Community-wide Public Water System Analysis

Town of Falmouth, Maine

Stantec

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Stantec Consulting Services Inc.
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P: (207) 775-1121

January 19, 2016

Theo Holtwijk
Director of Long Range Planning
Town of Falmouth
271 Falmouth Road
Falmouth, Maine 04105

Re: Request for Proposals – Water Study

Dear Mr. Holtwijk,

At Stantec, we build communities, and we design with community in mind. Stantec's team is made up of experienced design consultants with project experience across New England. We know the ins and outs of completing water system studies, and will work closely with the Town to develop and expand the water system to meet the needs of your community. Our efforts will allow you to focus on planning, updating and maintaining the infrastructure as the Town of Falmouth grows over the following years.

Leading the Stantec team will be Erica Lotz, PE, a water resources engineering specialist with 17 years of experience. As detailed in our proposal, Erica has a very strong background in water system studies, having developed hydraulic models for waterworks systems for several New England municipalities. As Project Manager, Erica will be the primary point of contact with the Town, and will ensure that the work is conducted on time and within the established budget.

Stantec also brings current experience working with the Town on the planned development and implementation of your long-range goals. Stantec was selected by the Town for the preliminary design of the Route 100 corridor and to design and oversee the revitalization of the Route 1 corridor. This experience has allowed Stantec access to a broad range of information and potential resources. Mark Debowski, who is currently leading these efforts, will be available to assist with roadway coordination and to facilitate communication with the Town. Mark will be able to draw on his unique understanding of the Town's vision.

We understand that the most important product will be to prepare a comprehensive water system analysis. We appreciate the work the Town and its team has done to plan for Town-wide development, and we know that more decisions will need to be made. Stantec is committed to working with the Town on these decisions while maintaining regular communication. As requested in the Town's RFP, our proposal includes a lump sum fee for completing the Water System Plan. Our team is excited about the challenges and opportunities presented by this project, and we look forward to the prospect of working with you to ensure its successful outcome.

We are pleased to submit our proposal for your review, and we look forward to your favorable response. We have reviewed your proposed RFP/contract terms and believe that should we be selected for this assignment, we will be able to conclude a mutually satisfactory contract with you.

Regards,

Stantec Consulting Services Inc.

Erica Lotz, PE, ENV SP
Project Manager
(781) 221-1163
Erica.Lotz@stantec.com

Brian Shea, PE, ENV SP
Principal-in-Charge
(781) 221-1275
Brian.Shea2@stantec.com

A
Firm Description

Company Background and Capabilities

The Stantec community unites more than 15,000 specialists working in over 250 locations. We collaborate across disciplines and industries to make buildings, infrastructure, and energy and resource projects happen. Our work—professional consulting in planning, engineering, architecture, interior design, landscape architecture, surveying, environmental sciences, project management, and project economics—begins at the intersection of community, creativity, and client relationships.

Since 1954, our local strength, knowledge, and relationships, coupled with our world-class expertise, have allowed us to go anywhere to meet our clients' needs in more creative and personalized ways. With a long-term commitment to the people and places we serve, Stantec has the unique ability to connect to projects on a personal level and advance the quality of life in communities across the globe. Stantec trades on the TSX and the NYSE under the symbol STN.

Locally, we have over 1,000 employees in the Northeast who have been servicing municipal clients for over 60 years.

1,374

is the total number of staff in our Northeast locations

Water Services

The Stantec team has been responsible for major expansions and improvements to municipal water systems throughout New England for over 60 years. Stantec currently has a staff of more than 300 environmental engineers proficient in the planning and design of water supply, treatment and distribution facilities. Enhancing our planning and design capabilities are our skills in construction administration, inspection, and start-up, helping to ensure that the project is completed on time, within budget, and in accordance with the contract documents. Our operations assistance and SCADA services ensure that the constructed facilities operate efficiently and are operator friendly.

Many of our clients are communities with whom we have worked from the master planning stage through construction on a broad array of facilities and improvements, often over the course of many years.

Over the past 10 years, Stantec has completed over 50 water system master plans, hydraulic models, flushing programs, distribution system studies and capital improvement plans throughout New England. These master plans identify a 20-year capital plan to address growth goals and system deficiencies identified through the hydraulic modeling process.

These projects typically begin with field investigations such as locating water infrastructure and hydrant flow tests. Stantec, along with client personnel, will conduct hydrant flow tests throughout the distribution system in order to collect data on system hydraulics. These data along with existing AutoCAD and/or GIS datalayers are then used to create or calibrate the system hydraulic model. The model is then used to identify system pipe capacity, pumping and/or storage deficiencies and to identify improvements necessary to meet minimum recommended operating pressures and fire flow requirements. After completing water system evaluations, many water systems begin addressing system maintenance such as implementation of unidirectional flushing programs. Stantec has developed these programs customized to phased implementation and available water department staffing levels.

Experience with the Town of Falmouth & PWD

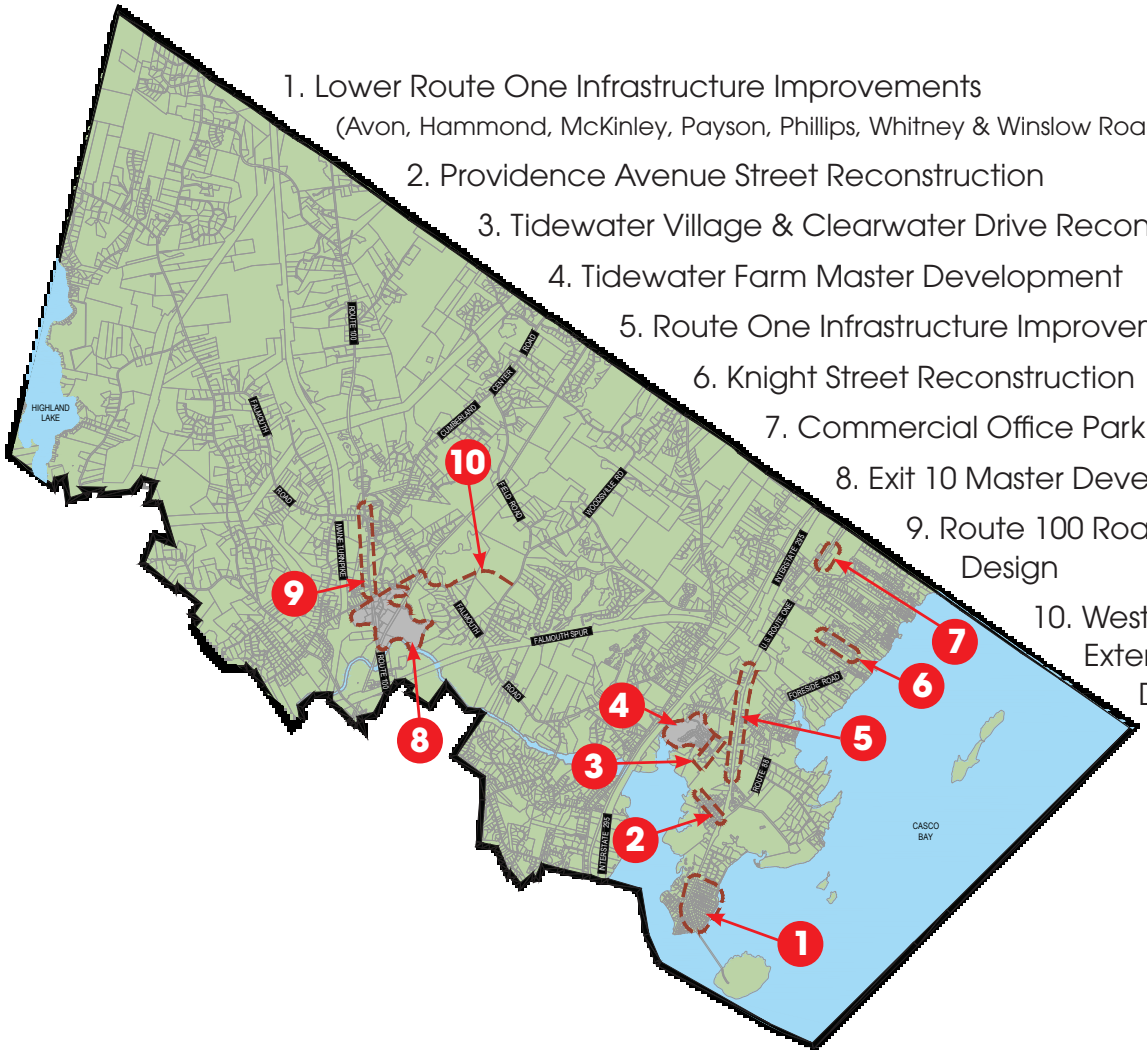
Stantec has a successful history with the Town of Falmouth, working with various Town offices as well as assisting with development projects. We have an excellent rapport with your planning, engineering and land use counsel and take pride in our work with them to provide you with a project that seamlessly fits into the Town's character. Maintaining an effective public communication process is important to the success of every project. Providing stakeholders opportunities to discuss project needs allows us, and the Town, to focus and meet the project challenges. Our experience with the Town includes the current Route 1 and 100 infrastructure projects, and past projects such as Lower Route One improvement projects, the Tidewater Farm/ Tidewater Village Master Development and reconstruction of Clearwater Drive. Stantec has also worked on the West Falmouth Crossing Commercial Development project and related infrastructure improvements. These projects exemplify the variety of work our team has completed in Falmouth.

