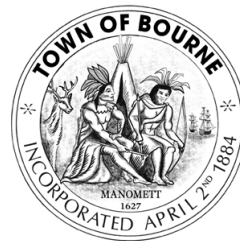


Request for Proposal

# COMPREHENSIVE WASTEWATER MANAGEMENT PLAN

Town of Bourne  
Bourne, MA  
May 7, 2020



**ENVIRONMENTAL**  
 **PARTNERS**



May 7, 2020

Timothy Lydon  
Town of Bourne  
24 Perry Avenue  
Buzzards Bay, MA 02532

**RE: Comprehensive Wastewater Management Plan**

Dear Mr. Lydon,

Bourne possesses truly singular and unique characteristics and natural beauty at the gateway to Cape Cod. At Environmental Partners, we believe that any wastewater planning initiative for the Town of Bourne will ultimately come to focus on balancing project affordability with preserving the lifeblood natural assets and healthy commercial interests of the Town. Having worked so extensively and successfully on the Cape for more than twenty years, we have an unmatched appreciation for Bourne's goals for this project. Accordingly, we have assembled a dynamic, multi-disciplinary project team with the engineering experience, scientific orientation, and intimate knowledge of the region to successfully undertake this assignment.

When it comes to community master planning on Cape Cod, quality needs to be given more credence over quantity every day, and successful wastewater planning on the Cape is something with which we are very familiar. For the past fifteen years Environmental Partners has guided the only truly successful small-scale wastewater management project on all of mainland Cape Cod in Provincetown. In 2000, The Town asked EP to step in and rescue a failing CWMP program that could not achieve community consensus. We were asked to take on this challenge because of Environmental Partners' familiarity with the needs of Cape communities and our successful experience with the extensive public information and participation that's fundamental to garnering support for new infrastructure projects. We've done this in Provincetown, Wellfleet, Eastham and are doing it today in Tisbury.

In Provincetown the CWMP planning process resulted in a unique and customized collection and treatment systems serving hundreds of waterfront lots, out-of-the-box siting solutions, and an initial capital cost of only \$16 Million. EP worked with the Town to successfully receive over \$12 Million of grant and low interest loans to offset these costs and reduce the financial burden to the Town. That system has now completed its fourth growth phase, and Environmental Partners continues to serve as Provincetown's Owner's Project Manager.

In Wellfleet, we provided comprehensive wastewater management planning that focused on natural solutions that leverage off the Town's active and extensive aquaculture program to reduce estuarine nitrogen loads at a small fraction of the cost of structured sewer systems. The experimental oyster spawning project in Wellfleet Harbor has yielded results that surpass expectations. The project received national award recognition with the American Public Works Association.

Eastham was the only Town on the Cape without a public water supply and has always relied on individual wells for water supply and onsite septic systems, resulting in a progressive rise in impaired drinking water quality because of the close proximity of these wells to septic systems. The concept of a constructing and financing a new infrastructure was understandably controversial and intimidating. Environmental Partners led an extensive, multi-year public participation effort that ultimately led to overwhelming support at Town Meeting. As part of this multi-phase \$135 Million project, EP assisted the Town in successfully receiving over \$80 Million of SRF and USDA grant/low interest loan funding thus far.

The message here is that we understand and appreciate the complexities of developing a community-wide water quality program, whether it involves wastewater or water, and that its success lies in a persistent, patient and open public process where all concerns are heard and answered. It is for this reason that for the past twenty years Cape communities have turned to us to help develop new infrastructure programs where none existed, and for which Bourne is now seeking assistance. EP will bring the same energy, commitment, judgment, and ingenuity that we provide to all of these communities to bear for Bourne.

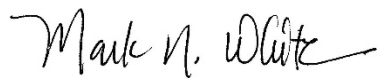
For cost estimating, life cycle analysis, and financial planning, we have brought together experts to work with us, including the Abrahams Group who has been assisting dozens of Massachusetts communities plan for and manage the financing of large infrastructure projects. With these combined resources, the Town will have the highest possible confidence in the financial comparison of alternatives and the overall lifecycle cost outlook of the project.

In reviewing our qualifications and experience statements and project approach, we are sure you will agree that the EP team is uniquely qualified for this assignment. Unlike other engineering consultants, we have no contractual ties to the Cape Cod Commission or other agencies (DEP or the MEP project), nor any conflict of interest with neighboring towns, and therefore are truly independent to advocate solely for the Town of Bourne.

We hereby acknowledge receipt of Addendum 1 dated April 3, 2020. We welcome the opportunity to discuss our qualifications and our approach with you.

Sincerely,

Environmental Partners Group, Inc.



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SECTION 1

# COMPANY PROFILE

# COMPANY PROFILE

## About EP

Celebrating our 23rd year, Environmental Partners (EP) is an award-winning multidisciplinary engineering and consulting firm built on the core philosophy that a strict focus on client service through partnership creates added value for our clients. With a staff of approximately 75, EP is headquartered in Quincy, Massachusetts, with regional offices in Woburn, MA, Hyannis, MA, and Middletown, Connecticut.

EP provides a broad range of services to municipal, commercial, industrial, and institutional clients including:

Civil Engineering

Construction Management

Drinking Water

Emergency Management Services

Environmental

GIS & Asset Management

Owner's Project Management (OPM)

Planning

Stormwater

Traffic & Transportation

Wastewater

## Our Experience

We understand the unique Cape Cod Public Participation process, and the range of diversity of public officials and citizens' opinions. We have completed hundreds of projects over the years in Barnstable, Brewster, Chatham, Dennis, Eastham, Harwich, Orleans, Provincetown, Truro, Wellfleet, Yarmouth, and Nantucket, Tisbury, and Oak Bluffs with the scrutiny and sensitivity required to assist the Town of Bourne.

Our growing list of awards is testament to our core philosophy. We are a highly innovative and award winning consulting and engineering firm. EP was selected as a "Top 25 Public Works Project" by the American Public Works Association for the design and construction of a new \$140 million town-wide municipal water system in Eastham. We were also selected for the same award in 2014 for our work in the Town of Wellfleet, exemplifying our commitment to sustainability and "out of the box" thinking on a sewer and stormwater project.



## Our Reputation and Capacity

EP's outstanding reputation over the past twenty-three years has been founded on timely performance of projects. Our ability to successfully manage projects, not only the technical tasks, but also our client's expectations, stems from our company size and structure. We provide a full-range of services, with exceptional client service. We have the technical and management skills to run large projects, and have a deep commitment to servicing our clients.

## SECTION 1

Simply stated, EP has grown to its current size based on a solid track record of providing quality services on a timely basis and excellent communication skills. We are not a firm that takes on projects that we cannot commit to completing. With a staff of approximately 75 people we are well equipped to provide engineering services to the Town of Bourne.

### Our Financial Stability

Environmental Partners has been providing similar services as those requested in this RFP since our inception nearly 23 years ago. Environmental Partners Group, Inc. is not debarred nor have we ever been dismissed or disqualified from a contract. EP has been financially stable since its inception in 1997. We have the necessary financial resources to successfully complete this project. If the Town of Bourne, after selecting us for this contract, feels there is not adequate information to demonstrate our financial stability, we will be pleased to provide more information to that effect. We have enclosed a copy of our certificate of insurance herein.

### Work with Nearby Communities

Environmental Partners has not performed any work for the Towns of Sandwich, Wareham, Mashpee, Falmouth, or Marion. We are not performing wastewater services for the Town of Barnstable, and we are not performing wastewater planning services for the Town of Plymouth.

### Financial or Proprietary Interest

Environmental Partners does not have financial or proprietary interest in any water, wastewater, or stormwater equipment, or treatment systems.

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**PROJECT UNDERSTANDING AND  
TECHNICAL APPROACH**



# PROJECT UNDERSTANDING AND TECHNICAL APPROACH

Bourne is uniquely positioned at the head of Cape Cod, stretching from Buzzards Bay to Cape Cod Bay. Its character is distinct from any of the other Cape towns, being home to over a dozen villages and harbors from Cataumet to Buzzards Bay to Sagamore and, as home to Massachusetts Maritime Academy at the west end of the Cape Cod Canal, is a college town as well. The Cape Cod Canal splits the Town between north and south. On its north side is its economic center and college community at Buzzards Bay, Sagamore Village on the west and Bournedale in between. The south side of the Town features several picturesque harbors and villages, as well as its other economic center along MacArthur Boulevard, the recycling and solid waste center at the closed landfill, and most prominently Joint Base Cape Cod, which occupies forty percent of Bourne's land.

After steady growth during the 1970s to 2000, over the last several years the Town's population has remained fairly consistent. Today the Town's year round population is 20,500, which swells to 40,000 during the summer. Nonetheless Bourne is a town in transition, as documented in its Local Comprehensive Plan that was updated just last year. It has become increasingly more attractive place for families and, with relatively easy access to Boston and Providence, is also attracting commuters as a place to live. The State is moving toward bringing commuter rail service to Buzzards Bay, which will make the Town even more desirable.

More summer homes are being converted to year round residences and more subdivisions are coming onto the scene. The mission and future of Joint Base Cape Cod (JBCC) is also in transition, and whatever direction it takes will have an influence on the Town's character as well.

The challenge, so succinctly stated in the Plan, is for Bourne to move through this transition in such a way that it "remains a delightful place to live and work".

## The Town's Highest Priority: Water Quality

Bourne recognizes that it has a wealth of water sources and that protecting them is fundamental to the Town's economic future. As part of the Comprehensive Plan process residents prioritized what they view to be the key issues facing the Town. Their highest priority is with water quality and protection of the Town's water resources. This concern is the driver behind the Town's decision to pursue a Comprehensive Wastewater Management Plan at this time.

Over the last decade Bourne has been participating in the Massachusetts Estuaries Project (MEP) with the Department of Environmental Protection. Under the MEP each of the Town's embayments are evaluated to determine whether limits on nitrogen discharges are needed to restore and ensure their ecosystem function. Total Maximum Daily Loads (TMDLs) have been established for Megansett Harbor, Phinneys Harbor and Back River/Eel Pond. The Federal Clean Water Act requires that the Town comply with these TMDL requirements. Other watersheds and embayments within the Town have not yet been studied as part of the MEP, including Buttermilk Bay, Pocasset Harbor and Pocasset River, but remain a concern for the Town.

Bourne has also been participating with the Cape Cod Commission on the Cape Cod Area Wide Water Quality Management Plan, known as the 208 Plan. The focus of the Plan is to support the efforts of Cape towns to address nitrogen

## SECTION 2

discharges to coastal waters, and provides a framework of traditional and nontraditional technologies for intercepting and treating nitrogen discharges on a watershed basis. The Commission assisted Bourne in applying for a \$2.3 Million Economic Development Administration grant for the construction of the new wastewater treatment plant in Buzzards Bay, which was awarded in February 2019 and is close to commencing operation.

## The Status of the Bourne's Wastewater Needs

### A. North of the Canal

The status of the Town's wastewater conditions and needs north of the canal are:

- The greatest potential for growth is in the downtown Buzzards Bay area, which historically was limited by wastewater disposal capacity.
- Bourne has an Intermunicipal Agreement with Wareham that provides for disposal of up to 200,000 gallons per day (gpd) of wastewater from this downtown area, which includes Hideaway Village and Taylor Point, to the Wareham wastewater treatment plant. The treatment capacity of the Wareham plant is 2 Million Gallons per Day (MGD) and effluent is discharged to the Agawam River.
- Because of nitrogen discharge limitations into the Agawam River, Wareham can only discharge up to 1.56 MGD and therefore is unable to use all of the plant's capacity. The downtown Buzzards Bay area currently discharges approximately 110,000 gpd to the Wareham plant, but there isn't sufficient capacity at the plant to meet Wareham's and Bourne's future wastewater needs.
- A wastewater planning study completed in 2010 (CH2M-Hill) forecasted that even limited development in the Buzzards Bay area will exceed the available capacity at the Wareham treatment plant. There are others that have also expressed interest in use of the Wareham plant, such as the Massachusetts Maritime Academy (MMA) and a small portion of Plymouth.
- MMA currently has their own treatment plant with an ocean outfall for effluent disposal at their campus that is permitted for 65,000 gallons per day (gpd), but projects longer term flows of up to 100,000 gpd.
- Bourne would also like to sewer the Buttermilk Bay area, which would contribute additional flow of about 200,000 gpd,
- The 20-year wastewater flow forecast for all of these sources from Bourne, MMA and Plymouth is approximately 570,000 gpd.
- Bourne is participating in a regional study through the Buzzards Bay Coalition with Bourne, Marion and Wareham that is evaluating the feasibility of an expansion of the Wareham plant to accommodate all of these needs, and the feasibility of diverting the effluent from its current discharge into the Agawam River to MMA's existing outfall at the west end of the canal.
- The Buzzards Bay Coalition is currently developing large-scale information on this alternative of: a) estimating current and future (20-year) wastewater flows from each community that would go to the regional plant, and b) estimating the construction and annual O&M costs.
- Bourne recognized in 2010 that developing a regional solution for these areas north of the canal would take a decade or longer. To address the Town's pressing need to provide wastewater disposal capacity to the downtown Buzzards Bay area, where economic development and growth would otherwise be limited without it, Bourne proceeded with the siting and construction of a 100,000 gpd package treatment plant with subsurface disposal at an 8.1 acre Town-owned parcel on the Buzzards Bay

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bypass road. The construction started during 2019 funded by the grant from the Economic Development Administration as described above. The plant will soon commence operations and is anticipated to provide the downtown area with the wastewater infrastructure it needs for the next ten years. In response, the Town has seen new construction such as assisted living facilities, over age 55 residences, and hotels that are consistent with the Town's smart growth objectives.

### B. South of the Canal

The status of the Towns wastewater conditions and needs south of the Canal are:

- The villages south of the canal and abutting Buzzards Bay are densely settled. With the exception of a few small-scale treatment systems (the Middle School, Pocasset Assisted Living facility, Brookside Golf Course and the Bourne Laundromat), these properties rely on individual onsite systems for wastewater disposal.
- The Town anticipates the need to treat leachate from the Town's closed landfill adjacent to MacArther Boulevard, as well as the need to address nitrogen TMDL restrictions that may be placed on some of the embayments along Buzzards Bay
- The JBCC has a wastewater treatment facility permitted for an average annual flow of 360,000 gpd. Effluent disposal is provided via a 10+ mile effluent force main that discharges to rapid infiltration basins. The treatment plant is owned by the Air Force and operated by the Massachusetts Air National Guard, and used for its on-base facilities. As of 2014 the facility was receiving approximately 131,000 gpd of flow. Because of flow impacts caused by inflow, the plant has an effective remaining available capacity of 75,000 gpd.
- Bourne is participating in regional wastewater planning for the areas south of the canal that includes the Towns of Falmouth, Sandwich, Mashpee and Barnstable. The concept being evaluated is expansion of the JBCC facility to accommodate the long term wastewater flows from these five Towns, which combined have an estimated wastewater flow need of 4.5 MGD and will require a significant expansion of the treatment plant as well as the effluent disposal facilities. Subsurface (rapid infiltration or wicks) or a surface water outfall into the Cape Cod Canal located approximately at the midpoint of the Canal are being considered for effluent disposal. The capital cost of this facility, including flows from Barnstable, is estimated to be \$229 Million in 2019 dollars and the annual O&M costs are estimated to be \$4.6 Million.
- Within this scenario is an assumption that the leachate from the closed landfill would be treated at an Integrated Solids Waste Management facility, together with domestic, commercial and light industrial wastewater flows from areas near the landfill, and the JBCC infrastructure would be used only for effluent disposal.
- While providing a comprehensive regional approach for meeting the wastewater needs of these communities, the JBCC concept faces many technical, regulatory, political and economic challenges that will need to be overcome. Not least of these is that the Air Force needs to decide whether to either lease or divest ownership of the land involved, a commitment that is yet to be made. The timing of when each of the five communities will need the wastewater flow capacity differ, which complicates the financing and cost allocation strategies. If an outfall is to be pursued for effluent disposal, it will need to meet several standards that are requirements of the Ocean Sanctuaries Act and require permitting at the federal,

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state, regional and local levels. Finally, for this regional approach to move forward the five communities will need to enter into an Intermunicipal Agreement with the other communities that articulates their relationship and financial obligations with each other.

### CWMP Goals and Objectives

Bourne's goals and objectives for the CWMP are summarized as follows:

- Benchmarking from planning studies already completed by the Town, identify the Town's sensitive freshwater, surface water and groundwater, and marine water resource areas that are threatened and need remediation and protection.
- Develop comprehensive strategies for sustaining these water resources that are implementable, take climate change into consideration, and are the most cost effective for the Town.
- Support the Town in evaluating the regional wastewater management initiatives in which Bourne is participating.
  - For the Buzzards Bay area north of the canal, evaluate the cost-effectiveness of the regional approach being considered through the Buzzards Bay Coalition with Wareham and Marion versus "going it alone" by expanding the package treatment plant. Forecast the cost to rate payers by pursuing either the regional solution or going it alone.
  - For the area south of the Canal, evaluate whether a regional solution with the JBCC is more cost effective than developing local options on a village by village basis, or that considers alternative technologies such as advanced onsite systems, permeable reactive barriers and aquaculture. As is done for the wastewater management approach north of the canal, forecast the

rate payer costs under either a regional or local approach.

- Develop an approach to upgrade onsite and neighborhood treatment facilities, especially in areas of densely developed neighborhoods
- Support the Town in developing and implementing an extensive public outreach and participation program throughout the development of the comprehensive plan, and that is ultimately oriented toward achieving consensus on an approach that is supported by the Town.
- Assist the Town in identifying and securing funding assistance and grants that will support implementation of the comprehensive wastewater management program.

### Scope of Services

In 2019, the Town adopted and the Cape Cod Commission accepted the Town's updated Local Comprehensive Plan (LCP) 2019. That plan contained many action items with the focus on growth in areas with adequate infrastructure and away from areas that must be protected for ecological, historical and other reasons. Action Items included:

- Reactivation of the Wastewater Advisory Committee to monitor and coordinate wastewater planning and development in all areas of Bourne
- Identify, remediate, treat or contain identified sources of pollution in coastal embayment and estuaries to attain established TMDLs and create a comprehensive wastewater Management plan to upgrade public and private wastewater treatment facilities and methods in appropriate areas especially in densely developed neighborhoods, and actively seek grants and other funding to carry out the plan

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With this as the backdrop, the town of Bourne has outlined a scope of work for engineering services for the creation of a Comprehensive Wastewater Management Plan. Our scope of work will incorporate the goals of this plan.

Comprehensive Water Management Plans (CWMP) are prepared in a phased approach to ensure that during the analysis, identification of options and final recommended plan is vetted with public participation and appropriate MassDEP and MEPA review and input.

The four-phased scope of work includes:

- I. Needs Assessment
- II. Identification, Screening and Evaluation of Alternatives
- III. Formulation of Recommended Plan
- IV. Completion of MEPA and DRI Reviews

### Phase 1 - Needs Assessment

The objective of the Needs Assessment is to develop an understanding of the existing and future water quality conditions within the planning area, and will serve as the basis for the remainder of the wastewater planning program. Previous planning efforts related to economic development, watershed protection, and wastewater infrastructure, utilizing data developed as part of the MEP program, and compiling available data of the remaining watershed areas will be used for benchmarking. The Needs Assessment will describe water quality in the Town's watersheds, identify impacts associated with nitrogen loadings from wastewater disposal under existing and anticipated future population levels, estimate the reductions in nitrogen levels required to meet TMDLs and describe the Town's wastewater infrastructure needs.

The understanding developed through the Needs Assessment will provide the context of the alternative management and mitigation strategies developed in Phase II of this planning effort, the Alternatives Analysis and Screening.

### Phase I Tasks:

1. Collect and review existing information. Data to be collected will include all previous wastewater, water quality and stormwater reports and water quality data in the Town's files (including MEP) as well as at MassDEP and the Cape Cod Commission.
2. Prepare for and attend a kickoff meeting with Town representatives and the Wastewater Advisory Committee to prepare draft plan of study for all phases of the project. At the kickoff meeting we will discuss the results of the Bourne Local Comprehensive Plan adopted by the town and approved by the Cape Cod Commission that has a prioritized focus on water quality. The meeting goal is to solidify agreement on the areas of focus for the project and review the public participation program. Prepare a plan of study based on the kickoff meeting and provide it to town for review and comment prior its submission to MassDEP for comment and acceptance.
3. Request a pre-planning meeting with representatives from all of the regulatory agencies and programs that will be involved in the CWMP process: MassDEP (multiple Divisions), MEPA, Cape Cod Commission, Natural Heritage and Endangered Species Program, and local Boards.
4. Finalize and submit the plan of study to MassDEP for review. Prepare and submit a MEPA ENF, as outlined in Phase IV for comment and approval by MEPA.
5. Identify potential grant and low interest loan opportunities to reduce the Town's cost for conducting the study and any subsequent phases such as with the Massachusetts Clean Water State Revolving Fund program. Grants for stormwater related portions of the recommended plan may qualify for permitting under other programs. Discuss with the Town the potential of dedicating a portion of the short term rental tax toward

## SECTION 2

this CWMP planning effort. Preparation of applications for funding, should the Town choose to pursue them, will be provided as an additional service outside this scope of work.

6. Conduct the Wastewater Management Needs Assessment drawing from previous planning studies, including the MEP studies completed for Bourne watersheds and the 2019 Local Comprehensive Plan Update.
  - a. Obtain detailed plans of the existing wastewater, water and stormwater infrastructure from the Town.
  - b. Obtain Board of Health records of Title V conditions for onsite wastewater disposal systems in the planning areas.
  - c. Gather water quality data and historic records for the Town's marine and freshwater surface water bodies and embayments. This information will be utilized to document existing water quality needs for each watershed and pond in Town including Buttermilk Bay, Back River/Eel Pond, Phinney's Harbor, Red Brook Harbor and others.
  - d. Public Participation: Prepare for and attend two public meetings to discuss the project goals and approach, and to gather information on wastewater disposal issues across the Town.
  - e. Incorporate the conclusions of the report "MEP Final Report 2006 - Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for Phinneys Harbor, Eel Pond and Back River System and MEP Final Report 2015 - Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for Megansett - Squeteague Harbor Estuarine System" into the analysis of defining the areas of need for wastewater management.
  - f. Create mapping that shows base-line conditions utilizing the Town's GIS MuniMapper data base. The GIS mapping will portray conditions of the man-made and natural environment including: land use, zoning, soil conditions, watershed delineations, water supply zones of contribution and environmentally sensitive areas. Other sources to be used to develop this mapping are the Water Resource Commission Stressed Basin Report, EOEEA water asset and water balance studies, Natural Resource Conservation Service maps and reports, Coastal Zone Management shoreline change maps and the Integrated List of Impaired Waters.
  - g. Update the needs analysis and flow projections from the 2007 Tighe & Bond analysis utilizing from the Board of Health regarding Title V compliance and onsite system failures, I/A systems in operation and neighborhood treatment systems as well as incorporating Zoning changes since the 2007 analysis. Prepare GIS mapping that depicts wastewater disposal issues and historic data.
  - h. Current wastewater nitrogen loading rates will be estimated on a watershed-by-watershed basis and will be based on water use data. If the appropriate Assessors data is available, these estimates will also be described with respect to residential, commercial and industrial property uses, and will also characterize discharges according to seasonal and year-round property uses. Nitrogen loading rates provided in existing MEP reports will be used for those watersheds that have been evaluated. As of April 2019 the status of the MEP technical Reports on the Bourne watersheds is:

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- TMDLs Established: Phinneys Harbor, Wild Harbor
  - Under Threshold: Canal North, Canal South, Sandwich Harbor, Eel Pond, Back River, Bourne Buzzards Bay
  - Not Studied: Buttermilk Bay, Pocasset River, Pocasset (Red Brook) Harbor
  - Draft Technical Report issued: Megansett Harbor, Fiddlers Cove, Rand Harbor
7. Assess Future Conditions
- a. Utilize the Bourne Local Comprehensive Plan (2019 update) for economic and demographic trends in the Town. The projection of build-out forecasts in the Plan, which provides a current assessment of existing population and future growth, will also be used as the basis for the Needs Assessment.
  - b. Estimate future septage/wastewater flows and nitrogen loads on a watershed basis, as was done for the estimate of current wastewater flows and loading.
8. Wastewater Needs and Problem Identifications
- a. Based on the findings of the above tasks, prepare a technical report that summarizes existing wastewater conditions and future wastewater needs in the Town, and develop a recommendation of priority areas of need.
  - b. Public Participation: Conduct a workshop with the Wastewater Advisory Committee to present the findings of the Needs Assessment describing current versus future water quality, and areas identified to have wastewater management needs. Following this, provide a presentation to the Board of Selectmen on the Needs Assessment with representatives of the Wastewater Advisory Committee.
- c. Public Participation: Prepare for and participate in a public meeting, presenting the findings of the needs assessment, and to solicit their input.
  - d. Prepare a summary of the findings for inclusion on the Town website including input from public meetings.
9. Update the Needs Assessment report to include comments provided through the Public Participation program. The report will include the proposed scope of work for Phase II – Identification, screening and evaluation of alternatives.
10. Prepare a MEAP Notice of Project Change (details are presented in Phase IV of this scope of work). The ENF will provide notice of the Needs Assessment Report.

## Phase II – Identification, Screening and Evaluation of Alternatives

Under this phase of the CWMP an analysis of wastewater treatment and management alternatives for addressing the water quality and infrastructure issues identified in the Needs Assessment will be performed. Both structural and non-structural measures will be assessed. Management alternatives will be identified and evaluated on the basis of the following treatment factors:

- A baseline conditions alternative that would determine the level of treatment possible by optimizing the existing wastewater collection, treatment and disposal facilities;
- Identification of areas where on-site septic systems are inadequate;
- Decentralized treatment options for areas with inadequate on-site septic systems, including alternative treatment systems

## SECTION 2

such as Permeable Reactive Barriers (PRB) or aquaculture, cluster systems, and package wastewater treatment facilities;

- Centralized treatment options, including expansion/upgrade of the existing WTP to improve nitrogen removal and regional options for residuals reuse and/or disposal;
- Collection system alternatives for centralized and decentralized treatment; and
- Flow and load reduction measures, including water conservation.

The screening analysis will evaluate the options identified above and potential locations for the siting of facilities. Factors to be considered include cost, design flexibility for handling varying loads and upgrades, environmental impacts and constraints, effluent quality, permit requirements, odor emissions, land requirements, ease of implementation, maintenance/operation requirements, GHG emissions and climate change resiliency. Up to four alternatives of Town-wide wastewater management will be selected for further evaluation in the Draft Recommended Plan.

### Phase II Tasks

1. Prepare a matrix of options for protecting the Town's water resources that were identified in the Needs Analysis as having wastewater management needs, including both structural and non-structural approaches. The alternatives will include: conventional sewerage and treatment through small-scale package treatment plants, regional approaches such as those currently being evaluated through the Buzzards Bay Coalition and the JBCC working group, decentralized approaches including enhancement of onsite systems with advanced treatment and innovative/alternative strategies such as shellfish aquaculture, permeable reactive barriers.
2. Develop a listing of the criteria to be used for evaluating each of the management alternatives.
3. Meet with the Wastewater Advisory Committee to review the alternatives matrix and the evaluation criteria.
4. Public Participation: Conduct a public workshop to present the alternatives matrix and the proposed criteria to be used in the screening analysis.
5. Develop concepts for either sewer collection/treatment facilities or approaches for improving the performance of on-site disposal systems in densely developed neighborhoods, particularly in the neighborhoods of Monument Beach, Gray Gables, Tahanto, Pocasset Heights, Patuisset and Cedar Point as highlighted in the Local Comprehensive Plan. Conduct a desktop analysis to identify sites that can potentially be considered as locations for effluent disposal. Previous studies completed by the Town that evaluated effluent disposal alternatives will be incorporated into this analysis.
6. Summarize the findings of the Buzzards Bay Coalition regional study for the area north of the canal and their infrastructure and financial implications to Bourne. Also summarize the status of the JBCC regional alternative for the area south of the Canal and the alternatives for Bourne that were considered as part of that study.
7. Perform the screening of the alternative technologies and strategies to identify those that are appropriate and feasible for the Town. The screening will be based on the criteria defined in Task 2 above. Summarize the results of the screening and review these results with the Wastewater Advisory Committee.
8. Develop alternative Town-wide wastewater management strategies that incorporate the feasible technologies. Up to four



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alternatives are envisioned: one that consists of a conventional sewerage and treatment, as required by MassDEP; one that encompasses the regional approaches being evaluated through the Buzzards Bay Coalition and the JBCC, and is complemented with decentralized systems for those areas not served by the regional systems; and two comprised of decentralized and innovative/alternative technologies. For each of these alternatives the specific management approach to be utilized in each of the Town's watershed and/or village areas will be described.

9. Meet with the Wastewater Advisory Committee to review and discuss the Town-wide wastewater management alternatives. It is assumed that the Committee will decide upon the recommended alternative strategies that are to be considered for detailed evaluation in Phase III.
10. Public Participation: Meet with the Board of Selectmen and representatives of the Wastewater Advisory Committee to present the recommended Town-wide wastewater management strategies that are to be considered in the detailed evaluation. The Board of Selectmen are to provide direction on and make the decision on the specific alternatives to be considered.

Public Participation: prepare for and participate in a public meeting to present the Town-wide wastewater management alternatives that are being considered.

11. Prepare a report summarizing the findings and recommendations of the Phase II activities. Submit the Phase II report to MassDEP for review and comment. It is understood that there is not a MEPA review requirement at this stage of the CWMP planning effort.

## Phase III – Formulation of Recommended Plan

The purpose of the draft Recommended Plan is to describe the impacts and potential mitigation measures associated with each of the alternatives selected through the Screening Alternatives Analysis. It will detail the factors and evaluation methodology used to rank the alternatives identified in the Screening Alternatives Analysis and select a Recommended Plan. Alternatives will be ranked on the basis of environmental impacts, costs, implementation capability, regulatory requirements and constraints, public acceptance, reliability, flexibility, optimization of existing facilities, GHG emissions, climate change resiliency and other considerations identified during the planning process.

### Phase III Tasks

1. Develop the following characteristics of each of the comprehensive wastewater management alternatives:
  - a. Concept-level capital costs for design, permitting and construction of the hard infrastructure associated with the alternative.
  - b. Estimated operation and maintenance costs, including energy usage of the alternative
  - c. The administrative and regulatory requirements associated with the alternative, including Board of Health bylaw changes associated with onsite systems and permitting requirements
  - d. The attributes of the alternative that will improve water quality conditions in environmentally sensitive areas, as outlined in the MassDEP CWMP guidelines.
  - e. The potential consequences of the alternative on growth in the context of current zoning and on the goals

## SECTION 2

- articulated in the updated Local Comprehensive Plan.
2. Discuss with the Wastewater Advisory Committee the cost allocation approach to be considered for each alternative, such as betterments, property taxes, user fees or a combination of these. It is assumed that the Committee will provide direction on the cost allocation approach for each of the alternatives. Using this approach, develop a financial pro-forma for each alternative that identifies estimated annual costs to the Town and property owners.
  3. Compile the results of the detailed characterization of each alternative and compare them according to the following factors:
    - a. Present worth
    - b. Cost effectiveness, including capital and operating costs
    - c. Environmental Impacts, including impacts on wetlands, water supply considerations, historical and archeological considerations
    - d. Institutional Considerations: such as the need for changes in local by-laws and government organizations
    - e. Siting considerations for any necessary pumping and/or treatment systems
    - f. Phased Implementation opportunities that could reduce cost and environmental impacts.
    - g. Reliability and Flexibility
  4. Review this comparison with the Wastewater Advisory Committee to select a recommended plan.
  5. Formulate an implementation schedule for the recommended plan that considers design, permitting and construction stages.
  6. Meet with the Board of Selectmen and representatives of the Wastewater Advisory Committee to present the findings of the detailed evaluation of the comprehensive wastewater management alternatives and the recommended plan for the CWMP.
  7. Public Participation: Conduct a public workshop to present the preferred Town-wide wastewater management plan for the CWMP.
  8. Incorporate comments from public workshop and prepare Draft Recommended Plan/EIR for submission to MassDEP and MEPA (see Phase IV for details)
  9. Respond to comments on the Draft Recommended Plan/EIR and prepare the draft CWMP
  10. Public Participation: Prepare for and attend a Public Hearing on the Draft CWMP
  11. Prepare a summary report on the public participation activities of Phases I,II and III for inclusion with the final CWMP

## Phase IV– MEPA and DRI Reviews

Over the course of the comprehensive wastewater planning process the Town's CWMP efforts will be submitted for reviews by a state and regional regulatory levels. Reviews will be performed in accordance with the Massachusetts Environmental Policy Act (MEPA), and regionally by the Cape Cod Commission.

### MEPA

1. The MEPA review process for CWMPs consists of the following:

## SECTION 2

- a. An Environmental Notification Form (ENF) as part of Phase I that describes the plan of study for the Comprehensive Wastewater Management planning effort
- b. Once the Needs Assessment is completed (the end of Phase 1), submittal of a Notice of Project Change that describes the results and conclusions of the assessment, and identifies those areas targeted for evaluation of management alternatives.
- c. Once the recommended plan has been identified in Phase III, a Draft Environmental Impact Report (DEIR) that details the Alternatives Screening Analysis and the Draft Recommended Plan
- d. A Final Environmental Impact Report (FEIR) that documents the Final Selected Plan, also at the end of Phase III.

We will discuss with the Town the approach of submitting an Expanded ENF that provides summaries of the planning studies already completed. An Expanded ENF offers the potential of a more streamlined review of the Environmental Impact Reports, and potentially being able to combine the DEIR and FEIR into a Single EIR.

2. At the outset of the CWMP effort a meeting will be held with the MEPA staff to discuss the content, sequencing and schedule of each of the required MEPA submittals, and the opportunities to accelerate the process through the Expanded ENF and SEIR,
3. A draft of each of the MEPA submittals will be prepared and provided to the Town for review and comment. After discussion and incorporating the comments received, they will be submitted to MEPA for review. The submittals will be noticed in the MEPA Environmental Monitor, local newspaper and circulated in compliance with Section 11.16 of the MEPA regulations.

4. A site visit and meeting with the Town by MEPA is anticipated as part of the ENF and EIR reviews. Environmental Partners will prepare for and attend each of these site visits. Environmental Partners will respond to questions the MEPA staff may have on the submittals, and offer comments on the conditions associated with the Secretary's Certificate on the ENF and EIRs.

## Cape Cod Commission - Development of Regional Impact (DRI)

1. The CWMP is subject to mandatory DRI review by the Cape Cod Commission because the CWMP requires the preparation of an EIR under MEPA. At the outset of the CWMP a meeting will be held with the regulatory staff of the Commission to discuss the DRI review process, the necessary submittals and the Commission's timeframes for conducting the DRI review. The concept of a joint review of the DRI with the MEPA EIR will also be discussed.
2. The DRI application will be prepared, using the MEPA EIR as the review document. The DRI application will articulate the relationship of the CWMP to the 208 Area Wide Water Quality Management Plan, for which the Cape Cod Commission is the lead agency.
3. The following public meetings with the Commission are anticipated:
  - Subcommittee review of the ENF, with the request for a joint review of the DRI with the MEPA EIR
  - A public hearing and presentation to the Commission on the Draft EIR
  - A public hearing and presentation to the Commission on the Final EIR
4. Environmental Partners will prepare for and attend each of these hearings.

## SECTION 2

Environmental Partners will also review the draft DRI approval with conditions and, after discussing them with the Town, provide comments to the Cape Cod Commission staff.

SECTION 3

# PROJECT TEAM

## SECTION 3

# PROJECT TEAM

Understanding the importance of this contract, Environmental Partners' is proposing a team approach of qualified professionals with the extensive experience necessary for the successful execution of a Comprehensive Wastewater Management Plan for the Town of Bourne.

### **Mark N. White**

Principal in Charge

Mark N. White, a founding partner and Principal of Environmental Partners Group, Inc., will serve as Principal in Charge. He will be responsible for the overall successful execution of tasks under the contract and assure that the Town's expectations are met. Mark has successfully managed projects for Cape Cod municipalities for more than twenty years. Specializing in wastewater, drinking water, and solid waste services, he has worked extensively with municipal, state, and federal agencies, often supporting clients with navigating complex permitting processes and pathways with the Environmental Protection Agency (EPA) and the Massachusetts Executive Office of Environmental Affairs including MEPA and DEP.

### **Helen T. Gordon, PE, BCEE, MCPPO**

Project Manager

Helen is a Senior Program Manager at EP and has over 37 years of experience working as a project director and manager on wastewater projects. She oversaw the Nantucket CWMP Update, which included an island wide hybrid solution recommended 20-year \$84M program to meet the TMDL requirements. The overall plan included a systematic program of

breaching certain island areas for flushing of strategic ponds, updating of Innovative/ Alternative guidelines for the island, assessment of groundwater discharge for the Surfside Wastewater treatment plant, creation of a fertilizer management program, upgrades to the existing Surfside Wastewater Treatment Plant and gravity and low pressure collection system.

### **Robert J. Rafferty, PE**

Lead Technical Engineer

Bob has 25 years of environmental engineering experience including planning, design, and construction of wastewater systems. He also has extensive experience in GIS & Asset Management and Owner's Project Management (OPM). Bob is currently managing wastewater projects in Newburyport, Westwood, Tisbury, and Groton including a large sewer main extension project in Groton. The work in Groton included securing a MassWorks grant to support the wastewater extension project.

A certified Professional Engineer in MA, Bob is an alum of the University of Massachusetts, Lowell with a B.S in Civil Engineering and an M.S in Environmental Engineering. Additionally, he has a certificate in Asset Management from BAMI – Purdue University.

## Technical Resources

In addition to project leaders Mark, Helen, and Bob, EP will provide the following staff members as technical resources for this project.

### **Paul C. Millett, PE**

Paul is a Senior Principal and a Regional Manager at Environmental Partners with over 30 years of experience in Drinking Water, Wastewater, Stormwater, Owner's Project Management, Emergency Management Services, and Construction Management services. He has managed the third party review and served as an Owner's Project Manager for the expansion of Provincetown's Sewer System over multiple phases and has been an integral member of the team for wastewater projects in Nantucket, Plymouth, and Framingham.

### **Ziad F. Kary, PE**

Ziad is a Senior Principal at EP with over 25 years of experience. He is a registered professional engineer within the Commonwealth of Massachusetts whose expertise is focused on geotechnical engineering, civil engineering, wastewater, construction management, and emergency management services. His recent project experience includes sewer force main and gravity main and pump station projects in Stoughton, Plymouth, Framingham, Nantucket, and Whitman.

### **Dave Patangia, PE**

Dave is a Principal at Environmental Partners with more than 20 years of experience in Civil Engineering, Construction Management, Drinking Water, Environmental, Owner's Project Management, and Wastewater.

He specializes in wastewater and drinking water treatment; process and instrumentation design; project and design management; and project delivery. His project experience includes completing design management of engineering studies and design, including pilot studies; preliminary engineering; detailed engineering; and services during construction, including startup.

### **Ryan Allgrove, PE**

Ryan has over twelve years of wastewater and water system design, modeling, operations and construction experience. His planning expertise includes extensive use of hydraulic modeling software for both distribution systems and collection systems. He is currently the lead design engineer for the Elmfield Road and Hop Brook Utilities project in Framingham and the project manager for the Town of Weymouth's plan for \$30 million in collection system improvements to accommodate redevelopment of the former Naval Air Station. Ryan will lead the technical aspects of the project.

### **Ann Marie Petricca, CPG**

Ann Marie is the Director of Geosciences and an Associate at Environmental Partners with over 30 years of experience in Geology, Hydrogeology, Environmental, Drinking Water, Hazardous Waste, Solid Waste, and Stormwater. Ann Marie manages numerous geologic and hydrogeologic projects, including: site characterization; water supply exploration, pump testing and development; groundwater modeling; Massachusetts Contingency Plan (MCP) and Superfund Remedial Investigations and implementation of remedial measures; landfill assessments; landfill and transfer station third party inspections; geophysical investigations; ASTM Phase I and II environmental assessments (domestic and international); wastewater effluent monitoring; and MS4 stormwater compliance.

### **Sarah F. Price, PE**

Sarah is a Senior Project Engineer at Environmental Partners with 8 years of experience in Civil and Environmental engineering. She specializes in hydraulic modeling, stormwater, and drinking water and is proficient in various computer programs including AutoCAD, HydroCAD, and PCSWMM. Her project experience includes hydrologic/hydraulic modeling, dam breach and repair design, water treatment plant design, drainage studies and design, permitting, and construction contract administration.

Sarah has a Bachelor of Science and a Master's of Science in Civil and Environmental Engineering from the University of California at Berkeley and is a licensed Professional Engineer in the states of Massachusetts and California.

### **Andrew T. Grota, PE**

Andrew is a Project Engineer at Environmental Partners with over five years of experience in the fields of civil engineering, construction management, drinking water, stormwater, and wastewater. He specializes in working on wastewater improvements projects, including municipal wastewater treatment systems, wastewater conveyance projects, sewer modeling, infiltration/inflow (I/I) and sanitary sewer evaluation surveys (SSES) projects, construction management of wastewater related projects, and hydraulic modeling of pressurized and non-pressurized systems.

### **Benjamin J. Mangan, PE**

Ben is a Senior Project Engineer at Environmental Partners with 7 years of experience in the Drinking Water and Wastewater industry. Specializing in potable water and wastewater design and construction projects, his roles have included project planning, technical design, construction administration, and project management. Ben is experienced with design and modeling software's including AutoCAD, Civil3D, ArcMap, WaterGEMS and SewerGEMS.

### **Vern Lincoln**

Vern is a Project Scientist at Environmental Partners with 5 years of experience in Environmental services and specializes in hydrogeology, stormwater compliance, GIS mapping/analysis, and data collection. His project experience includes new source site evaluations, aquifer testing, groundwater sampling/monitoring, municipal stormwater compliance, and asset management programs. Graduating magna cum laude from Curry College with a Bachelor's degree in Environmental Science, Vern has received 40-Hour OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) and NASSCO PACP/LACP/MACP Certification.



## Subconsultant

EP has enlisted the expertise of a subconsultant to support this project:

### **The Abrahams Group**

Financial Analyst / Advisor

In order to conduct an thorough description and assessment of the town's funding strategy for the recommended plan, we have enlisted the expertise of Mark D. Abrahams, President of The Abrahams Group.

Mark will prepare financial impact analysis (betterment taxes, user fees, life-cycle cost analysis, etc.) for various cost options. He has done this successfully on numerous similar projects with Environmental Partners.

# ORGANIZATIONAL CHART

## Town of Bourne



**Helen T. Gordon, PE, BCEE**  
Project Manager

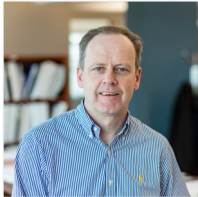


**Mark N. White**  
Principal in Charge



**Bob J. Rafferty, PE**  
Technical Leader

### TECHNICAL RESOURCES



**Paul C. Millett, PE**



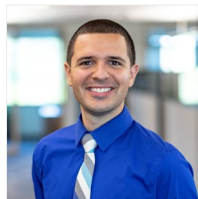
**Ziad F. Kary, PE**



**Dave Patangia, PE**



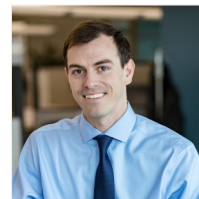
**Ryan J. Allgrove, PE**



**Andrew T. Grota, PE**



**Vern S. Lincoln**



**Ben J. Mangan, PE**



**Sarah F. Price, PE**



**Ann Marie Petriccia, CPG**

### SUBCONSULTANTS

**Financial Analyst**  
The Abrahams Group

SECTION 4

# RELEVANT EXPERIENCE

# RELEVANT EXPERIENCE

EP has worked extensively and successfully throughout Cape Cod for over 23 years. The matrix below provides an overview of our experience in delivering unique and customized collection and treatment systems to communities throughout the region. Following the matrix are detailed descriptions for each project.

PROJECTS	CAPE COD COMMISSION	CIVIL INFRASTRUCTURE PLANNING & DESIGN	FORMULATION OF RECOMMENDED PLAN	GEOGRAPHIC INFORMATION SYSTEMS (GIS)	IDENTIFICATION OF ALTERNATIVES	INTER-MUNICIPAL AGREEMENTS	MEPA AND DRI REVIEWS	MEPA PROCESS	NEEDS ASSESSMENT	REGIONALIZED TREATMENT	STORMWATER RESOURCE PLANNING & DESIGN	WASTEWATER RESOURCE PLANNING & DESIGN	WATER RESOURCES PLANNING & DESIGN	PUBLIC PARTICIPATION
<b>CWMP Services and Wastewater Facilities Construction</b> Provincetown, MA	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	✓
<b>CWMP Wastewater Effluent Discharge Analysis</b> Provincetown, MA	✓	✓	✓	✓	✓		✓					✓		✓
<b>Wastewater Planning and Facility Upgrades</b> Tisbury, MA (*Martha's Vineyard Commission)	✓*	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
<b>New Municipal Water System Development</b> Eastham, MA	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
<b>General Consulting Services and Four Corners Sewer Extension</b> Groton, MA		✓	✓	✓	✓				✓		✓	✓		✓
<b>Integrated Water Resource Management Plan</b> Marshfield, MA		✓	✓	✓	✓				✓		✓	✓	✓	
<b>Sewer System Needs Assessment &amp; Alternative Analysis &amp; Mapping</b> Marshfield, MA		✓	✓	✓	✓				✓			✓	✓	
<b>Wastewater Planning and Oyster Reef Restoration</b> Wellfleet, MA		✓	✓	✓	✓				✓		✓	✓		✓
<b>Tri-Town Regional Water Treatment Plant OPM Services</b> Braintree, Holbrook, Randolph, MA		✓	✓	✓	✓	✓		✓	✓	✓			✓	✓
<b>Shared Water System</b> Truro and Provincetown, MA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

## SECTION 4

# CWMP Services and Wastewater Facilities Construction

Provincetown, MA



EP worked with the Town of Provincetown, MA over the course of many years to resolve their ongoing wastewater collection, treatment and disposal issues through a privatization or Design/Build/Operate (DBO) initiative for a \$19 million comprehensive wastewater management plan. EP has been managing all aspects of the DBO project for the town for over ten years, including full time oversight and vendor coordination. Phase 1 (\$16M) was completed in 2003. Phase 2 (\$6.4M) was completed in the summer of 2008. Phase 3 (\$20M) was completed in 2012 and Phase 4 was completed in 2015.

EP was retained to assist Provincetown in advancing a stalled wastewater facilities planning project. Hundreds of failing septic systems along the full length of Commercial Street's waterfront posed imminent danger to the business district and tourist industry. Title V remedial costs were unaffordable for most, and in many cases Title V compliance was impossible due to lot size and high water tables.

Working closely with Town staff, elected officials, regional (Cape Cod Commission) and state (DEP/MEPA) agencies, EP spearheaded a new evaluation of treatment and disposal sites that led to a cost-effective and environmentally acceptable plan. EP worked with the Town to site the advanced wastewater treatment plant on an old burn dump off Route 6, with

### RELEVANT FEATURES

- ✓ *Cape Cod Commission*
- ✓ *Civil Infrastructure Planning & Design*
- ✓ *Formulation of Recommended Plan*
- ✓ *Geographic Information Systems (GIS)*
- ✓ *Identification of Alternatives*
- ✓ *MEPA and DRI Reviews*
- ✓ *MEPA Process*
- ✓ *Needs Assessment*
- ✓ *Wastewater Resource Planning & Design*
- ✓ *Water Resources Planning & Design*
- ✓ *Public Participation*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Paul C. Millett, PE*
- ✓ *Ziad F. Kary, PE*
- ✓ *Dave Patangia, PE*
- ✓ *Anne Marie Petricca, CPG*

decentralized effluent infiltration beds beneath open portions of the Route 6 Right of Way. Extensive groundwater modeling was done to permit and properly design the beds.

EP supported the Town in securing a complex DEP Groundwater Discharge Permit for its wastewater disposal beds along Route 6. An innovative approach for effluent disposal that utilized areas of a highway median strip was selected, after the location of several effluent bed locations was proposed, and was complicated by the presence of rare and endangered species, wetland resource areas, and ponds in the immediate vicinity of these effluent beds. To further complicate the permit, the concerned parties included the Cape Cod National Seashore, an abutter to this highway and these effluent beds.

EP performed detailed groundwater modeling that defined the extent of groundwater mounding and the effluent travel direction and timeframes resulting from these wastewater discharges, and in spite of the many concerns

## SECTION 4

raised by local, regional and state permitting authorities, the Discharge Permit was issued expeditiously and with only minor conditions. As part of this effort, EP led the Town through the Cape Cod Commission's DRI and MEPA's EIR permitting process.

EP also developed and managed the privatization effort by which the \$19 Million facilities were constructed and operated for twenty years. The following tasks were included: Phase 1 tasks included takeover and successful completion of the stalled CWMP process. Development of preliminary designs and a detailed Request for Proposals using a D-B-O approach followed the completion of the CWMP. This included preparation of contract documents and financial terms and conditions, including options for the Town to use state/federal loans, or acquire financing from the selected Vendor.

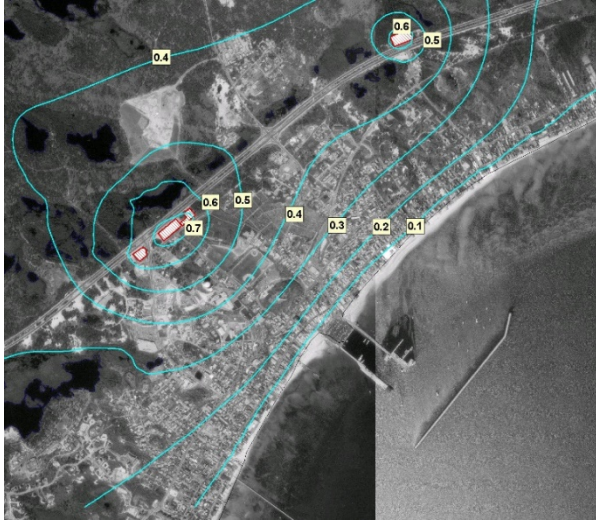
Phase 2 tasks included detailed review of plans and specifications, and preparation of a comprehensive summary of review comments followed by resolution of design review comments with the DBO designer. Phase 2 also included coordination with the Town's Legal Counsel and Finance Department, resulting in preparation of state reimbursement requests through the DEP SRF program and a unique grant application to the US Department of Agriculture, Rural Development Office, to fund a portion of the project serving the Cape End Manor expanded nursing home.

One of EP key accomplishments was to guide the Town through the privatization process for the entire project, thereby reducing costs, shrinking schedules and simplifying project implementation. EP has protected the Town's interests throughout the entire process, including successfully pursuing and obtaining state and federal grants and loans for Provincetown.

## SECTION 4

# CWMP Wastewater Effluent Discharge Analyses

Provincetown, MA



Provincetown's downtown area was being limited by inadequate wastewater disposal opportunities. Septic system failures and impacts to the harbor were impacting businesses and economic growth. EP participated in their CWMP program, which resulted in the selection of a unique vacuum sewer and grinder pump collection system for the downtown area and treatment using Sequencing Batch Reactors. EP proposed an innovative approach for effluent disposal by siting a series of effluent disposal areas along the Route 6 corridor, including the median strip. Use of the Route 6 corridor required that a detailed hydrogeologic analysis be performed to confirm that the effluent discharges would not endanger the water quality of the sole source aquifer, surface water bodies and wetlands within Provincetown and the Cape Cod National Seashore. These are fragile resources that needs to be carefully managed.

### RELEVANT FEATURES

- ✓ *Cape Cod Commission*
- ✓ *Civil Infrastructure Planning & Design*
- ✓ *Formulation of Recommended Plan*
- ✓ *Geographic Information Systems (GIS)*
- ✓ *Identification of Alternatives*
- ✓ *MEPA and DRI Reviews*
- ✓ *Wastewater Resources Planning & Design*
- ✓ *Public Participation*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Paul C. Millett, PE*
- ✓ *Ziad F. Kary, PE*
- ✓ *Dave Patangia, PE*
- ✓ *Sarah F. Price, PE*

EP led the hydrogeologic study to characterize the aquifer and develop an analytical element groundwater model to provide an accurate representation of the Pilgrim Lens. The model was used to identify appropriate locations of the leachfields such that effluent discharges will not affect the pond and wetland resource areas in the Town.

Siting the effluent disposal beds along the Route 6 corridor required negotiating a land transfer with MassDOT and permit reviews by MassDEP, MEPA, the Cape Cod Commission and the local Conservation Commission. By working closely with each of the agencies, the project could be successfully permitted and constructed within a tight time frame.

## SECTION 4

# Wastewater Planning and Facility Upgrades

Tisbury, MA

The Town of Tisbury has designated the State Road District, an unsewered business district, as a priority for economic development. State Road contributes to Lake Tashmoo, a threatened embayment and for which a nitrogen TMDL has been established. Because all of the properties within the watershed rely on on-site septic systems, Tisbury needed a plan to provide sewer service to the planned economic district, thereby enabling economic growth to occur while also mitigating nitrogen discharges to Tashmoo. Tisbury is also under pressure to provide additional wastewater capacity for redevelopment in their sewerred downtown area, affordable housing and other municipal uses. EP has been supporting the Town in developing approaches for accommodating these wastewater needs, which involved an extensive public participation program that led to the delineation of the State Road Sewer District. All of this is part of their Comprehensive Wastewater Management Planning that is currently underway. EP prepared the design for the sewer expansion for the State Road District, which consists of a low pressure sewer system.

EP has also provided consulting, planning, design, permitting, funding assistance, and construction services to upgrade the Town's wastewater infrastructure. This initially involved a systematic evaluation of the collection system, main pump station and treatment facility that resulted in a series of recommended improvements to the infrastructure and treatment plant. The program for the treatment facility includes recommendations for returning the facility to reliable operation, a five-year capital improvement plan, and a long-term plan for maximizing the flow capacity of the facility.

### RELEVANT FEATURES

- ✓ *Cape Cod Commission*
- ✓ *Civil Infrastructure Planning & Design*
- ✓ *Formulation of Recommended Plan*
- ✓ *Geographic Information Systems (GIS)*
- ✓ *Identification of Alternatives*
- ✓ *MEPA and DRI Reviews*
- ✓ *MEPA Process*
- ✓ *Needs Assessment*
- ✓ *Stormwater Resource Planning & Design*
- ✓ *Wastewater Resource Planning & Design*
- ✓ *Water Resources Planning & Design*
- ✓ *Public Participation*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Bob Rafferty, PE*
- ✓ *Paul C. Millett, PE*
- ✓ *Ziad F. Kary, PE*
- ✓ *Ryan Allgrove, PE*
- ✓ *Ben Mangan, PE*
- ✓ *Sarah Price, PE*
- ✓ *Ann Marie Petricca, PG*
- ