASB 34 Task Force; he is a contributing author and editor for AWWA’s Manual M-29, Capital Financing, and served the same role for the recent AWWA/GFOA textbook Financial Management for Water Utilities. He has been accredited and served as an expert witness in accounting, contract, and construction and rate matters before courts and regulatory agencies.
Section 3 Relevant Experience

Tighe & Bond has been providing high-value consulting services for wastewater infrastructure improvement projects to municipal clients for over a century. On the pages that follow, we have provided detailed descriptions of some of our most relevant projects performed in Connecticut, all of which have been completed in the past 10 years.

Town of New Milford, Connecticut WPCA

Tighe & Bond worked with the New Milford WPCA on the preparation of an updated Sanitary Sewer Service Area map and Water Pollution Control Plan for the New Milford WPCA. Sewer mapping had already been updated into GIS format by Tighe & Bond as part of a separate project. Tighe & Bond and WPCA personnel presented the updated sewer map at a Workshop held with various Town agencies including the Mayor’s office, Economic Development, Planning Department, and Conservation Commission. The goal of this Workshop was to gain agreement on existing and future sewered areas as presented. Tighe & Bond also coordinated with the Planning Department to insure consistency with the Town’s Plan of Conservation and Development (POCD). Once the sewer areas had been finalized, the map was reviewed by the CTDEEP and CTOPM for consistency with the State’s POCD. A written Water Pollution Control Plan was also prepared based upon the CTDEEP’s standard template.

Town of Stratford, Connecticut

The Town of Stratford owns and operates an 11.5 MGD plant that discharges into Long Island Sound. Tighe & Bond has provided planning, design, and construction phase engineering services required to assist the Town in addressing several administrative orders from the DEEP and the US EPA concerning their sewage system. One of the most recent projects completed with the Town was the inspection of six of the Town’s wastewater pump stations. Tighe & Bond’s inspection team, led by Fred Mueller conducted inspections at the Benton Street, Oak Bluff, Pecks Mill, Ryan’s Lane, Ryder’s Lane, and Short Beach pump stations. Condition assessments at each station addressed site/civil, structural, architectural, process mechanical/HVAC and electric systems at each of the stations, as well as provisions for emergency power. The results of the inspection work were used in the development of a Pump Station Assessment Plan and budgetary cost estimates for recommended improvements. These prioritized recommendations established an overall capital improvement plan (CIP) to help the Town plan future capital expenditures and communicate expected costs to the WPCA and other stakeholders. Tighe & Bond is currently working on the design of upgrades to each of the stations.

Additionally, Tighe & Bond was hired to provide assistance to the Town in preparing responses to an EPA administrative order regarding its sewage system’s CMOM program and reporting requirements. Our services included developing public education materials, editing the Town’s emergency response plan, assisting in the development of a long-term preventative maintenance program, FOG program, and the preparation of CMOM assessments and corrective action plans.

Work on the design of the pump station upgrades is being funded through the CTDEEP’s Clean Water Fund.
AQUARION WATER COMPANY

Tighe & Bond has worked with Aquarion Water Company on the development of Capital Improvement Plans (CIPs) for their water facilities located throughout the State of Connecticut. A list of plans completed for water facilities including wellfields, pump stations, treatment systems, and pressure regulating vaults over the past 10 years is as follows:

- CIP development for 20 facilities in the Towns of Salisbury, Suffield, Goshen, Sherman, Washington, Lebanon, Cornwall, North Canaan, Norfolk, Marlborough, East Hampton, Kent, and Mansfield;
- CIP development for 15 facilities in the Towns of Southbury, Litchfield, Newtown, New Milford, Woodbury, and Woodrich;
- CIP development for 8 facilities in the Town of Simsbury;

Our most recent project is currently ongoing and includes CIP development for 50 facilities in the Towns of Bethel, Newtown, Brookfield, and New Milford.

TOWN OF VERNON, CONNECTICUT

Tighe & Bond recently completed a Wastewater Facilities Plan for the Town of Vernon that included an evaluation of both their collection system and Water Pollution Control Plant (WPCP).

Tighe & Bond worked collaboratively with Town departments to identify potential areas of sewer expansion, quantify future flows and define a future sewer service area consistent with the requirements of the State of Connecticut’s Plan of Conservation and Development. A Workshop with key Town leaders organized by Tighe & Bond helped to facilitate this process.

The Vernon WPCP accepts flow from four bordering communities (Ellington, Manchester, South Windsor and Tolland). Tighe & Bond worked with Vernon to confirm the amounts of flow for each community that would be allowed over the 20 year planning period. This helped to establish a total future flow to the plant that was used during the design of the upgrades.

This task ultimately resulted in the development of a written Water Pollution Control Plan for Vernon that was approvable by the DEEP and addresses the Town’s wastewater needs for the next 20 years.

Tighe & Bond also performed the following evaluation tasks to assess the capacity and condition of the collection system:

- Condition and capacity evaluation of the Town’s seven wastewater pump stations with recommendations to address identified problems.
- Town-wide Phase I Infiltration and Inflow (I/I) investigation to quantify the amount of infiltration and inflow in the system and identify area for Phase II study.
- Sewerage system modeling of the main trunk lines using PCSWMM modeling software to determine if they have adequate capacity to handle current and projected flows.

This project was funded through the CT CWSRF program and includes public outreach and coordination with DEEP.
Town of Southington, Connecticut

Southington retained Tighe & Bond to prepare a Wastewater Facilities Plan that included an evaluation of both their collection system and Water Pollution Control Plant (WPCP).

Tighe & Bond worked collaboratively with Town departments to identify potential areas of sewer expansion, quantify future flows and define a future sewer service area consistent with the requirements of the State of Connecticut’s Plan of Conservation and Development. This task ultimately resulted in the development of a Water Pollution Control Plan for Southington that is approvable by the DEEP. It also provides a plan to address the Town’s wastewater needs for the next 20 years.

The collection system is a gravity system that extends over a considerable distance with ten pump stations and two siphons that cross rivers. Portions of the system are over 100 years old which allow infiltration and inflow into the system. Tighe & Bond performed the following evaluation tasks to assess the capacity and condition of the collection system:

- Condition and capacity evaluation of the Town’s ten wastewater pump stations with recommendations to address identified problems.

- Town-wide Phase I Infiltration and Inflow (I/I) investigation to quantify the amount of infiltration and inflow in the system and identify area for Phase II study. Field work included four weeks of continuous flow monitoring, isolated night time flow measurements, and selected manhole inspections.

- A Phase II SSES Investigation will begin shortly in areas of the collection which were determined to have excessive I/I during the Phase I work. Field work for this phase will include CCTV inspections of high infiltration areas, and smoke testing and building inspections in areas of high inflow.

- Sewerage system modeling of the main trunk lines to determine if they have adequate capacity to handle current and projected flows. SewerGEMS modeling software was utilized to evaluate the existing flow conditions within the Town’s interceptor sewers. An additional analysis was then performed using future flow estimates to determine if any capacity restrictions will exist in the system.

This project was funded through the CT CWSRF program and includes public outreach and coordination with DEEP.
Connecticut Water Company

Tighe & Bond has worked extensively with Connecticut Water Company on the development of Capital Improvement Plans throughout the State of Connecticut. A summary of this experience is presented in the following table:

| Experience Developing Capital Improvement Plans for Pumping Facilities and Wells in Connecticut |
|---|---|---|---|
| **Town** | **Facilities** | **Town** | **Facilities** |
| Avon | Butler Booster Station | Plainfield | Plainfield Well 1 and 2, Wellhouse and |
| Canton | Cemetery Road Booster Station | Plymouth | North Street Pump Station, O’Brady |
| Clinton | Kelseytown Booster and Weiss Well | Plymouth | Terryville Wells/Treatment Building, |
| East Windsor | Hunt WTP Facility and Generator | Prospect | Indian Field Wells Treatment |
| Ellington | Egypt Road Wells and Treatment | South | Church Road, East Hill, Peck Lane |
| Enfield | Powder Hollow Treatment Facility | South | Pine Knob Well and Treatment |
| | Spring Lots WTP/Wells/Generator | | |
| | *Shaker Road Pump Station* | | Woodland Park Well |
| Farmington | Charles House Wells, CT Sand and | Suffield | Mapleton Well |
| | Pondwood Well and Treatment | | Suffield Booster 1, Booster 2 |
| Guilford | Guilford Wellhouse and Treatment | Thomaston | Clay Street Booster Station |
| | Pinewood Well and Treatment | | Pleasant Street Booster Pump |
| Madison | Five Fields Well | Vernon | Vernon Well 1, 3, 5, 6; Treatment |
| Naugatuck | Hillside, Sharon Ave Pump Stations | Thompson | Thompson Well 3, Treatment |
| | Hunters Mountain Pump Station | Vernon | West Street Booster Station |
| | Industrial Parks 1 and 2 | Vernon | County Rd. Booster Station, Clinton, |
| Old Saybrook | Old Saybrook Booster | Windsor | Bradley Booster Station, Pump |
| | Old Saybrook Well, Wellhouse, and | | |

**Notes:**
1) Italicized facilities were evaluated for total replacement cost only
Section 4  References

We believe our relationships with our clients are paramount. Our client references will confirm that our ability to foster and maintain close working relationships has been a critical factor in our success and has enabled us to deliver projects that meet their expectations. We have provided references for several clients where we have provided similar work within the past ten (10) years as requested.

1. **John Casey**, Town Engineer  
   Town of Stratford, Stratford, CT  
   (203) 385-4013; jcasey@townofstratford.com  
   **Projects:** Evaluation of Six Pump Stations  
   Design of Pump Station Upgrades  
   Infiltration/Inflow Evaluation/Sanitary Sewer Evaluation Survey  
   Trunk Sewer Hydraulic Modeling

2. **Jim Grappone, P.E.,** Assistant Town Engineer  
   Town of Southington, Southington, CT  
   (860) 276-6231; grapponej@southington.org  
   **Projects:** Wastewater Facilities Plan, Sewer Service Area Map and Water Pollution Control Plan  
   Evaluation of 10 pump stations  
   Design of Upgrades to 3 Pump Stations  
   Infiltration / Inflow Evaluation/SSES Project  
   Trunk Sewer Hydraulic Evaluation

3. **Charlene Michalek,** Office Manager  
   New Milford WPCA, New Milford, CT  
   (860) 355-1049; cmichalek@nmwpca.org  
   **Projects:** Water Pollution Control Plan, Update to Sewer Service Area Map

4. **Robert Grasis,** Director  
   Vernon WPCA, Vernon, CT  
   (860) 870 -3545; rgrasis@vernon-ct.gov  
   **Projects:** Wastewater Facilities Plan, Water Pollution Control Plan, Update to Sewer Service Area Map  
   Condition Assessment of Pump Stations

5. **Carolyn C. Giampe,** Manager, Capital Project Delivery  
   Aquarion Water Company of Connecticut, Bridgeport, CT  
   (203) 337-590; cgiampe@aquarionwater.com  
   **Projects:** Capital Improvement Programs at various communities as listed in Section 3

6. **David Peeling, P.E.,** Director of Engineering  
   Connecticut Water Company, Clinton, CT  
   (860) 664-6007; dpeeling@ctwater.com  
   **Projects:** Capital Improvement Programs at various communities as listed in Section 3
### Section 5  **Staff Availability**

Staff availability for the team members shown in Section 2 is listed in the table below. This is based upon the project initiating in early 2019. Please note that Tighe & Bond prides itself on completing projects on time and within budget. With over 370 professional staff members, we can utilize alternate team members, with your approval, to insure all project deadlines are met.

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Current Projects</th>
<th>Availability for the Brookfield Wastewater Facilities Plan Project</th>
</tr>
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<td><strong>Tighe &amp; Bond</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Stephen Seigal    | • Vernon WPCF Upgrade – 20%  
                   | • Southington WPCF Construction – 20%  
                   | • Plainville WPCF Construction – 10%  
                   | • Additional ongoing Projects – 30%                                           | 20%                                                               |
| Lori Carriero     | • Stratford SSES – 10%  
                   | • Westport Sewer Extensions – 10%  
                   | • Thomaston Sewer Evaluation – 10%  
                   | • Additional ongoing projects – 30%                                           | 40%                                                               |
| Fred Mueller      | • Middletown Pump Station Upgrade – 25%  
                   | • Southington WPCF Construction – 15%                                     
                   | • Stratford Pump Station Upgrades – 15%                                    
                   | • Additional ongoing projects – 20%                                        | 30%                                                               |
| Fred Mascia       | • Trumbull Sewers – 40%  
                   | • Thomaston Road Improvements – 20%                                       
                   | • Additional ongoing projects – 20%                                        | 20%                                                               |
| Cynthia Castellon | • Aquarion CIPs - 10%  
                   | • Aquarion Simsbury WTP - 20%                                            
                   | • Salisbury WPCF - 20%                                                   | 50%                                                               |
| Ronald Maniscalco | • Westport PS's - 40%  
                   | • Hull WWTP - 20%                                                        
                   | • Jaffrey Generators - 5%                                                | 35%                                                               |
| Jon Popoli        | • Aquarion CIP's -10%  
                   | • Aquarion Simsbury WTP - 25%                                           
                   | • Phillipston Queen Lake Rd -30%                                         | 35%                                                               |
| Stephanie Hubli   | • Middletown Contract Administration - 25%                                     
                   | • Seymour Replacement Well - 15%                                          
                   | • Stratford Pump Station Rehab - 10%                                      | 50%                                                               |
| **MFSG**          |                                                                                  |                                                                   |
| Ed Donahue        | • Fredericksburg, VA Water/Sewer Rate Study – 20%                             
                   | • Camden, NJ Water and Sewer Rate Study – 20%                             
                   | • Canton, OH Water and Sewer Rate Study – 10%                             | 50%                                                               |
| Mike Maker        | • Fredericksburg, VA Water/Sewer Rate Study – 30%                             
                   | • Camden, NJ Water and Sewer Rate Study – 20%                             
                   | • Canton, OH Water and Sewer Rate Study – 10%                             | 40%                                                               |
Section 6  State Regulatory Agency Experience

Tighe & Bond is well versed in a variety of design standards, guidelines, and regulations. Understanding regulations is critical from a technical standpoint. This understanding is also a necessary component of most projects as it allows us to assist our clients in developing strategies and priorities to meet their needs, while still complying with regulatory requirements.

The majority of our projects involve some form of permitting at the federal, state, or local levels. Tighe & Bond is fully capable of preparing and assisting our clients in obtaining all types of wetlands permits including Notice of Intents, Water Quality Certifications, Chapter 91 Waterways Licenses, and U.S. Army Corp of Engineers permits. We have experience in assisting in obtaining sewer extension permits, state highway access permits, and preparing preliminary and definitive subdivision plans for local approval. At the local level, we often coordinate with Public Works Departments, Planning and Zoning Boards, Water Pollution Control Authorities, Environmental Protection Agencies, and Public Utility Companies.

Tighe & Bond meets with the regulators at the start of the design phase to establish design objectives and to present improvement concepts. This helps to streamline the design and permitting process and improves the likelihood of obtaining permits in a timely manner. We have extensive experience working on projects involving Clean Water Funding and we have strong relationship with the regulators such as CT Department of Energy and Environmental Protection, CT Department of Public Health, and the Connecticut Office of Policy and Management. A table demonstrating our relevant experience is provided below.

<table>
<thead>
<tr>
<th>Connecticut Regulatory Agency Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Aquarion Water Company</td>
</tr>
<tr>
<td>Bristol</td>
</tr>
<tr>
<td>CT Water Company</td>
</tr>
<tr>
<td>Manchester</td>
</tr>
<tr>
<td>MDC</td>
</tr>
<tr>
<td>Middletown</td>
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<tr>
<td>New Milford</td>
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<td>Plainville</td>
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<tr>
<td>Salisbury</td>
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<tr>
<td>Southington</td>
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<tr>
<td>Thomaston</td>
</tr>
<tr>
<td>Thompson</td>
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<tr>
<td>Vernon</td>
</tr>
</tbody>
</table>

CWF = Clean Water Funding  
DEEP = CT Department of Energy and Environmental Protection  
DPH = CT Department of Public Health  
OPM = CT Office of Policy and Management
Section 7  Required Disclosures

7.1  Ongoing and Prior Work Assignments

Tighe & Bond is currently working with the Town of Brookfield on the following assignment:

- GIS Mapping for MS4 Stormwater Compliance with the Town of Brookfield Department of Public Works

In addition, our firm has also worked on the following previous project:

- Completion of a Sewer Rate Study for the WPCA (completed in 2015)

7.2  Potential Conflicts

To the best of our knowledge, no staff member of Tighe & Bond has any type of conflict or financial relationship with any Town of Brookfield Town employees, WPCA employees, or elected officials. We are not a participant in any type of ongoing litigation involving the Brookfield WPCA or Town of Brookfield.
Section 8  Project Approach

8.1  Project Understanding

The Brookfield WPCA is looking to develop a Facility Plan that can be used as a roadmap for the long-term operation and maintenance of their collection system. This includes keeping system components operational, confirming they all have adequate capacity for current and future flows, and insuring that financial resources are available to operate and maintain the system.

Our project approach has been written around the specific task items discussed in the Town’s RFQ. We have also added additional items that are normally performed as part of a Wastewater Facilities Plan for discussion purposes. Ultimately, the specific tasks to be performed will be decided by the WPCA. Our team will be happy to assist the WPCA develop a scope of work based on our experiences with other communities if requested.

8.2  Water Pollution Control Plan/Sewer Service Area Map

Development of a Water Pollution Control Plan is required by the CTDEEP as part of a Wastewater Facilities Plan. This plan is prepared concurrent with a Sewer Service Area Map. Together, these documents:

- Delineate areas of existing sewers, community sewer systems, and future sewers
- Delineate areas where sewers are to be avoided
- Delineate areas of concern where sewers may be required in the future
- Confirm the total flow allowed within the Town of Brookfield sewer system.

When preparing a Water Pollution Control Plan, it is important that the Sewer Service Map be consistent with both the Brookfield Plan of Conservation and Development (POCD), and the State of Connecticut Office of Policy and Management (OPM) Locational Guide Map.

The existing Water Pollution Control Plan on the WPCA’s website is dated August 27, 2014 and references the Town’s 2001 POCD. As a minimum, this plan must be updated to reference the current POCD effective July 2, 2016. The State of Connecticut is in the process of updating their POCD, however, the proposed 2018-2023 Plan was not acted upon during the 2018 Legislative session. Therefore, the 2013-2018 Plan remains in effect. Our suggested approach is as follows:

- Review the existing Sewer Service Area Map with WPCA officials and other Town Departments (Land Use, Economic Development) to determine if any revisions are required to the existing map.
- If any extensions to the sewer service area are anticipated, flow estimates will be prepared as appropriate for each extension area.
- The revised map will be reviewed for consistency with both the 2016 Brookfield POCD and the 2013-2018 State of CT POCD.
- Once all map revisions are complete, a written Water Pollution Control Plan will be developed using CTDEEP’s template. This is similar to plans we completed in Southington, Vernon and New Milford.
8.3 Pump Station Condition Assessment

A main goal of any condition assessment is to evaluate each major piece of equipment and determine when it should be replaced or upgraded because of its condition or due to safety considerations. A secondary goal is to maximize use of facilities that are relatively new and minimize the costs of facilities that should be replaced.

The development of Capital Improvement Plans (CIP) for each pump station will be based upon: visual inspections, age of the equipment/structure, known deficiencies, criticality, energy efficiency, safety and regulatory concerns. Future increases in capacity, if any, as well as any necessary provisions for resiliency per new TR-16 Regulations will also be taken into consideration. We rely not only on our experience but also on equipment manufacturer recommendations and guidance from professional organizations such as ASHRAE to determine the expected remaining service life.

Our evaluation team will visit each pump station to evaluate the sites, structures, process equipment, buildings (structures, roofs, windows, doors, building envelopes), and building support systems (HVAC and electrical). Our team will consist of a process engineer, a structural engineer, and an electrical engineer. After the site visits the evaluation team will prepare a report categorize assets into four groups as follows:

- **Immediate** items are critical assets in imminent danger of failure, or have safety, security or other regulatory compliance issues
- **Category A** items have an expected remaining service life of 5 or fewer years
- **Category B** items have an expected remaining service life of between 6 and 10 years
- **Category C** items have an expected remaining service life of between 11 and 20 years

Prioritization allows the WPCA to phase needed improvements to match priorities and available funding. Through our experience on past project, we have found that it is important that the client provide input on the prioritization. Therefore, once the inspections have been completed and initial priorities established, we will conduct a prioritization workshop with the WPCA to confirm that WPCA members and operating staff agree with our recommendations and prioritization categories.

Once agreement has been reached on recommended improvements and priorities, our team will develop costs estimates for each item as applicable. Budgetary cost estimates typically include allowances for contractor markup (10%), installation, general conditions (15%), and engineering and contingency. All budgetary cost estimates are also tied to the most recent ENR Construction Cost Index.

An example of a Capital Improvement Plan Final summary is attached at the end of this section. Our clients have found this document to be a concise summary of the condition of each component, and a valuable tool for current and future budgetary planning.
8.4 Financial Analysis

Once the capital improvement plan is complete, the useful life and unit replacement cost data for each component will be entered by MFSG into a financial model for analysis in excel format. This will allow the development of optimal cost projections for annual re-investment in infrastructure. These projections can be done on a year by year basis, or periodically as required. Re-investment can be done either in the form of additions to the WPCA’s annual budget, or funding of what is commonly referred to as Repair, Renewal and Replacement (or “3R”) reserves.

To identify the full cost of operating and maintaining infrastructure, it is necessary to evaluate whether the planned capital investments in the system are sufficient to provide for long-term sustainability. Reserves for replacement of assets (“3R” reserve) should be established to provide funds to pay for unexpected major repairs and planned replacement or rehabilitation of collection system components. This reserve can be used to pay for capital costs to avoid or minimize the amount that would otherwise be recovered through user fees (and possibly result in a significant rate increase). Typically, this annual “3R” reserve contribution is calculated based on the estimated useful life and replacement cost of each component.

The end result of this financial analysis will be an estimate of the annual investment required to appropriately maintain the sewer infrastructure and maximize the useful life of each asset. The annual investment required will be compared to the currently planned annual investment. The difference between what is required and what is planned is the amount of additional investment that the WPCA should consider undertaking. If desired, a sewer rate study could also be performed.

8.5 Community Sewer Systems

The WPCA website indicates that there are several community sewer systems in the Town, all of which are privately owned and operated. Our team contains engineers who can evaluate these systems if required. MFSG can utilize generally accepted cost of service and ratemaking principles (including techniques and methodologies used by actuaries) to determine the adequacy of amounts reserved for repair, replacement and rehabilitation of each community system in accordance with existing WPCA policies. A formal actuarial evaluation is not suggested, as this would entail substantial additional expense.

8.6 Potential Additional Tasks

Tighe & Bond can also provide assistance to the WPCA with the following tasks, if requested:

- **Updating the collection system mapping into GIS format.** Our GIS Department is currently working with the Brookfield Department of Public Works on MS4 compliance so we are familiar with the Town’s GIS system.

- **Evaluating Infiltration/Inflow in the collection system.** It is our understanding that the Town has done quite a bit of work on evaluating this issue. Tighe & Bond can review work done to date as documentation to regulatory authorities that excess flows are being addressed.

- **Documentation of Collection System Operation and Maintenance.** Both the CTDEEP and USEPA have been encouraging communities to develop written programs to formally document operation and maintenance procedures, and procedures to follow in the event of an overflow. Tighe & Bond has provided this service to many WPCAs (most recently to Southington and Stratford), and can assist the WPCA as well.
### TABLE 3-1
Recommended Improvements

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Location</th>
<th>Item Description</th>
<th>Proposed Improvement</th>
<th>Estimated Capital Cost</th>
<th>Immediate</th>
<th>Cat A</th>
<th>Cat B</th>
<th>Cat C</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>$5,000</td>
<td>$137,000</td>
<td>$2,864,500</td>
<td>$2,600,000</td>
<td>$5,606,500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Total Capital Cost</strong></td>
<td><strong>Grand Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Action Category Definitions:

- **Immediate** - Items that have an immediate need for repair or replacement because of their condition or importance. Items that were safety or code concerns were included in this category.
- **Category A** - Items that have an expected remaining service life of 5 or fewer years - repair or replacement is expected to be necessary between now and 2025.
- **Category B** - Items that have an expected remaining service life of 6 to 10 years - repair or replacement is expected to be necessary between 2021 and 2025.
- **Category C** - Items that have an expected remaining service life of 11 to 20 years - repair or replacement is expected to be necessary between 2026 and 2035.

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### Pump Station

#### Civil

- **C 1 Exterior** - Deteriorated pavement - parking area
  - **Recommended Action Category (1)**: B
  - **Proposed Improvement**: Replace parking area
  - **Estimated Capital Cost**: $25,000
  - **Immediate**: $0
  - **Cat A**: $0
  - **Cat B**: $0
  - **Cat C**: $25,000

- **C 2 Exterior** - Pump Station Curtain Drain System
  - **Proposed Improvement**: Provide Spare Pump or High level alarm
  - **Estimated Capital Cost**: $10,000
  - **Immediate**: $0
  - **Cat A**: $0
  - **Cat B**: $10,000
  - **Cat C**: $0

- **C 3 Exterior** - Pump Station Curtain Drain System
  - **Proposed Improvement**: Replace pump and provide high level alarm
  - **Estimated Capital Cost**: $10,000
  - **Immediate**: $0
  - **Cat A**: $0
  - **Cat B**: $10,000
  - **Cat C**: $0

#### Process/Mechanical

- **P 1 Interior** - Vertical Turbine Distribution Pumps
  - **Proposed Improvement**: Replace pumps (One 600 hp; One 300 hp)
  - **Estimated Capital Cost**: $2,500,000
  - **Immediate**: $0
  - **Cat A**: $0
  - **Cat B**: $2,500,000
  - **Cat C**: $0

- **P 2 Interior** - Vertical Turbine Distribution Pumps
  - **Proposed Improvement**: Provide Spare Pump or High level alarm
  - **Estimated Capital Cost**: $10,000
  - **Immediate**: $0
  - **Cat A**: $0
  - **Cat B**: $10,000
  - **Cat C**: $0

- **P 3 Interior** - Vertical Turbine Distribution Pumps
  - **Proposed Improvement**: Replace pump and provide high level alarm
  - **Estimated Capital Cost**: $10,000
  - **Immediate**: $0
  - **Cat A**: $0
  - **Cat B**: $10,000
  - **Cat C**: $0

- **P 4 Interior** - Piping - Operating Floor
  - **Proposed Improvement**: Repaint Piping
  - **Estimated Capital Cost**: $16,000
  - **Immediate**: $0
  - **Cat A**: $0
  - **Cat B**: $16,000
  - **Cat C**: $0

- **P 5 Interior** - Piping - Operating Floor
  - **Proposed Improvement**: Replace Valves
  - **Estimated Capital Cost**: $200,000
  - **Immediate**: $0
  - **Cat A**: $0
  - **Cat B**: $200,000
  - **Cat C**: $0

#### Structural/Architectural

- **Building Exterior**
  - **S 1 Exterior** - Plywood panels on east and west elevations covering louver openings
    - **Proposed Improvement**: Remove and replace plywood with metal wall panels
    - **Estimated Capital Cost**: $40,000
    - **Immediate**: $0
    - **Cat A**: $40,000
    - **Cat B**: $0
    - **Cat C**: $0

- **S 2 Exterior** - Overhead coiling door in south elevation is worn and deteriorated
  - **Proposed Improvement**: Remove and replace overhead coiling door
  - **Estimated Capital Cost**: $20,000
  - **Immediate**: $0
  - **Cat A**: $20,000
  - **Cat B**: $0
  - **Cat C**: $0

- **S 3 Exterior** - Exposed Flashing
  - **Proposed Improvement**: Replace flashing with asphalt
  - **Estimated Capital Cost**: $10,000
  - **Immediate**: $0
  - **Cat A**: $10,000
  - **Cat B**: $0
  - **Cat C**: $0

- **S 4 Exterior** - Roof scuttle access ladder and hatch
  - **Proposed Improvement**: Replace skid with standard stair
  - **Estimated Capital Cost**: $5,000
  - **Immediate**: $5,000
  - **Cat A**: $0
  - **Cat B**: $0
  - **Cat C**: $0

#### Electrical

- **E 1 Interior** - Hotel Disconnect Switches
  - **Proposed Improvement**: Replace disconnect switches
  - **Estimated Capital Cost**: $2,000
  - **Immediate**: $0
  - **Cat A**: $2,000
  - **Cat B**: $0
  - **Cat C**: $0

- **E 2 Interior** - Heat and Smoke Detectors
  - **Proposed Improvement**: Replace Heat and Smoke Detectors
  - **Estimated Capital Cost**: $5,000
  - **Immediate**: $0
  - **Cat A**: $5,000
  - **Cat B**: $0
  - **Cat C**: $0

#### HVAC

- **H 1 Basement** - Hot Water Pumps and Disconnects
  - **Proposed Improvement**: Replace pumps and disconnect switches; provide VFDs
  - **Estimated Capital Cost**: $20,000
  - **Immediate**: $0
  - **Cat A**: $20,000
  - **Cat B**: $0
  - **Cat C**: $0

#### Instrumentation and Controls

- **I 1 Interior** - Discharge Pressure/Suction Flow Transmitters
  - **Proposed Improvement**: Replace transmitters (2)
  - **Estimated Capital Cost**: $9,000
  - **Immediate**: $0
  - **Cat A**: $9,000
  - **Cat B**: $0
  - **Cat C**: $0

- **I 2 Interior** - Discharge Flow Transmitter
  - **Proposed Improvement**: Replace transmitter
  - **Estimated Capital Cost**: $4,500
  - **Immediate**: $0
  - **Cat A**: $4,500
  - **Cat B**: $0
  - **Cat C**: $0

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**Rounded to nearest Thousand:**

- **Immediate**: $5,000
- **Cat A**: $137,000
- **Cat B**: $2,865,500
- **Cat C**: $2,600,000
- **Total Capital Cost - Grand Total**: $5,607,000