Both the Route 1 and 100 projects are a direct result of your thoughtful attempt to manage growth for residential and commercial uses as well as tourism. These are enhancement projects that included street work, placement of overhead utilities underground, new street signalization and lighting and related stormwater improvements.

Our experience with the Portland Water District is another strength we bring to this project that will ease project development. Our familiarity with PWD and Falmouth will facilitate discussions with the District regarding future replacement and rehabilitation projects within the Town of Falmouth, along with discussions of future water system cost sharing potential.

Our experience with PWD includes water renewal/ replacement on Pleasant Hill Road and the Green Acres neighborhood in Scarborough. Other work includes a sewer interceptor and water main upgrades in Westbrook, and the Peaks Island sanitary sewer extension and water renewal project. Stantec is also currently working with PWD on an Electrical Master Planning Report.

The following page includes a graphic showing our experience in Falmouth over the past 20 years.



1. Lower Route One Infrastructure Improvements
(Avon, Hammond, McKinley, Payson, Phillips, Whitney & Winslow Roads)
2. Providence Avenue Street Reconstruction
3. Tidewater Village & Clearwater Drive Reconstruction
4. Tidewater Farm Master Development
5. Route One Infrastructure Improvement Project
6. Knight Street Reconstruction
7. Commercial Office Park Complex
8. Exit 10 Master Development
9. Route 100 Road Reconstruction Design
10. West Falmouth Sewer Extension Conceptual Design

B

Project Team

Project Team and Key Personnel

The team selected to complete this project for the Town of Falmouth brings strong credentials in creating water system hydraulic models and in integrating these models into municipal GIS databases. Our team has the technical expertise and availability to ensure that the work is completed within the established time frame and budget.

We believe in building long term relationships with our Clients based on trust, respect, and integrity. All team members are fully committed to the success of this project.

Erica Lotz, PE, ENV. SP

Project Manager

The majority of Erica's 17 years of experience has focused on water system evaluations. Erica recently completed a water system master plan update for the Town of Stoneham, MA which included updating the Town's existing hydraulic model and calibrating the model based on hydrant flow tests. The calibrated hydraulic model was converted to a GIS shapefile for the Town to include as its updated water layer in its geodatabase. Recent work also includes her role of managing the development of a water system master plan for the Town of Northborough, MA. This water system study included an evaluation of proposed expansion of commercial development within the Town. The Town's calibrated hydraulic model was a key tool in investigations of this proposed work.

Brian Shea, PE, ENV SP

Principal-in-Charge

Brian has 29 years of experience concentrating on planning, design and construction phase services for water and wastewater collection and treatment systems. He has led major projects, including pumping station upgrades for municipalities throughout New England, as well as for the Massachusetts Water Resources Authority and the Portsmouth Naval Shipyard (PSNY). For the Portland Water District (PWD), Brian is currently serving as the Principal-in-Charge of an electrical master planning report, and also served as the Principal-in-Charge of a feasibility study for locating a UV disinfection facility at the Peaks Island WWTF. For the PSNY, Brian served as Project Manager for the design and construction phase services for upgrades and improvements to Building 292 (Sewer Pump Station).

Ryan Stackpole, EIT

GIS/Hydraulics Engineer

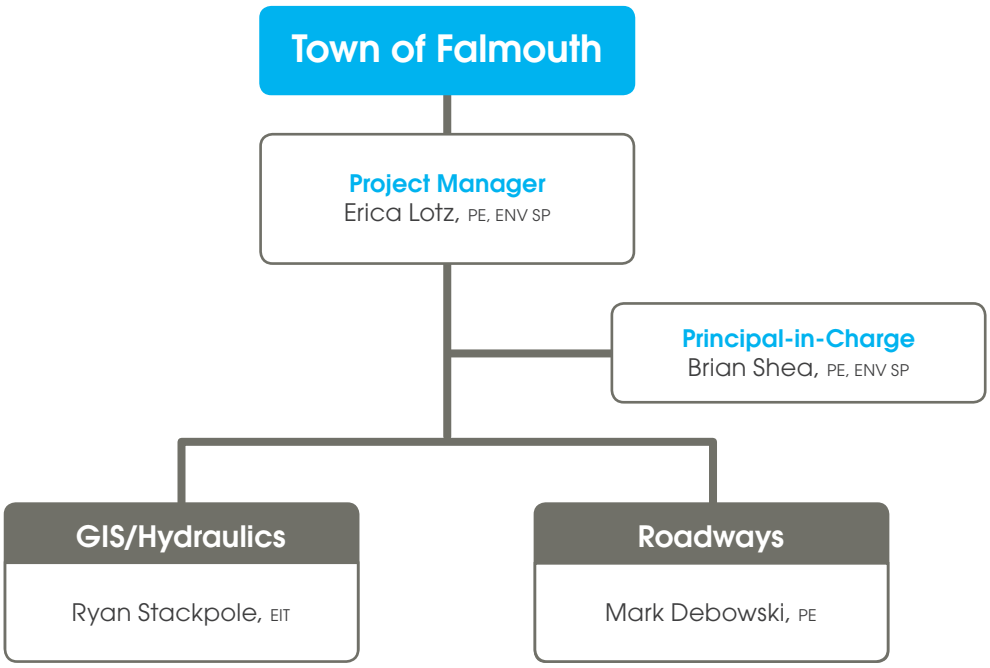
Ryan will play a key role in GIS mapping and hydraulic modeling. Ryan has worked closely with Erica on numerous water system evaluations and GIS mapping projects. Relevant work includes the preparation of a Water System Master Plan for the Town of Stoneham, MA, which included updating the Town's hydraulic model and coordination with the Town's GIS data. For the Town of Northborough, MA, Ryan developed a hydraulic model which also serves as the Town's GIS datalayer.

