

Statement of Qualifications for WASTEWATER ENGINEERING SERVICES

DANVILLE, VT
February 15, 2023



Submitted to:
Audrey DeProspero
Town of Danville
PO Box 183
Danville, VT 05828

February 15, 2023

dufresnegroup.com
info@dufresnegroup.com

Audrey DeProspero
Town of Danville
PO Box 183
Danville, VT 05828

Re: Wastewater Statement of Qualifications

Dear Ms. DeProspero:

Dufresne Group is pleased to respond to your request for qualifications for wastewater engineering services. During your review of our enclosed submittal, please note that we offer the following advantages to the Town for this project:

- Nearly all staff proposed to work on this project are out of our St. Johnsbury office which will provide efficiencies during site visits, attendance at meetings and a general understanding of the service area.
- We maintain excellent working relationships with H₂O Innovation staff and have recent wastewater experience with your contract operations firm on projects in St. Johnsbury, VT, Cabot, VT, and Littleton, NH.
- Dufresne Group is registered as a Disadvantaged Business Enterprise (DBE) in Vermont and is 100% woman owned. Our DBE status counts towards meeting the State's DBE goal for CWSRF projects.
- Dufresne Group has extensive experience with State and Federal funding for water and wastewater projects throughout Vermont. Dufresne Group has excellent relationships with funding agency officials and keeps up-to-date on the funding climate and available incentives.
- Dufresne Group specializes in municipal water and wastewater engineering. We have extensive knowledge of wastewater and all the specific elements of your project: wastewater treatment plants, solids handling, disinfection, and collection system evaluation.

We are excited for the opportunity to support the Town of Danville on this project. In the interest of being concise, we have limited the length of our proposal. Please feel free to contact us if you have any questions or would like to meet to discuss how we can assist the Town with this project.

Sincerely,
DUFRESNE GROUP



Naomi Johnson, P.E.
President

Statement of Qualifications

PROJECT UNDERSTANDING

Originally constructed in 1982, the Danville Wastewater Treatment Facility has reliably treated wastewater from the community for decades, supporting safe residential and business growth in the Town. Although many improvements have been made to update and maintain equipment at the facility, some of the systems and components have reached their expected useful design life. In addition, increasing regulatory requirements require additional consideration for improved treatment, sludge dewatering and disposal.

Currently the 0.060 MGD facility is reported to operate at approximately 50% of permitted capacity on average. Although no significant growth in the developed surroundings is expected, a review of the facility capacity and process optimization is desirable to consider any potential collection system expansion or improved effluent quality.

The first phase of the wastewater treatment facility project will be to prepare a Preliminary Engineering Report (PER) to evaluate the status of the Danville Treatment Facility with a prioritized focus on controls, disinfection, nitrogen optimization and sludge disposal. Recent improvements at the pump stations and reliability in the collection system will limit the amount of focus needed on those systems allowing the focus to be on the treatment facility. The PER will be written per Vermont Water Investment Division and USDA Rural Development guidelines and utilized as the basis document for funding applications.



APPROACH

The Danville Wastewater Treatment facility and collection system have been well maintained since construction by a dedicated long-term operator. Recent improvements include rebuilding of the pump stations at Sugar Ridge and below Marty's, installation of a new roof on the treatment plant and completion of the 20-year evaluation. Although the wastewater system does not require significant improvements, the preparation of a preliminary engineering report will allow the Town to utilize the State of Vermont Clean Water State Revolving Fund or USDA Rural Development for project funding.

The Preliminary Engineering Report will include a review of the entire wastewater system, working closely with the operator and reviewing historical records to obtain a thorough understanding of the system history and areas of concern. As noted above, based on preliminary discussions with the operator, the emphasis on needed improvements are related to challenges with facility controls, UV disinfection system, cleaning out the lagoon and disposal of the sludge, improved treatment and general building improvements. A typical scope of work for a preliminary engineering report for a wastewater treatment plant is included below.

Statement of Qualifications

I. Basic Services:

A. Collect and review existing information provided by the client including the annual budget, rate structure, schedule of any debt, and wastewater treatment plant. These files may include information on the Wastewater Treatment Plant (WWTP), pump stations and collection system including reports, studies, drawings, specifications, O&M Manuals, and monthly operational reports. The existing information will also include historical wastewater quality data and information contained in the discharge permit. Additional data will be obtained through interviews with WWTP operator.

B. Develop a Project Planning narrative including the project location, environmental resources present, current population data and expected population trends for the Town based on historical population data from the US Census for no less than 20 years prior to the date of the report.

C. Describe the existing facilities. The description will include:

- a. Location map,
- b. General condition,
- c. Capacity,
- d. Adequacy,
- e. Schematic process layout,
- f. Summary of any recurring compliance issues,
- g. History of major system components,
- h. Results of any water/energy/waste audits recently completed or in progress.

D. Describe the character and use of the receiving waters.

E. Prepare a list of deficiencies and/or equipment or process limitations that may adversely affect process efficiency or effluent quality based on the results of the field inspections of the WWTP and pump stations.

F. Prepare a table showing a 20-year capital improvement program listing the current and projected operational and maintenance expenses and the estimated cost for improvements anticipated to be required at various times over the next 20 years.

G. Describe the current rate schedule and develop rate alternatives to assure adequate funds are available to fund the operational, maintenance, and capital needs over the next 20 years.