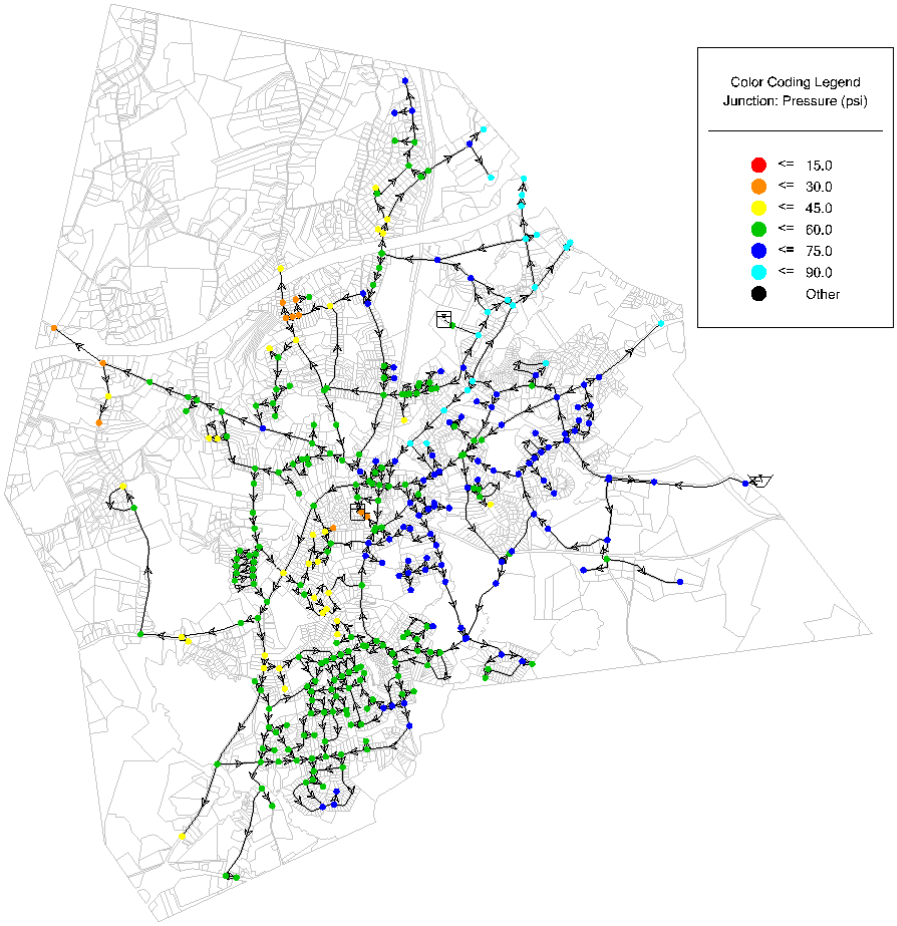
Mark Debowski, PE

Roadways Engineer

Mark manages and designs highway and local roadway improvements under Stantec's on-call contracts with MaineDOT. These assignments include studies and designs for roadway improvements in Newcastle, Damariscotta, Bridgton, Fryeburg, Yarmouth, Turner, Greene, Searsport, Waterville, Eliot and Falmouth. Mark is currently managing the Route 100 preliminary design work for the Town of Falmouth and his expertise with the Town of Falmouth will be a critical component to Stantec's successful completion of this evaluation.

Team Organization





WATER SYSTEM MASTER PLAN

Northborough, MA

The Town of Northborough has four groundwater supply sources, but in recent years, has been purchasing 100% of its water supply from the MWRA due to degrading water quality in its wells. Stantec recently completed a water system master plan study for the Town which evaluated the costs associated with providing treatment of the supplies compared to continued purchase of supply from the MWRA, and a combination of both. The evaluation also included the development of a hydraulic model and water distribution study.

The Town of Northborough had limited electronic mapping of its water system; therefore, we used the existing limited GIS mapping and available paper mapping to develop a hydraulic model. Once the model was developed, our team and Town personnel completed hydrant flow tests throughout the water system to provide the basis for the model calibration. The calibrated model was used to develop water system improvements to address fire flow deficiencies and to address reliability concerns in the distribution system.

Our team provided the Town with updated electronic files of the water system to serve as the new water system GIS datalayers.

Since the development and calibration of the hydraulic model, the Town has requested that Stantec complete numerous hydraulic model runs to evaluate water system impacts of proposed developments in the Town and to address system operation concerns regarding tank operation.

PROJECT OWNER CONTACT

Daniel Nason, Director
Dept. of Public Works
Town of Northborough
(508) 393-5030

TEAM MEMBERS INVOLVED

E. Lotz
R. Stackpole

WATER SYSTEM MASTER PLAN STUDY

Barnstable Fire District, MA

Stantec completed a water system master plan for the Barnstable Fire District located in Barnstable, MA. The system consists of two service areas separated by four pressure reducing valves, four gravel wall wells, 52 miles of water mains, and three storage tanks. With assistance from District staff, Stantec conducted hydrant flow tests to collect system-operating data for the calibration of the hydraulic model. With the use of the hydraulic model, we evaluated the adequacy of the District's supply, distribution and storage facilities. A prioritized list of water system improvements was developed and verified using the computer model. Capital construction costs for each recommended improvement were estimated to provide the District with an outline of capital improvement projects over the next 20 years.

With the development of the hydraulic model completed, the District has had us complete numerous hydraulic model runs to evaluate system operational changes. For example, one of the District's water storage tanks is approximately 70 years old and was in need of repairs. The District was considering demolishing the water storage tank instead of completed the repairs. Stantec completed a hydraulic evaluation that determined that with the tank offline, fire protection levels within the Barnstable Village area would be reduced to less acceptable levels. As a result, the District is currently repairing the water storage tank.

Stantec also provides as-needed services to the District. Recent tasks include reviewing numerous proposed developments within the District to determine if adequate flow and pressure are available to support these projects.

PROJECT OWNER CONTACT

Thomas Rooney, Supt.
Barnstable Fire Dist.
Water Department
(598) 362-6498

TEAM MEMBERS INVOLVED

E. Lotz
R. Stackpole

HYDRAULIC EVALUATIONS
Waltham, MA

The City of Waltham water system serves a population of approximately 60,000 people through three pressure zones that are supplied by metered connections from the Massachusetts Water Resources Authority (MWRA) system. The City has a hydraulic model of its water system which was previously developed and calibrated. Over that last five years, the City of Waltham has asked Stantec to complete numerous hydraulic evaluations of its water system using the previously developed hydraulic model.

The City's intermediate service area is supplied by the Cedarwood Pumping Station. During a Sanitary Survey completed by the Massachusetts Department of Environmental Protection (MADEP), the DEP noted that the pumping station did not have emergency backup power. Using hydrant flow tests and the hydraulic model, we completed a hydraulic evaluation that demonstrated that an existing reduced pressure connection between the City's high service area and the Cedarwood Area could provide an adequate supply to this service area in the event of a loss of power at the Cedarwood Pumping Station.

In the Cedarwood service area, the City of Waltham is implementing sewer system improvements. In order to minimize the disturbance to residents, the City asked Stantec to identify any necessary water system improvements. Stantec completed localized hydrant flow tests and re-calibrated the hydraulic model in this area. Based on the flow tests' results, we identified numerous closed valves in the area. The City is now implementing a City-wide valve locating and operation program.

As part of a culvert replacement project, a key 12-inch water main needed to be shut down for approximately one week to complete the project. Our team was asked to evaluate the impact that shutting down the 12-inch main would have on available flows throughout this portion of the City. The City completed hydrant flow tests and we completed a localized calibration of the hydraulic model in this vicinity of the culvert work. Following the hydraulic model runs, we met with Water Department and Fire Department staff to discuss the results.

PROJECT OWNER CONTACT
Stephen Casazza, P.E.
City Engineer
City of Waltham
(781) 314-3830

TEAM MEMBERS INVOLVED
E. Lotz
R. Stackpole




WATERWORKS FACILITIES MASTER PLAN
Gloucester, MA

Stantec has long been providing the City of Gloucester waterworks engineering services covering a wide range of projects. Stantec initially developed a comprehensive Waterworks Facilities Master Plan in 1999 and was recently requested to update to the plan. The City's water system serves approximately 30,000 people spread across both sides of the Annisquam River. The system supplies an average daily demand of 3.5 million gallons from two surface water supply facilities, three storage tanks, two pressure zones and 140 miles of pipe.

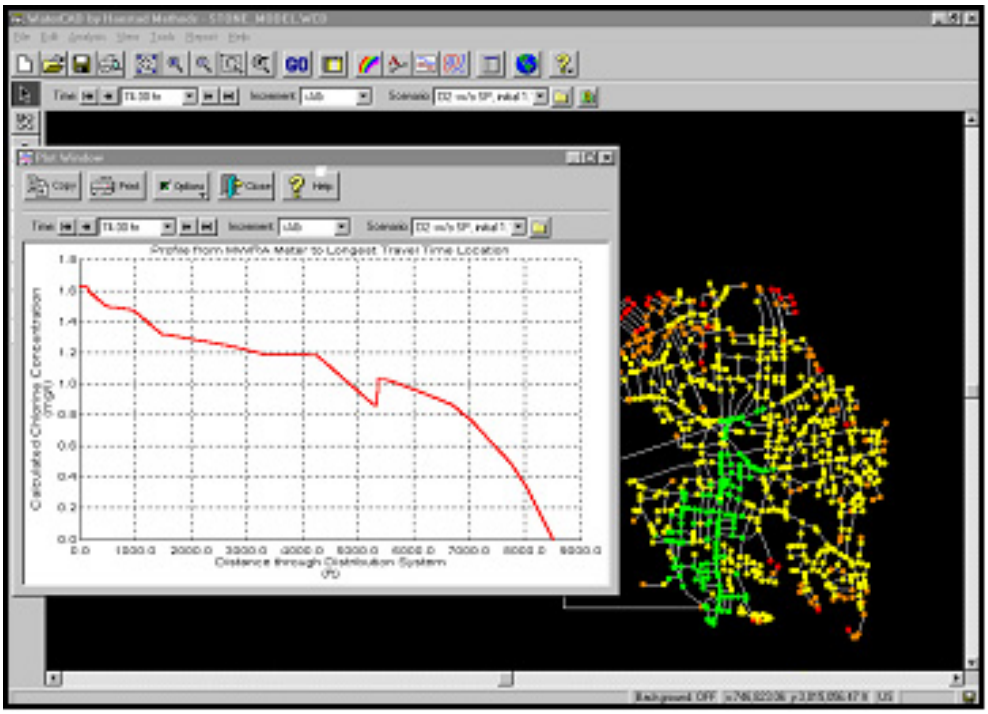
Our team collected data on the existing system and used the City's base maps to develop a computerized hydraulic model. The model was calibrated using hydrant flow test data that we collected. Stantec conducted a detailed set of hydraulic scenarios with the model, under both steady state and extended period conditions, to determine and identify weaknesses in the system. Specific model runs were performed to evaluate options to reduce water age and improve water quality in the City's Lanesville neighborhood. As a result the City replaced the deteriorated 1 MG Lanesville Standpipe with a composite elevated 750,000 gallon storage tank. In addition a control valve was installed to isolate the Lanesville section of the City into its own service area.

A highlight of this project was a detailed evaluation of both of the City's 5-MGD water treatment facilities, considering all current and future Safe Drinking Water Act requirements. Facilities assessments were performed at both facilities as well as the City's five surface water supply intakes and two raw water transfer facilities.

The final Master Plan Report included a 20-year Capital Improvement Program (CIP). Recommended improvements included relocation of the two 20-in cast iron transmission mains that supply the east side of the Annisquam River, improvements to both treatment facilities, cleaning and cement lining water mains, and pipe replacements, as well as upgrades to various facilities and infrastructure. The City will use the CIP to help prioritize construction projects and budgets, solicit Drinking Water State Revolving Funds (DWSRF), and maintain the overall water system.

PROJECT OWNER CONTACT
Larry Durkin, P.E.
Environ. Engineer
City of Gloucester
(978) 281-9792

TEAM MEMBERS INVOLVED
E. Lotz
R. Stackpole



STUDY OF WATER DISTRIBUTION SYSTEM

Stoneham, MA

In 1999, Stantec developed a water system master plan for the Town of Stoneham to investigate high coliform occurrences in the distribution system. In 2013, our team conducted hydrant flow tests and updated and calibrated the hydraulic model to reflect the water system improvements completed by the Town since 1999. The Town receives 100% of its water from the MWRA through metered interconnections. There are no Town-owned storage or pumping facilities.

While the Town is no longer experiencing coliform positive samples, there are isolated areas that experience low chlorine residuals. As part of the Master Plan, we evaluated the cause of these low chlorine residuals. Travel times calculated by the hydraulic model indicated that on average, travel times in the distribution system are about two days, but in the northwest area of town, travel times are almost five days. This long travel time is a result of oversized water mains in the area.

Originally, the Town had two metered connections to the MWRA's system, both located in the southern section of Town. In 1986 the MWRA constructed a new pipeline through Stoneham and a new meter was installed near the center of the developed portion of Town. Since much of the water infrastructure was installed prior to the addition of the third meter, many large pipes were installed to convey water from the original two meters in the south to the northern areas of Town. With this third meter, many water mains are oversized for the flow rates they normally carry.

As a result of the hydraulic evaluation, we are currently working with the Town to design new smaller water mains in various streets to address these chlorine residual issues. Our team is assisting the Town with securing funding through the MWRA's Local Water System Assistance Program.

PROJECT OWNER CONTACT

Robert Grover, Director
Dept. of Public Works
Town of Stoneham
(781) 438-0760

TEAM MEMBERS INVOLVED

E. Lotz
R. Stackpole

WATER SYSTEM MASTER PLAN UPDATE

Fall River, MA

In 2002, Stantec developed a computer model of the distribution system. Hydraulic analyses were performed to identify deficiencies, to determine adequacy of existing mains and facilities; and to develop a list of recommended system improvements. The Water System Master Plan report outlined all findings and recommendations, through the year 2020. Specific recommendations focused on maintaining distribution system water quality by instituting a cast iron water main replacement program, a unidirectional flushing and valve exercising program, and a storage facility improvement program for the City's seven water storage tanks. The Water System Master Plan was updated in 2014, with projections and improvements through the year 2035.

As a result of the Master Plan recommendations, we have designed and provided services during construction for over 40 miles of pipeline replacement in eighteen projects, three storage tank rehabilitation projects, and three storage tank replacement projects, as well as multiple improvement projects at the Water Treatment Plant. Stantec has assisted the City in obtaining low interest loans and principal forgiveness for all of these projects through DEP's Drinking Water State Revolving Fund (DWSRF) Low-Interest Loan Program.

Stantec also recently completed the design of a replacement 750,000 gallon elevated steel water storage tank, with an increase of the overflow elevation from 320' to 368' to improve the pressure in the Fall River Industrial Park by creating a High Service System (HSS). The tank will be equipped with a floating aeration and tank mixing system for reduction of distribution system tri-halomethanes (THM). Also part of the design is a 500 gpm booster pump station that will be automatically operated from tank level.

Stantec also provides as-needed services to the City. Recent tasks included water system evaluations related to proposed development within the City. The calibrated hydraulic model has been a critical tool to allow the City to encourage additional commercial development in targeted areas of the City.

PROJECT OWNER CONTACT

Terrance Sullivan
Director, Community Utilities
City of Fall River
(508) 324-2321

TEAM MEMBERS INVOLVED

E. Lotz
R. Stackpole

C

Statement of Project Understanding

Statement of Project Understanding

The Town of Falmouth would like to promote growth in specific areas while still maintaining its rural character. Over the course of three years, the Long Range Planning Advisory Committee (LPAC) developed the Town of Falmouth 2013 Comprehensive Plan which set a framework to enhance and grow the community. As the Town is taking steps toward implementing the plan, technical questions regarding the water system are being raised and the Town is seeking the assistance of a water system consultant to guide the process and address technical questions.

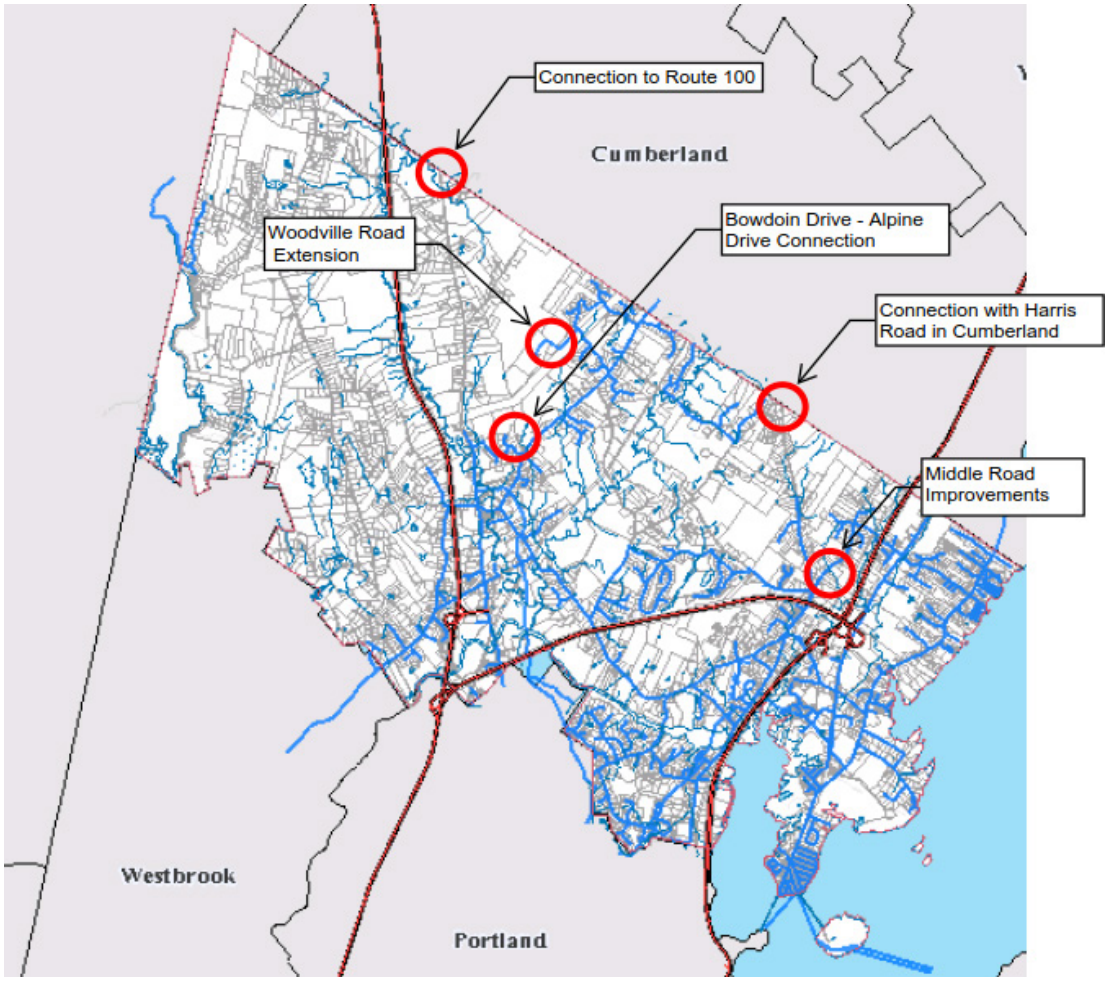
The Portland Water District (PWD) supplies water to portions of the Town of Falmouth through the 73 miles of water main located within the Town. The water system is primarily located in the eastern portion of Falmouth along I-295 and east of I-95. Due to the varying topography within the limits of the water system, PWD provides water to the residents through two service areas: Zone 267 and Zone 340. The Winn Road pump station pumps water from Zone 267 into Zone 340, and the 3 million gallon (MG) West Falmouth Storage Tank provides water storage capacity to Zone 340.

In 2002, PWD completed a water system assessment of its entire water system. This study included the development and calibration of a hydraulic model of the water system. Some localized fire flow deficiencies were identified. In many cases these deficient fire flows are located at higher elevations and therefore there is less flow available to fight a fire while still maintaining a minimum water system operating pressure of 20 psi.

PWD developed a 5-Year Capital Improvement Plan (CIP) to address water system improvements. As identified in the RFP these projects include:

- Connection to Route 100 in Cumberland
- Connection with Harris Road in Cumberland
- Middle Road improvements
- Woodville Road extension
- Bowdoin Drive-Alpine Drive connection

The purpose of this project is to assist the Town to follow through on its Comprehensive Plan to proactively plan for water utility extensions in growth target areas, and to evaluate whether the existing water system can support the type of targeted growth identified by the LPAC.



D
Scope of Services/ Approach

Scope of Services/Approach

TASK 1 Existing water system

(Primary Responsibility: PWD)

A project kick-off meeting will be held between Stantec and the Town to discuss overall project goals and responsibilities. Following this project kick off meeting, Stantec and the Town will meet with PWD to discuss the existing water system infrastructure within the Town of Falmouth, and to discuss PWD's approach for system expansion. PWD will provide a summary of the improvement projects that have been implemented since the development of the 2002 Comprehensive Strategic Plan. At this meeting we will also discuss future upgrade plans PWD anticipates completing over the next five to ten years.

We anticipate that the Town will provide PWD with what it sees as future growth areas within Falmouth and we will discuss any opportunities for enhancing the water system within the Town of Falmouth.

Stantec has worked on multiple projects with Portland Water District and has a great working relationship with the District and its staff.

TASK 2 Evaluate unserved areas in the Town's designated Growth Area

(Primary Responsibility: Stantec)

The Town has identified designated growth areas within the Town. This information will be overlayed with the existing water distribution GIS layer to determine any gaps. A preliminary layout of these two datalayers is shown to the right.

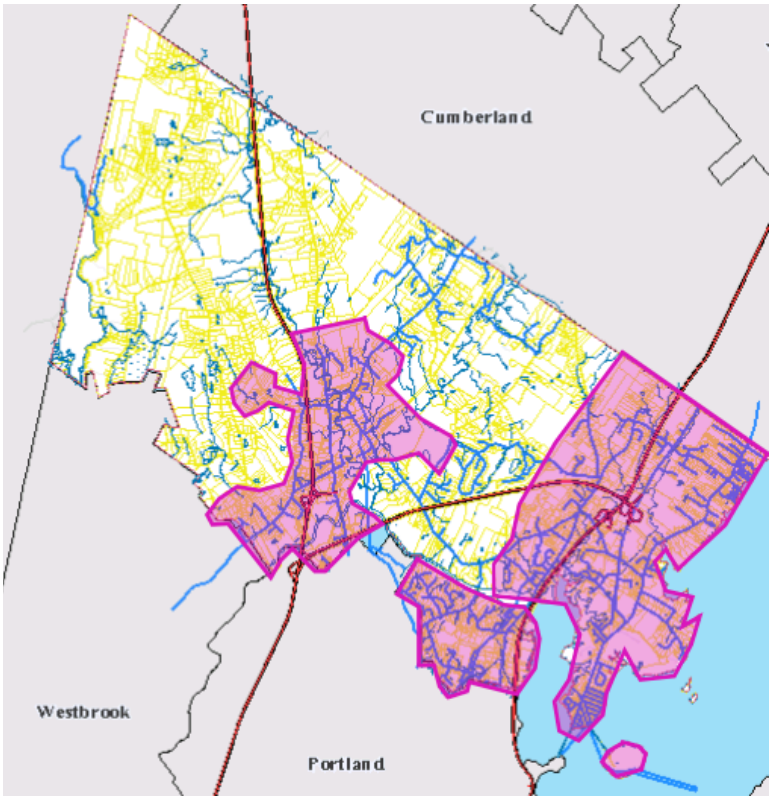
In addition to water system limits and growth areas, additional datalayers that will be evaluated include: 2-foot contours, streams and wetlands, surficial geology and other related information to determine if the long term viability of private wells may be impacted.

Ground elevations within the growth area boundary will be critical to understanding whether the water system can be expanded. The two service areas within Falmouth are Zone 267 and Zone 340. These numbers represent the operating hydraulic gradeline elevations for each zone.

With a hydraulic gradeline of 267 feet, ground elevations above elevation 186 feet cannot be adequately served by this pressure zone since a minimum operating pressure of 35 psi can no longer be maintained. Similarly for Zone 340, ground elevations above elevation 259 feet cannot be adequately served.

PWD has agreed to provide the selected consultant with its hydraulic model for this project. In desired growth areas, where water system expansion appears feasible, Stantec will use PWD's hydraulic model to evaluate this expansion. Based on anticipated growth strategies, Stantec will estimate average and maximum day demands along with estimated fire flow requirements for evaluation in the hydraulic model. With the hydraulic model, water system improvements can be identified including any necessary upgrades to existing infrastructure to support this growth.

Stantec will meet with the Town to discuss the preliminary improvement projects. If desired, we will demonstrate how the hydraulic model operates to calculate available flow and pressure within a water system. **In our experience, demonstrating transparency with how water system improvements are developed provides better buy-in from stakeholders.**



TASK 3 Costs and Priorities of all recommended improvements

(Primary Responsibility: Stantec)

Based on the hydraulic model evaluation completed under Task 2, Stantec will provide engineering and construction cost estimates for each of the recommended improvements. These improvements will be prioritized based on the relevant importance of each improvement along with overall goals identified by the LPAC and the Comprehensive Plan.

Stantec will review as-bid prices for recent nearby utility construction projects to ensure that the cost estimates are representative of the current construction climate.

TASK 4 Opportunities for cost-sharing

(Primary Responsibility: Stantec)

Once the improvements have been identified and prioritized, Stantec will identify opportunities for sharing the costs associated with these improvements. Potential cost sharing would include state or federal grant programs, cost sharing with PWD, cost sharing with MaineDOT and cost sharing with other potential parties.

Stantec will also work with the Town to identify other mechanisms for the Town to promote development in the growth areas. Options include establishing a policy along with regulatory changes that would identify under what conditions Town funds would be used for assisting with utility extensions.

TASK 5 Final Report

(Primary Responsibility: Stantec)

Stantec will develop a draft Report summarizing the findings, recommendations and costs for this water system study. We anticipate attending a meeting with representatives from the Community Development Committee (CDC) and the Long Range Planning Advisory Committee (LPAC) to discuss the draft report and comments by Town staff and the Committees. Following receipt of these comments, Stantec will address these comments and issue a final report. A presentation will be developed to summarize the final report for the Town Council at one of its regularly scheduled meetings.

Management Approach

Our project management approach is built around communication and cooperation between Stantec staff and the Town. Stantec and the Town will meet and discuss progress on a routine basis. Equally important will be the communication between Stantec and the Town on a day-to-day basis to exchange information and discuss and resolve issues that cannot wait for regularly scheduled meetings. Constant communication, via telephone and email, will enable to the project team to resolve questions quickly and help maintain the project schedule.

Schedule

Stantec has reviewed the project schedule included in the RFP. We have the staff and resources to begin work immediately, and complete the project by July 2016.

E
Project Budget

Project Budget

The total project cost for Tasks 1 through 5 summarized previously is $19,000. This amount is an all-inclusive, fixed fee, which is open to negotiation. The labor rates for project staff are as follows.

Principal in Charge	$175.00
Project Manager	$150.00
Transportation Engineer	$135.00
Project Engineer	$85.00

F

References

References

References for each of our six project examples have been provided on the project pages in section B.

Appendix

Resumes of Key Personnel

Erica Lotz PE, ENV SP

Project Manager

Erica brings significant experience in various areas of water supply engineering. Her many assignments include the evaluation of water systems along with the permitting, design and construction phase services for water mains, storage tanks and pumping stations throughout New England.

EDUCATION/TRAINING

MBA, Strategy & Business Analysis, Boston University, 2010

B.S., Civil Engineering, Worcester Polytechnic Institute, 1998

Risk Assessment Methodology for Water Utilities (RAM-W) Training, October, 2002

Water Distribution System Modeling and Water Quality Analysis Seminars, Haestad Methods, October, 1998

REGISTRATIONS

Professional Engineer, #45192, Commonwealth of Massachusetts

Envision™ Sustainability Professional Credential, November 2013

MEMBERSHIPS

Member, New England Water Works Association – Mentoring Program

Member, Plymouth County Water Works Association – Education Committee

PROJECT EXPERIENCE

Hydraulic Model Update, Groton Utilities, Groton, CT

Project Manager. Completed update of Groton Utilities' water system hydraulic model. Work included completion of flow tests throughout the water distribution system.

Water Supply Master Plan, Stoneham, MA

Prepared master plan and water quality analysis. Included computer model to analyze distribution system, synchronized into WaterCAD from Town's GIS database. Population and consumption projections were made to see what impacts would be placed on supply and distribution system. System improvements were developed based on system's ability to meet required fire flows and present and future maximum and peak hour consumption demands. Demands were calculated and allocated according to meter records. Flow tests conducted by FST and Stoneham DPW personnel were used to calibrate the model. System improvements were modeled to show Town impacts improvements will have.

Water System Master Plan and Unidirectional Flushing, Holliston, MA

Project Manager for the completion of a water system master plan study and unidirectional flushing program. Work included the evaluation of the water supply, treatment and distribution facilities within the Town. Identified required water main improvements to meet figure flow requirements. Evaluated water supply capabilities to meet demand projections. Conducted preliminary evaluation of existing treatment facilities to meet water quality goals and objectives.

Unidirectional Flushing Program, Sterling, MA

Project Manager for the development of a unidirectional flushing program. Utilizing a previously developed and calibrated hydraulic model, flushing zones and sequences were developed include valve and hydrant operation.

Water System Asset Management Plan, Holliston, MA

Project Manager for completion of Asset Management Plan for Town's water distribution system. Data collection included locating and inspection of all fire hydrant in the Town. Existing data on pipeline installation year was limited so hydrant year was used as a surrogate for installation year. Age, material and proximity to wetlands were used to prioritize pipeline replacement. Developed Asset Management plan identifying a 10-year pipeline replacement program.

Erica Lotz PE, ENV SP

Project Manager

Asset Management Plan, Groton, CT
Completed a comprehensive Water System Asset Management Plan for Groton Utilities (GU). GU's water distribution system information resided in various GIS and AutoCAD files along with spreadsheets that included pipeline installation year, hydrant installation year, maintenance records and history of breaks and leaks. Compiled all of the available data into a centralized database in order to analyze the remaining useful life of the water distribution system.

Distribution System Water Quality and Hydraulic Model, Holliston, MA
Project Manager for the development of a water system hydraulic model. Model was calibrated through the completion of hydrant flow tests. The Town has experienced water quality complaints. With the use of the calibrated hydraulic model an evaluation was completed to evaluate the potential causes of the distribution water quality complaints.

Weston Aqueduct Supply Main 3, MWRA
Assistant Project Manager. Project involves design, permitting and construction phase services for replacement of approximately 8 miles of 54 and 60-inch transmission line with 72-inch pipe and rehabilitation of about 3 miles of 54 and 60-inch pipe from Weston to Medford.

Water System Master Plan Update, Fall River, MA
Conducted evaluation of water distribution system's ability to meet current and future demands while maintaining distribution system water quality. Utilized GIS to investigate Total Coliform Rule violations to determine cause of coliform outbreak and identify improvements the City should make to prevent future violations. Supplied hydraulic model to City in GIS compatible format to be added to City's existing GIS system.

Water Supply Master Plan, Norwood, MA
Prepared Master Plan including hydraulic model to analyze existing distribution system. Population and consumption projections made to determine what impacts these would have on existing supply and distribution system. Developed and modeled system improvements based upon system's ability to meet required fire flows and maximum and peak hour consumption demands. Model runs included both EPS and steady state runs to evaluate system deficiencies. Model was also utilized to evaluate what impact the addition of a reactivated well supply would have on flow reversals in the distribution system.

Water Supply Master Plan, Hanscom AFB, MA
Prepared Master Plan and water quality analysis. Included computer model to analyze distribution system. Population and consumption projections made to see what impacts would be placed on supply and distribution system. System improvements developed based on system's ability to meet required fire flows and present and future maximum and peak hour consumption demands. Demands were calculated and allocated according to meter records. Flow tests conducted by FST and Hanscom AFB personnel used to calibrate the model.

New Well No. 5, Barnstable Fire District, Barnstable, MA
Project Manager for the design and services during construction of a 900-gpm gravel packed well and pumping station.

PRESENTATIONS

"Water System Asset Management – Holliston, MA", NEWWA Joint Regional Operations Conference and Exhibition, April 2012

"Innovative Upgrades for a Small System – New Hartford, CT", Conn. Section, AWWA –Annual Technical Conference and Vendor Expo, Feb. 2004

"Reactivation of Buckmaster Pond Well Water Supply," NEWWA Joint Regional Operations Conference and Exhibition, April 2004

"What Happened to the Chlorine Taste? UV Disinfection Experience in Easton, MA", NEWWA Annual Conference, Newport, RI, September 2004

** denotes projects completed with other firms*

Brian Shea PE, ENV SP

Principal-in-Charge

Brian's 29 years of experience have concentrated on planning, design and construction phase services for wastewater collection and treatment systems. These projects have been completed for the Massachusetts Water Resources Authority and for agencies and municipalities throughout New England.

EDUCATION

MS, Hazardous Materials Management, Tufts University, 1996

B.S., Civil Engineering, University of New Hampshire, 1985

REGISTRATIONS

Professional Engineer, #13337, State of Maine

Professional Engineer, #36503, Commonwealth of Massachusetts

Professional Engineer, #10359, State of New Hampshire

Professional Engineer, #8086, State of Vermont

Professional Engineer, #22479, State of Connecticut

Professional Engineer, #64948, State of Florida

ENVISION, December 2015

MEMBERSHIPS

Member, Water Environment Federation

Member, New England Water Environment Association
Member, American Public Works Association

PROJECT EXPERIENCE

Electrical Master Planning, Portland Water Disctrict, ME

Principa-in-Charge for evaluation of power and emergency power delivery systems for PWD's four wastewater treatment plants.

Peaks Island WWTF, Portland Water District, ME

Principal-in-Charge on this recent contract. Stantec (formerly FST) conducted a feasibility study for locating a UV Disinfection Facility at the existing Peaks Island WWTF, for the Portland Water District. The District arrived at a feasible concept level process design and sought Stantec's assistance to confirm the feasibility from an electrical, structural, and architectural standpoint.

Building 292 Pump Station, Portsmouth Naval Shipyard, Kittery, ME

Project manager for the design and construction phase services for upgrades and improvements to Building 292 (Sewer Pump Station) at the Portsmouth Naval Shipyard. The Sewer Pump Station receives all wastewater flows for the Shipyard operations, and from naval vessels docked at the facility. The station discharges the wastewater off base to the Town of Kittery's wastewater collection system. The upgrades and improvements at the Sewer Pump Station designed by Stantec include: three new vertical centrifugal wastewater pumps, three new induction rated 50 hp vertical motors, three new variable frequency drives (vfd's) to control wastewater discharge rates, new suction and discharge valves and piping, and complete replacement of the outdated motor control center. Also included was the installation of new ultrasonic measuring devices in the wet well to measure wet well water levels, and control the output speed from the vfd's.

Preliminary Design Report, Sconticut Neck Sewers, Fairhaven, MA

Preliminary survey, soil boring evaluation, field investigations to develop layout of sewer system required for the Sconticut Neck area. Alternatives evaluated include gravity and low pressure sewers, pumping station locations; development of construction cost estimates. Design of 7 miles of gravity sewers, 2 miles of force mains, 2 miles of low pressure sewers, and 5 pumping stations.

Comprehensive Wastewater Management Plan, Northborough, MA

Project Manager. Develop a comprehensive wastewater management plan for Northborough in association with the Assabet River Consortium.

** denotes projects completed with other firms*

Brian Shea PE, ENV SP

Principal-in-Charge

Hampton Beach Infrastructure Upgrade, Hampton, NH

Deputy Project Manager. Work consisted of planning, design, and construction phase services for sewer replacement under two contracts to provide the Town with capacity in the sewer system to support redevelopment projects proposed under the Hampton Beach Master Plan. Contract No. 1 - Beach Area Sewers consisted of the replacement of 10 miles of 70 year old sewers in the main beach area of Hampton; Contract No. 2 - Ocean Boulevard & Kings Highway consisted of the replacement of about 1 mile of sewer. Included in Contract No. 2 was the construction of about 1/2 mile of 18" Sewer in Kings Highway to re-direct sewage flows, and eliminate a sewage pumping station.

Sewer 2000, Marshfield, MA

Project Manager. Design and construction engineering services for 8.7 miles of gravity and force main sewers, and two pumping stations. Project included construction of 2.5 miles of 24" and 30" interceptor sewer in Route 139, and development of traffic management plans.

Wastewater Treatment Plant, Bellows Falls, VT

Design of influent sewers, septage receiving facility, rotating biological contactor distribution chamber, chlorine rapid mix chamber, pump and piping systems for sludge pumping station, layout of a laboratory facility.

** denotes projects completed with other firms*

Ryan Stackpole EIT

GIS/Hydraulics

Ryan has CADD experience developing contract drawings and as-built drawings. He is equally adept at creating maps using GIS. Ryan has assisted in the preparation of master plans and permitting associated with water supply and distribution. Along with his office skills, Ryan has gained field experience including water quality sampling, flow tests, and soil boring inspection.

EDUCATION/TRAINING

B.S., Civil Engineering, University of New Hampshire, 2012

OSHA 29 CFR 1910.146 – Confined Space Entry

OSHA 29 CFR 1910.120 – 40 Hour HAZWOPER

REGISTRATIONS

Engineer in Training, State of New Hampshire

PROJECT EXPERIENCE

Water System Master Plan, Stoneham, MA

Project engineer for preparation of master plan and water quality analysis. Included updated computer model to analyze distribution system, coordinated with Town's existing GIS database. Conducted flow tests with town DPW personnel to calibrate the model. Calculated population and consumption projections to determine future impacts on the supply and distribution system.

Water System Master Plan, Northborough, MA

Assisted in preparation of hydraulic model and master plan. Developed hydraulic model to analyze distribution system. Model will serve as Town's GIS datalayer upon completion. Conducted flow tests with Town personnel in order to calibrate the model. Calculated population and consumption projections to determine future impacts on supply and distribution system.

Repair and Expand SCADA, PNSY, ME

Assisted in design of water meter manhole locations, and associated radio equipment. Developed hydraulic model to aid in selecting ideal meter locations. Performed field observations to obtain information regarding manhole locations and existing equipment. Developed contract drawings.

Water System Master Plan Fall River, MA

Strengthened the accuracy of existing model to reflect ongoing construction. Created updated water distribution map in GIS for later use by the City. Gen-erated population and consumption projections to evaluate water system's capacity to meet current and future demands. Assembled tables and figures to be illustrated in the master plan.

Northern Intermediate High Pipeline, MWRA

Completed related GIS mapping to both analyze constructability and present preferred pipeline alternatives. Computed ledge removal estimates along pipeline routes to evaluate potential alternatives. Assisted in operation of water quality sampling equipment.

GIS System Update, Fairhaven, MA

Worked in conjunction with PeopleGIS to develop the Town's online GIS mapping system, MapsOnline. Provided PeopleGIS with an updated sewer system data base to show the Town's collection system, including pipe connectivity, sizes, material, installation year, pumping stations and force main discharge locations. Also incorporated hyperlinks to record plans and service ties, provided by the Town, to the applicable pipe segments and services in the online database. All data accessible through MapsOnline and available in the field.

** denotes projects completed with other firms*

Mark Debowski PE

Roadway Engineer

Mark is a licensed professional civil engineer experienced in management, design, and modeling for all aspects of roadway and highway design. His enthusiasm for roads and all things related to them began in his childhood backyard, and today he brings his lifelong interest to others with skills in communication, planning, and quality control.

EDUCATION/TRAINING

B.S., Civil Engineering, Illinois Institute of Technology, 2000

B.A., Liberal Arts / Engineering, Wheaton College, 2000

M.Div. and Th.M., Gordon-Conwell Theological Seminary, 2005

REGISTRATIONS/CERTIFICATIONS

Professional Engineer, #10940, State of Maine

Professional Engineer, #13899, State of New Hampshire

Professional Engineer, #073762, Commonwealth of Pennsylvania

Maine DOT LAP Certification, 2013

NH DOT LPA Certification, 2014

MEMBERSHIPS

American Society of Civil Engineers – Maine Section

PROJECT EXPERIENCE

Route 1 South Infrastructure Plan, Falmouth, ME

Highway design engineer for the development and revitalization of the Route One corridor. Design improvements include improved lane use and channelization to accommodate all users, upgraded traffic signals and pedestrian accommodations, undergrounding aerial utilities to improve corridor appearance, new aesthetic street lighting, and a new streetscape to improve livability.

Maine Route 100/26 Highway Improvements, Falmouth, ME, Maine DOT

Project engineer for preliminary design for full-depth reconstruction of 1.25 miles of roadway. Design work included alignment improvements, roadway widening, driveway and intersection improvements and realignment, storm sewer and culverts, the addition of sidewalk, and other safety improvements. The design process included the design and evaluation of four roadway widening alternatives.

Mechanic Street Improvements, Lebanon, NH

Project engineer for corridor study involving traffic and infrastructure analysis, future needs planning, and gathering public input leading to eight roadway, ten intersection, and two highway interchange concepts. Alternatives were analyzed and refined, leading to a recommended concept.

Route 302 Reconstruction, Bridgton and Fryeburg, ME

Project manager for ten miles of highway reconstruction to improve alignment, pavement structure, subsurface and surface drainage, intersections, and safety. Two hundred driveway and entrance reconfigurations and additional sidewalk are included in the project. Several alignment, widening, and drainage alternatives have been evaluated as part of the design process.

NH Route 101A Corridor Study, Milford to Nashua, NH

Studying improvements to three locations along the corridor to provide the basis for determining whether one or more of these study locations may become construction projects. Designed three intersections alternatives to alleviate traffic congestion, including an 8-lane and 10-lane configuration as well as a two lane roundabout alternative.

Route 1B Highway Improvements, Newcastle and Damariscotta, ME, MaineDOT

Project engineer for preliminary design of 3 ½ miles of roadway reconstruction and final design for ½ mile of roadway reconstruction in a historic, urban location in order to improve drainage, parking, and pedestrian safety. Using 3-D modeling, designed alignments, sidewalk, driveways, parking, drainage, fostered utility coordination, and provided design for two intersection studies which evaluated seven options including a roundabout.

** denotes projects completed with other firms*