Statement of Qualifications

- H. Describe the need for the project including health, sanitation, and security, replacement of aging infrastructure, planning for reasonable growth and operating permit compliance.
- I. Describe existing and projected flow, existing flow composition, waste strength and peaking factors based on historical records.
- J. Evaluate alternatives for addressing the project need. For each technically feasible alternative, include as applicable: description, design criteria, environmental impacts, site layout, schematics, land requirements, potential construction problems, construction sequence and maintenance of operations considerations, sustainability considerations and construction cost estimates. Alternatives will include, at a minimum those to address the following:
- a. UV System Upgrades
 - b. Controls
 - c. Lagoon cleaning and sludge disposal
 - d. Influent channel modifications
 - e. Improved Organics Treatment
 - f. General facility improvements
- K. Develop a life cycle cost analysis and compare non-monetary factors to form the basis for selecting recommended alternatives.
- L. Prepare a detailed description of the recommended project(s) with a conceptual site plan, project schedule, list of anticipated permits, and total project cost estimate.
- M. Evaluate the revenue requirements for the existing O&M costs, projected future O&M costs, capital fund reserve for equipment replacement, existing capital debt, and project debt for capital improvements. Review potential funding of the recommended improvements by the Rural Development (RD) loan/grant program and the Clean Water State Revolving Fund (CWSRF) program. Develop rate projections to provide additional revenue to fund the costs of the project, based on funding by the two alternative sources.
- N. At the 60% and 90% complete stages, submit documents that encompass all findings, figures and tables for review to the Town, State and Rural Development.
- O. Prepare three copies of the final bound report and provide to the Town. Provide electronic copies to DES and RD.



Statement of Qualifications

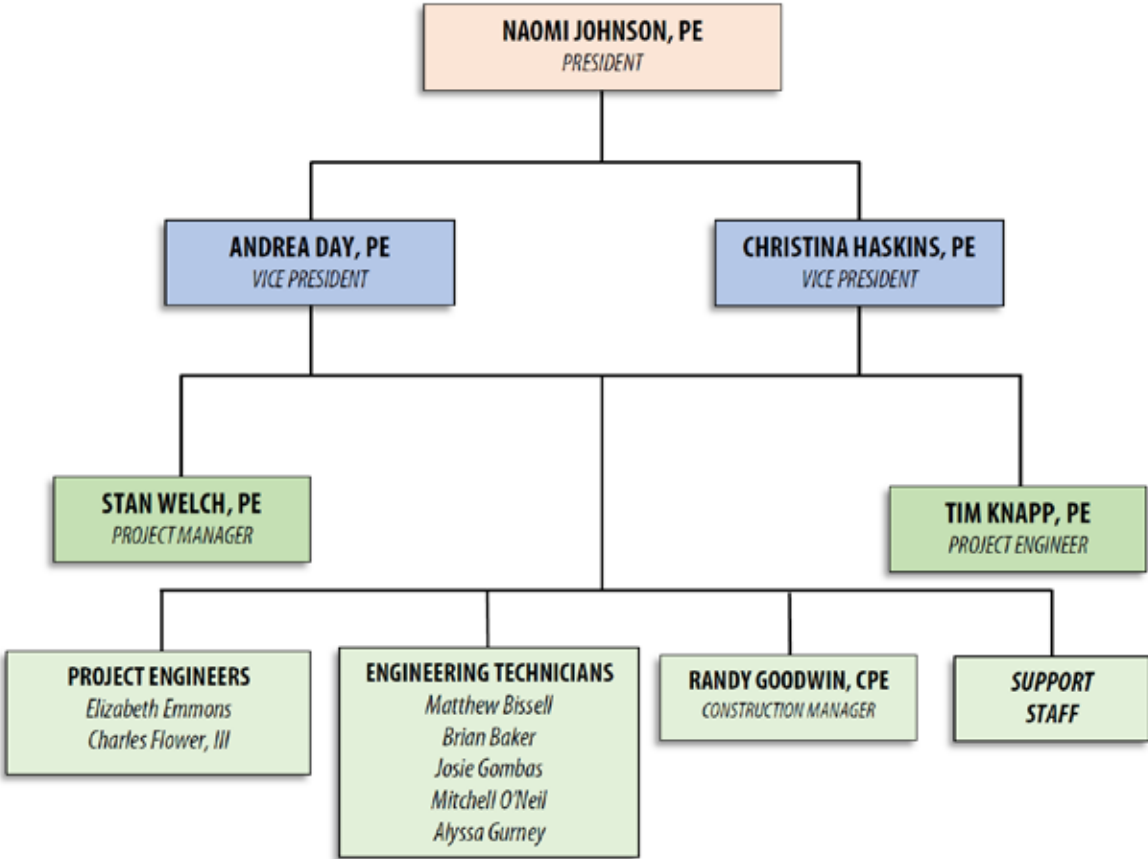
III. Special Services:

- A. Meet with the Town or regulatory officials to discuss findings and receive input.
- B. Prepare an Environmental Report to review environmental impacts for any recommended alternatives that would disturb outside the existing building area in accordance with the National Environmental Policy Act.
- C. Accompany the operators to complete inspections of the WWTP and collection system.
- D. Complete a topographic survey of the wastewater collection system to develop a system-wide GIS-based map.
- E. Utilize subconsultants such as mechanical and electrical Engineers to perform specialty inspections at the wastewater treatment plant, as needed.
- F. Provide funding assistance to the Town, including discussions with CWSRF and RD and preparing funding applications.



COMPANY HISTORY

Since 1999, Dufresne Group has provided civil engineering and consulting services to both municipal and private sector clients throughout Vermont and New Hampshire. Dufresne Group is based in Springfield, Vermont with offices in Barre, Manchester and St. Johnsbury, Vermont. We currently employ a staff of sixteen. We are a 100% woman owned corporation registered as a disadvantaged business enterprise (DBE) in Vermont and New Hampshire. Our company structure is shown in the following graphic.



QUALIFICATIONS AND EXPERIENCE

We are a full-service engineering firm. Often, the projects we work on start out by assisting clients with identifying and applying for funding. We then provide the planning, design and construction observation and administration services to bring the project through completion.

Our engineering experience includes a variety of project types, from project planning through Asset Management and Capital Improvements Plans to project implementation through treatment facility construction. Key projects with similarities to the Danville wastewater project needs include:

- o Evaluation, final design, and engineering services during construction for treatment facilities:
 - § Screw Pump Replacement, St Johnsbury, VT
 - § Wastewater Treatment Facility Asset Management Plan, Putney, VT
 - § Wastewater Treatment Facility Asset Management Plan, Littleton, NH
 - § Sewer Trunkline Evaluation and Reporting, Barre City, VT
 - § WWTF Evaluation and Screw Pump Replacement, Littleton, NH
 - § Wastewater Treatment System replacement, Hyde Park, VT
 - § Wastewater System 20-Year Evaluation, St. Johnsbury, VT
 - § Headworks and Digester Improvements, St. Johnsbury, VT

Statement of Qualifications

Additional specific project experience is included on project sheets contained in this submittal. An overview of our experience related to those services that may be needed for the Danville wastewater project are outlined below.

Municipal Infrastructure Funding Programs

We provide funding assistance on nearly every municipal project we work on and obtaining a favorable funding package is nearly always critical to the project proceeding. We have extensive experience with the common municipal infrastructure funding programs, including the Drinking Water and Clean Water State Revolving Funds (DWSRF and CWSRF) and the USDA Rural Development (RD) Grant/Loan program. We work very closely with the representatives for state and federal programs to assist our clients with securing funding and meeting the funding agency administrative requirements. We have excellent relationships with funding agency representatives, correspond with them frequently to obtain the most up-to-date funding information for our clients, and attend funding update sessions multiple times each year. The following table summarizes some of our funding assistance for projects.

Project/Client	Funding	Project Cost	Terms/Grant
Barre City: WWTF Upgrade	CWSRF	\$1,000,000	0% Loan
Chester: Water Main and Storage Tank Imp.	DWSRF	\$4,000,000	3% Loan
Littleton Subarea 5 Wastewater Improvements	CWSRF	\$2,000,000	2% Loan
Hyde Park: Wastewater System Upgrade	CWSRF	\$985,000	0% Loan
Jeffersonville: Water Main and Tank Design	DWSRF	\$116,000	0% Loan
Lebanon: Water Treatment Plant Improvements	NHGTF	\$3,670,000	20% Grant
Northfield: CSO Elimination	CWSRF	\$1,300,000	0% Loan
Peterborough: Tank, Main, Cleaning/Lining	RD	\$3,500,000	45% Grant
Peterborough: Old Street Rd & Sand Hill Mains	DWSRF	\$1,158,000	25% Grant
St. Johnsbury: Westside Infrastructure	RD	\$15,000,000	70% Grant
Littleton: Wastewater System Asset Management	CWSRF	\$90,600	66% Grant
Littleton: Subarea 2 Wastewater PER	RD	\$56,500	53% Grant

Wastewater and Water Systems Engineering

Dufresne Group provides all areas of consulting engineering including planning and studies, final design, and construction phase services. We have specialized in water and wastewater project engineering since the company’s inception. The majority of our company’s projects are for municipal utility improvements projects, in these categories:

- Project Development and Funding Assistance
- Asset Management Plans for Water, Wastewater, and Stormwater Systems
- Preliminary Engineering Reports
- Water, Wastewater, and Stormwater Improvements Final Design
- Construction Phase Management and construction observation/Resident Project Representation

Our experience includes new, replacement, and rehabilitation for the following types of assets:

Statement of Qualifications

- Treatment systems/facilities
- Pump stations
- Vaults and tankage
- Control valves
- Process piping
- Utility mains

Our dedicated focus on water and wastewater engineering enables us to review the most cost effective and optimal treatment and collection system solutions during the preliminary phases of a project to form a strong foundation moving into final design. With a certified professional estimator on staff, our clients can be confident in our construction and total project cost estimates for planning and budgeting purposes. Maintaining excellent professional relationships with our subconsultants, system vendors, regulatory agencies, and funding agencies is key for our project management staff, and rewards our projects with fluid design document generation, design review, and overall permitting.



Screw Pump Installation in St. Johnsbury

As with any significant infrastructure investment, community buy-in and perspective are critical in reviewing suitable alternatives. With our team members being local to Danville, Peacham, and St. Johnsbury, the Town of Danville can be certain that any solutions considered will be reviewed thoroughly with key community members and operational staff to ensure that any proposed project is not only a good fit for the facility or system, but also a good fit for the community. Local interaction, local perspective, and project team communication will be key throughout the preliminary and final design phases.

Construction Administration Services

Dufresne Group provides construction engineering services on nearly all projects designed by the firm. We have a full-time construction manager with over 30 years of experience that oversees construction administration and Resident Project Representatives (RPRs), who is also a Danville resident. This consistent leadership has resulted in clear procedures based on real project experience that result in efficient, effective construction administration and observation.

In addition to standard Resident Project Representation, some municipalities request independent construction services. For example, since 2009 we have been retained by the City of Lebanon, New Hampshire to provide construction phase services for third party inspection. Our primary role is to provide support to the Engineering Department and Department of Public Works and represent the City on the construction site. We have provided onsite Resident Project Representation on a variety of projects, which have all involved water, sewer, drainage, sidewalk, curbing and roadway construction.

Danville's wastewater improvement project will require knowledge in all these areas.

ST. JOHNSBURY WASTEWATER TREATMENT PLANT SCREENING AND DIGESTER MIXING UPGRADE

TOWN OF ST. JOHNSBURY, VERMONT



St. Johnsbury Wastewater Treatment Plant

The St. Johnsbury Wastewater Treatment Plant Screening and Digester Mixing Upgrade project was completed in order to bring much-needed improvements to the existing Treatment Facility. Alongside the Town of St. Johnsbury, Dufresne Group assessed the quality of the existing Treatment Facility screening and digester mixing in order to develop a project that addressed the most necessary components.

Work done for this project includes:

- Construction of a screen room with grinding and cylindrical screen equipment on top of the existing headworks
- Replacing the existing digester boiler
- Renovation of the two existing digesters
- Replacement of digester gas mixers with mechanical mixers

Funded by USDA Rural Development, the project ended up being under budget. As a result, additional improvements were able to be made. These improvements include:

- Miscellaneous alarm upgrades
- Addition of foundation insulation for the primary digester
- Addition of an influent flow meter
- Installation of new roofing for the digester building
- A bridge crane system in the screen room for the screen and grinder maintenance and removal
- Replacement of the gas safety equipment

KEY FEATURES:

- New screen room with equipment
- Replacement of the existing boiler
- Renovation of the existing digesters
- Additional updates were possible due to the project coming in under budget

REFERENCE:

Chad Whitehead, Town Manager
51 Depot Square, Suite 3
St. Johnsbury, VT 05819
Phone: 802.748.3926

WASTEWATER SYSTEM MASTER PLAN

TOWN OF MANCHESTER, VERMONT



Flow Control Structure



Manhole

Dufresne Group developed the Wastewater Master Plan for the Town of Manchester, Vermont wastewater system in three phases. Phase I consisted of investigations, inspections and evaluations of the existing facilities including the Wastewater Treatment Facility and wastewater pump stations. A topographic survey was conducted to obtain location, rim and invert elevation, condition and photos of all manholes in the collection system.

Phase II consisted of flow monitoring within the wastewater collection system, creating a basemap and developing a computer model of the wastewater collection system. The computer model was used to determine deficiencies in the collection system. The effects of future growth were also evaluated including likely areas of expansion and hydraulic capacity of the existing sewer mains. A prioritized list of deficiencies was prepared and recommendations were made for the system improvements.

In Phase III, the final report was prepared to summarize the investigations, inspections and evaluations made in Phase I and the deficiencies and recommendations developed in Phase II. The report also included estimated costs of recommended improvements, a capital improvement plan and recommendations for future wastewater rates and project scheduling and phasing.

KEY FEATURES:

- Flow metering studies conducted during three seasons.
- GIS basemap of system created for 19.6 miles of sewer main.
- Hydraulic computer model used to evaluate collection system and identify deficiencies.
- Capital Improvement Plan developed including rate projections.

REFERENCE:

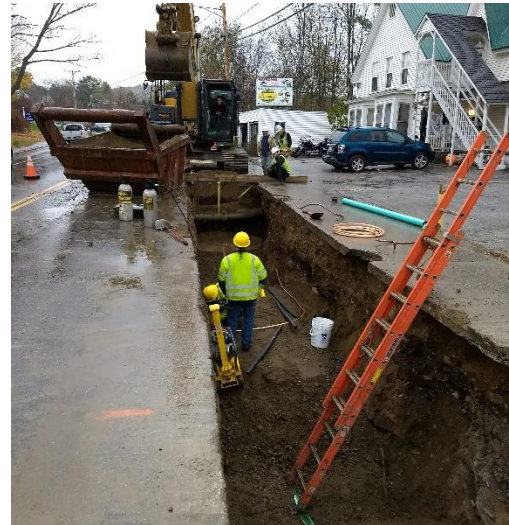
Leslie Perra, Interim Town Manager
40 Jeff Williams Way
Manchester Center, VT 05255
Phone: 802.362.1313

LITTLETON SUBAREA 5 SEWER IMPROVEMENTS

TOWN OF LITTLETON, NEW HAMPSHIRE



A new manhole on Union Street



Construction on Union Street

The Littleton Subarea 5 Sewer Improvements project provided new sewer mains for residents and businesses in the Town's Subarea 5, specifically on Union, Cross and Pine Street and Chiswick Avenue. This was an area that was identified in a system-wide evaluation as having excessive infiltration and high inflow.

The planning phase of the project, completed in February 2017, was partially funded by a grant from USDA Rural Development. Based on the findings from the Preliminary Engineering Report, the Town applied for and received funding from the NH Clean Water State Revolving Loan Fund for the design and construction phases of the project.

Dufresne Group developed the project phase after investigations for the PER showed the existing sewer mains were in poor conditions and had inadequate access. Areas of the sewer main that were found to have acceptable slope, separation from the water main, and condition issues only were lined with cured-in-place pipe. This provided a cost savings to the project, and therefore to the Town.

The construction phase of the project, which consisted in part of over 3,500 LF of new sewer main, was started in October 2018 and completed in November 2019.

KEY FEATURES:

- Over 3,500 LF of sewer main replacement and 2,300 LF of sewer services
- Over 1,200 LF of cured-in-place sewer main
- 31 new manholes
- Full-width pavement overlay on Town maintained side streets
- Through coordination with NHDOT, the Union Street section of the project was completed prior to a pavement overlay project, so the whole project has a new asphalt overlay

REFERENCE:

James Gleason, Town Manager
125 Main Street, Suite 200
Littleton, NH 03561
Phone: 603.444.3996

NORTH END EJECTOR STATION IMPROVEMENTS DESIGN AND CONSTRUCTION ADMINISTRATION

BARRE CITY, VERMONT



Existing Pneumatic Ejector Station



Existing Panel



New Submersible Station

The City of Barre owns and operates an existing pneumatic ejector station on North Main Street used to convey wastewater from 12 residential and commercial connections. The ejector station was originally constructed in 1966 and has exceeded its estimated design life causing operational and maintenance concerns for the Department of Public Works.

The City consulted with Dufresne Group through a qualification-based selection process to acquire a Clean Water State Revolving Loan Fund (CWSRF) planning loan to evaluate the station's status and improvement alternatives.

Dufresne Group observed the existing conditions and consulted with the DPW regarding maintenance and operation. After considering the existing conditions DG authored a Preliminary Engineering Report (PER) to review replacement options for the station. A suction lift station and a submersible station were both considered viable alternatives and preliminary layouts were drafted for both systems. Ultimately, it was determined that a submersible station would be the optimum replacement option and was recommended as a design and construction project for the City to pursue.

Final design of the station replacement was completed as outlined in the PER using CWSRF funds. Included in the project were approximately 100 LF of water main replacement and 100 LF of roadway reconstruction. The construction project is currently underway with substantial completion anticipated in June 2023.

KEY FEATURES:

- TR-16, 10 State Standards, and the Vermont Wastewater System and Potable Water Supply Rules utilized as the design standards for the evaluation.
- Considered possible growth based on undeveloped lot size adjacent to the project area.
- Coordination required with VTTrans to review project impacts to the Washington County Railroad.
- CWSRF Loans for preliminary and final design phases.
- Estimated Construction Cost: \$1,208,200

REFERENCE:

Bill Ahearn, PE
Director of Public Works & Engineering
6 North Main Street, Suite 1
Barre, VT 05641

Statement of Qualifications

PROJECT TEAM

Dufresne Group proposes a team for your project that has been assembled to ensure that you receive the maximum benefit of our experience and talents. All our project team members are very knowledgeable in all aspects of municipal utility development, design, and construction. Our key team members have worked together for over 10 years on multiple municipal infrastructure projects from planning through construction. Naomi Johnson and Randy Goodwin have been working together for 32 years and have completed numerous wastewater treatment plant projects together. In addition, Randy is a resident of Danville and our project team, other than Naomi Johnson, are all located in our St. Johnsbury office.

Naomi R. Johnson, PE, President



Naomi Johnson will supervise all staff. Naomi is a graduate of the University of Vermont and Montana State University. Naomi has over 30 years of experience in planning, design, and construction of wastewater projects. Specializing in hydraulics and hydrology, Naomi has served as lead design engineer and project manager for many utility piping, treatment, and pumping projects. Naomi's resume includes a variety of treatment facilities projects, most recently the St. Johnsbury Wastewater Treatment Facility Upgrades, Royalton Treatment Facility Improvements, Lebanon Treatment Plant upgrades and the Hyde Park wastewater improvements project.

Stanley Welch, PE, Project Manager



Stanley Welch will be the Project Manager. Stan graduated from the University of New Hampshire with a bachelor's degree in Civil Engineering. Stan has a broad range of engineering experience in planning, design, and construction administration for numerous projects in the civil engineering field. Stan's recent treatment works projects are at the St. Johnsbury wastewater treatment facility and the Littleton, NH treatment facility. Stan is currently working in the construction phase for improvements to the North End wastewater pump station in Barre, the design phase for a Sludge Management project with new biosolids dewatering facilities in St. Johnsbury, and the evaluation phase of the Cabot and St. Johnsbury WWTF's. Through work in St. Johnsbury and Cabot, Stan has developed an excellent working relationship with the local H₂O Innovation staff, who are the Danville wastewater system operators.

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Randy Goodwin, CPE, Construction Manager



Randy Goodwin will be responsible for cost estimating for the project and development of construction phasing plans. Randy has 35 years of cost estimating and construction experience for numerous municipal projects. Randy holds the designation of Certified Professional Estimator (CPE) through the American Society of Professional Estimators. Randy has completed numerous accurate cost estimates for utility replacements, treatment facility upgrades, pump stations and civil/site projects. Randy also has extensive experience in treatment facility new construction and upgrade projects that extends back to the original construction of the Barre and Montpelier City water treatment facilities. Randy is a resident of Danville and maintains an excellent working relationship with the local H₂O Innovation staff.

Elizabeth Emmons, EI, Project Engineer



Elizabeth graduated from Vermont Technical College in 2001 with a bachelor's degree in Architectural Engineering Technology and from Norwich University in 2010 with a Masters in Civil Engineering. Elizabeth has a broad range of engineering experience including GIS Mapping and CAD experience as well as underground utility design, treatment plant design, road and sidewalk layout design and permitting. Elizabeth works out of the St. Johnsbury office and has extensive asset management experience which will be applicable while reviewing the existing status and conditions at the Danville WWTP.

Additional consultants that we have working relationships with will be brought in as part of the project team to ensure the systems at the Danville WWTP systems are adequately evaluated. At this time, we anticipate using Engineering Services of Vermont to provide a mechanical and electrical engineering site visit to review existing conditions and system deficiencies.

Naomi Johnson, PE | *President*



Naomi has a broad range of engineering experience, including water and wastewater treatment system design, water distribution system computerized analysis, geographic information systems (GIS) software applications, and stormwater systems design and permitting. She has been with Dufresne Group since 1999.

EDUCATION

MEng., Environmental Engineering, 1995, Montana State University

BS, Civil Engineering, 1989, University of Vermont

PROFESSIONAL CERTIFICATIONS

VT Professional Engineer

NH Professional Engineer

ANR On-Site Wastewater System Designer

AWARDS AND PUBLICATIONS

Presented *Integrating Arcview GIS and AutoCad*, 2001, Vermont GIS Expo

Vermont Young Engineer of the Year, 2000

ACEC Engineering Excellence Award for the *Berlin Pond Source Protection Plan*

Presented *Engineering GIS Applications*, 2000, VT GIS Expo

Evaluation of Water Quality Modeling of Distribution Systems using EPANET, 1995, a Master's thesis completed at Montana State University

Student Engineer of the Year, 1988, University of Vermont, presented by Vermont Society of Engineers

Contributor to AWWARF research project: *Factors Limiting Microbial Growth in Distribution System: Laboratory and Pilot-Scale Experiments*

RELATED PROJECT EXPERIENCE

Preliminary Engineering Report, Woodsville, NH

Project Manager responsible for evaluating a potential emergency connection between the Woodsville Water and Light Department and the North Haverhill Water and Light Department. The project involved cost estimating, hydraulic analysis and report production for the recommended 5,000 lf interconnection with 8-inch diameter pipe and a booster pump station.

Wastewater Improvements, St. Johnsbury, VT

Project Manager responsible for completing a Preliminary Engineering Report and Environmental Report for improvements at the WWTF, Oak Street Pump Station and Hood Pump Station. The Final design and construction services for the project included fine screening, new headworks building, digester mixing replacement system, new and larger force main and complete replacement of a pump station.

Wastewater System Evaluation, Hyde Park, VT

Project Manager responsible for preparing a Preliminary Engineering Report for the two municipal on-site wastewater disposal systems.

Wastewater Improvements, Hyde Park, VT

Project Manager for a project to replace the submersible pump station on Johnson Street Extension and replace one of two community on-site wastewater disposal systems. The replacement on-site wastewater disposal system is regulated under the Indirect Discharge program and includes large volume pretreatment tanks followed by a recirculating filtration system and pressure distribution to absorption trenches.

Water Treatment Plant Upgrade, Lebanon, NH

Project Manager for improvements to the City Water Treatment Plant including a Powder Activated Carbon silo storage and feed system, replacement of the flocculator equipment, sedimentation basin sludge collectors and wastewater vertical turbine pumps. Additional non-process upgrades include a new building addition, replacement of doors, windows and the control building roof.

Wastewater Treatment Facility Upgrade, City of Barre, VT

Project Manager responsible for design of improvements to the facility including chemical feed systems and chlorine contact basins and construction phase management. Permitting requirements included a new discharge permit for a 0.6 mgd capacity increase and NPDES and Act 250 permitting.



Water and Wastewater Master Plan, Berlin, VT

Project Manager responsible for preparing a planning document evaluating current and projected water supply and wastewater disposal needs for the Town of Berlin. The project included GIS mapping to document the existing sewer collection system extent and small public water system locations. Features of the master plan included phasing recommendations for water supply connections to adjacent municipalities and capital improvements program recommendations for extensions of the wastewater collection system.

Wastewater Asset Management Plan, Putney, VT

Project Manager responsible for developing an Asset Management and Capital Improvements Plan for the Putney Wastewater System. The project included survey and inventory of the sanitary sewer collection system, 5 pump stations, two bridge crossings and assessment of the Wastewater Treatment Facility.

Replacement of Sewer Siphons at Two Crossings of the Williams River, Chester, VT

Project Manager and designer for two separate siphon replacement projects. During Tropical Storm Irene, river bed scouring resulted in breaks in the dual sewer mains crossing the Williams River adjacent to Route 103. The 6-inch diameter ductile iron lines were replaced as an emergency project with mechanical joint, concrete encased, parallel lines. The following year, another deficient river crossing was discovered and the 90 foot Williams River crossing was also replaced with dual 6-inch diameter, mechanical joint, concrete encased pipes.

Sewer Trunk Line Evaluation, City of Barre, VT

Project Manager responsible for completing an evaluation report for the Barre 24-inch and 30-inch diameter trunk lines. The project included television inspection and survey of approximately 4,000 linear feet of sewer main and structures, identifying deficiencies and recommending improvements to meet the conditions of the 1272 Order.

Route 302 Gravity Sewer Main Replacement, City of Barre, VT

Project Manager responsible for design review and construction phase management. The project on Route 302/Washington Street involved replacing approximately 1,000 lf of gravity sewer main with new 8-inch main and a connection to an existing siphon structure.

Wastewater Treatment Facility Improvements, Hartford, VT

Project Manager responsible for design of improvements to the White River Junction and Quechee Wastewater Treatment Facilities. The project included final design and construction phase activities associated with replacement of a belt filter press, replacement of a lagoon aeration system and blowers, replacement of filter controls and miscellaneous equipment upgrades.

Cabot Wastewater Treatment Facility Design, Cabot, VT

Project Engineer responsible for process design and development of plans and specifications for membrane filtration and associated aeration and chemical feed equipment.

Wastewater Treatment Plant Capacity Increase Improvements, City of Barre, VT

Revised Evaluation Report for capacity related improvements to serve as a Facilities Plan. Original project included preparing an Environmental Assessment, coordinating polymer evaluation and full scale clarifier testing, and developing scope/fee for additional services. Additional services included evaluating the facility headworks, primary treatment, and digester residence time.

Primary Digester Renovations, City of Barre, VT

Project Manager responsible for investigating deficiencies in the existing digester at the WWTF and developing conceptual plans and cost estimates for renovating the digester.

Wastewater Treatment Facility Upgrade, Montpelier, VT

Process design Engineer for phased improvements to the existing treatment facility. Improvements included phosphorus removal facilities, solids management improvements, and SCADA system installation.

Stanley Welch, PE | *Project Manager*



Stan has been with Dufresne Group since 2018 and currently serves as a project manager out of the St. Johnsbury office. Stan has had a broad range of engineering experience in planning, design, and construction administration for numerous civil engineering projects throughout New England. Stan has provided engineering services for small and large private, municipal, and federal clients. His experience includes planning, design, and construction administration for various water, wastewater, and stormwater utility projects.

EDUCATION

BS, Civil Engineering, 2012,
University of New Hampshire

PROFESSIONAL CERTIFICATIONS

VT Professional Engineer, 2017

NH Professional Engineer, 2016

AFFILIATIONS & CERTIFICATIONS

OSHA 10, Construction Safety
and Health

Gravitec Certified Fall Protection
Qualified Person

Project Management
Fundamentals, Public Naval
Shipyards

Tau Beta Pi- Engineering Society

EMPLOYMENT HISTORY

2008-2012: Resident Project
Representative, Dufresne Group

2012-2017: Civil Engineer,
Portsmouth Naval Shipyard

2017-2018: Project Engineer, Tata
& Howard, Inc.

RELATED PROJECT EXPERIENCE

Wastewater System Vertical Assets Management Plan, Littleton, NH

Served as the Project Engineer to complete and asset management plan for the Town of Littleton's wastewater treatment facility and pump station assets. The plan included the inventory and condition assessment of all accessible assets along with review of historical maintenance efforts and existing capital improvements plans. The asset management database was provided in Microsoft Access format at no cost to the owner. The plan established level of service goals for the owner and a framework for the sustainability of the asset management program. The deliverable report provided guidance to prioritize capital improvements based on condition, estimated remaining useful life, and criticality of the system's assets.

Wastewater Pump Station Evaluation, Stewartstown, NH

Served as the Project Engineer for the evaluation of two dry-pit style pump stations in Stewartstown, NH. The evaluation included inventory and inspection of existing conditions, and consideration of design alternatives for any proposed improvements. The evaluation concluded with the recommendation to upgrade the pump stations with new submersible style pump stations, complete with anti-ragging control systems.

Influent Pump Station Improvements, Canaan, VT

Served as the Project engineer to evaluate poor performance and clogging issues at the Canaan, VT wastewater treatment facility influent pump station and septage receiving. Duties included inventory and inspection of existing conditions, evaluation of operator protocols, and treatment plant data review. Preliminary design was performed to include an anti-ragging control system interface onto the existing influent pumps, and modifications to the septage receiving area to incorporate a grinder unit.

Pleasant St. and Gilman Ave. CSO Evaluation, St. Johnsbury, VT

Served as the Project Engineer to complete an evaluation of 9,000 LF of combine sewer in St. Johnsbury, VT. Duties included evaluating existing conditions and performing preliminary design of sanitary sewer collection and separated storm sewer collection infrastructure. Alternative designs were evaluated based on criteria set by DG and the town. Cost estimates were performed, and funding recommendations made.



Roy Street, Morin Drive, and Wastewater Pump Station Preliminary Engineer Report, Derby, VT

Served as the Project Engineer for the evaluation of expanding an existing wastewater collection system into two separate developments with less than 1-acre lots. The evaluation also included the review of the existing collection system pump stations. Several options were considered for the proposed sewers, including septic tank effluent pumps (STEP), individual grinder pumps, and traditional gravity collection. Ultimately it was recommended that gravity collection be installed in one of the developments while the other remain using individual onsite treatment systems. The project was funded by USDA RD, and the project required coordination with the State and Funding Agency.

Subarea 2 Wastewater Collection Evaluation, Littleton, NH

Served as the Project Engineer for the evaluation of the gravity wastewater collection system in Subarea 2 of Littleton, NH. The evaluation included mapping and inspection of existing infrastructure conditions and developing and considering alternatives in order to recommend improvements. The evaluation concluded with the recommendation to replace the gravity sewers within Subarea 2 with modern materials and proper open trench construction methods.

Sludge Management PER, St. Johnsbury, VT

Served as the Project Manager to complete an evaluation of options to manage sludge for the St. Johnsbury Wastewater Treatment Facility considering the elimination of the town's land application methods. The project included sampling and evaluation of the existing sludge characteristics with visits to assess sludge dewatering, storage and drying practices at multiple regional wastewater treatment facilities. The project evaluation, which was presented in a Preliminary Engineering Report, was unique and challenging to the Town as it involved the need to replace a long-standing disposal system, addressed the impact of PFAS on facility operations, involved adding a new treatment system to an existing facility with limited space and considered new technologies for sludge drying with major economic impacts.

North End Pump Station PER & Final Design, City of Barre, VT

Served as Project Manager to complete an evaluation and design for replacement of a wastewater pump station on Route 302 at the west side of the City. The project involved assessing the station service area and potential for growth that could impact the City's existing facilities downstream from the station and also intermunicipal agreements. Funded by the State Revolving Loan Fund, this project addressed a long standing need for infrastructure replacement as well as standby power to maintain service during emergency conditions. The project required coordination with the State's Water Investment Division, and the Washington County Railroad since the existing site is within the right of way of an active railroad. The project also proposed relocation of approximately 200 linear feet of water main to maintain the required separation from the proposed wastewater pump station.

Signal Hill Pump Station Final Design, Brattleboro, VT

Served as Project Engineer to design a complete replacement of a water booster pump station with demolition of the existing station. The project features included new building construction, new electric service, a package booster pump station and chlorine contact time facilities. The pump station design allows for future capacity increases with space to install additional pumping units.

WWTF Screw Pump and Bar Rack Replacement Project, Littleton, NH

Served as Project Manager and designer for the Screw Pump and Bar Rack Replacement project at the Littleton New Hampshire Wastewater Treatment Facility. The project involved the replacement of the existing screw pumps, replacement of the mechanical vertical bar rack in the headworks, installation of a wash press screening compactor, updated electrical systems, and updated control systems. The project was fast tracked as emergent work and the Town purchased long lead time equipment directly while the project was finalized and bid.

Wastewater System and Wastewater Treatment Facility 20-Year Evaluation, St. Johnsbury, Vermont

Served as Project Manager to evaluate the existing conditions and performance of the St. Johnsbury, Vermont wastewater system including collection systems and the treatment facility. The project involved managing electrical, architectural, and mechanical subconsultants to provide discipline specific evaluations of key facilities. Modern design standards were reviewed and applied to the collection system and treatment facility and performance was evaluated compared to the Town's NPDES permit. Project and capital planning recommendations were made address deficiencies and promote sustainability of the systems.

Randall Goodwin, CPE | *Construction Manager, Cost Estimator*



Randy has been with Dufresne Group since May of 2000 and specializes in construction field services such as project management and cost estimating but provides other services including QA/QC and inspection. He has over 30 years of construction experience for numerous municipal water, wastewater and stormwater projects.

EDUCATION

Associates in Architecture & Building Engineering Technology, 1988, Vermont Technical College

AFFILIATIONS & CERTIFICATIONS

Certified Professional Estimator, American Society of Professional Estimators, 2014

Below-Grade Safety Course

Eight Hour OSHA Training Course

ADDITIONAL EDUCATION

Construction Cost Estimating, 2019, HalfMoon Education

Facilities Construction Engineering, 2013, RS Means

Unit Price Estimating, 2013, RS Means

RELATED PROJECT EXPERIENCE

Pleasant St. and Gilman Ave. Area Water, Sewer, and Stormwater Improvements Project, St. Johnsbury, VT

Construction phase engineering construction manager for the \$7,200,000 project that included 24,300 linear feet of water main, sewer main, and storm sewer. Also, 5,300 linear feet of road reconstruction, replacement of an undersized culvert with a new 84-inch culvert over 30' deep, and horizontal directional drilling of two new sewer siphon mains.

Wastewater Treatment Facility Upgrade, St. Johnsbury, VT

Construction phase engineering project manager and resident project representative for a \$2,100,000 upgrade to the facility. Upgrades included a new screen building with screening equipment at the headworks, new digester mixers and digester wall improvements, new digester boiler system, and upgrades to the digester gas safety equipment.

Water Treatment Upgrade, Lebanon, NH

Construction phase engineering project manager for a \$3,100,000 upgrade to the facility. Upgrades included replacement of the equipment within the flocculation chambers, sedimentation basins, chemical building, backwash to wastewater pump station and filter/control building. Also, construction of a powdered activated carbon storage and feed system, construction of a filter building addition for locker and bathroom facilities, miscellaneous architectural improvements for the chemical and filter buildings and miscellaneous electrical, controls, instrumentation, process and sitework.

Subarea 5 Sewer Improvements, Littleton, NH

Construction phase engineering construction manager for a \$2,000,000 sewer replacement/rehabilitation project. Work included 3,300 lf of 8" C900 PVC sewer main and services, 1450 lf of 12" SDR 35 PVC sewer main and services, and 1300 lf of cured-in-place sewer lining.

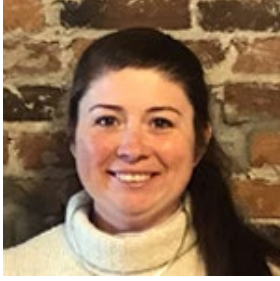
Water System Improvements, Chester, VT

Construction phase engineering Project Manager responsible for management of all activities associated with the construction of various water system improvement projects. These projects totaled \$4,050,000 and included a new 0.33 mg water storage tank, 9,100

linear feet of water main replacement, water storage tank rehabilitation, and well house improvements.



Elizabeth Emmons, EI | *Project Engineer*



Elizabeth has been with Dufresne Group since 2008 and currently serves as a project engineer out of the St. Johnsbury office. She possesses a tremendous amount of knowledge in the latest engineering software and has extensive experience designing and permitting a wide range of water, wastewater, and stormwater solutions, which she has refined over 20 years in the profession.

EDUCATION

MEng., Civil Engineering, 2010,
Norwich University

BS, Architectural Engineering
Technologies, 2001, Vermont
Technical College

PROFESSIONAL CERTIFICATIONS

VT Engineering Intern, 2001

GIS Application for Water
Resources, 2009, Norwich
University

ADDITIONAL EDUCATION

Stormwater Training, 2019, Green
Mountain Water Environment
Association

Wastewater: Preparing for Change,
2014, Pipeline Specialists Everett J.
Prescott, Inc.

RELATED PROJECT EXPERIENCE

20-year Wastewater Evaluation, St. Johnsbury, VT

Served as the Project Engineer for the wastewater collection portion of the evaluation phase. Project consisted of evaluation and GIS mapping for the wastewater collection and treatment to address treatment quality, aging infrastructure, and limited access.

Long Term Control Plan, St. Johnsbury, VT

Served as the Project Engineer for the combined sewer overflow (CSO) evaluation of the wastewater collection system. Project consisted of evaluating the wastewater and stormwater collection areas contributing to each CSO, modeling system to estimate CSO impacts, and identifying alternatives to reduce CSO events.

Subarea 5 Sanitary Sewer Evaluation, Littleton, NH

Served as the Design Engineer/CAD Designer for the sewer portion of the replacement project. Project consisted of new sewer main in a densely developed, mixed use area of the Town. Provided Resident Project Representative services during construction.

Asset Management, Woodsville, NH

Served as the Project Manager for the asset management information collection and plan development. Project consisted of inventory, assessment, and evaluation of raw water collection and water treatment facility assets for the water system. Database and risk assessment were performed using EPA CUPSS software.

Oak Street Sanitary Sewer and Water Evaluation, St. Johnsbury, VT

Served as the Design Engineer/CAD Designer for a multi-utility replacement project with green stormwater treatment. Project consisted of 3,500 lf of new water main, 2,975 lf of new sewer main, 2,940 lf of new storm drain, and reconstruction of the existing road with 1,240 lf of bioretention drainage swales.

Water Treatment Facility, St. Johnsbury, VT

Served as the Design Engineer/CAD Designer and permitting for the site and process layouts for the new water treatment facility and upgrades to the existing water treatment facility. Project consisted of new a treatment facility building to house membrane filter units and chemical treatment, upgrades to the existing plant to provide raw

water pretreatment and pumping, and site upgrades to provide a new access and buried utilities.



Statement of Qualifications

REFERENCES

On the project sheets included above, we have provided references for projects with similar needs as those anticipated in Danville. Additional Client References for our most recent projects are included in the table below.

Wastewater Treatment Facility Upgrade Planning – Chester, VT	
Project Contact	Julie Hance. Town Manager PO Box 370 Chester, VT 05143 802-875-2173 jhance@chestervt.gov
Project Description	The Chester Wastewater Treatment Facility was upgraded in 2005 with minimal improvements since that time. The facility now has a Significant Industrial User contributing process wastewater from a food manufacturing process. Dufresne Group is planning various improvements for the Town of Chester including a new SCADA system for the wastewater facilities, chemical control system upgrades and funding assistance for other pretreatment options.
Wastewater Treatment Facility Upgrades – St. Johnsbury, VT	
Project Contact	Jim Brimblecombe - H ₂ O Innovations 799 Bay Street, P.O Box 175 St. Johnsbury, VT 05819 jim.brimblecombe@h2oinnovation.com
Project Details	Dufresne Group has been the long-term consultant for the Town of St. Johnsbury’s utilities and has completed several projects and has several ongoing projects for the wastewater collection and treatment system in St. Johnsbury. These projects include headworks improvements, pump station upgrades, long term planning, and sludge processing evaluation and design among others.
Treatment Plant Upgrade – Lebanon, NH	
Project Contact	Jay Cairelli, Asst. Director of Public Works 193 Dartmouth College Highway Lebanon, NH 03766 603-448-0674 Jay.cairelli@lebanonnh.gov
Project Description	In 2016, the City of Lebanon drafted a capital improvement plan for the Water Treatment Plant to replace several pieces of existing equipment as well as modify and upgrade specific components at the plant. The planned upgrades included implementing a corrosion control chemical feed system and additions to the chemical building and the filtration building. After an evaluation report was completed by DG the design project included relocating the Powder Activated Carbon storage and feed system, constructing orthophosphate storage and feed in the former PAC room, a building addition, replacement of the flocculators, sludge collectors and various slide gates. The project was designed in January-May 2019. The majority of the \$3.6M improvements project was completed in 2020. This water project is included to demonstrate our skills with designing comprehensive upgrades to existing treatment plants.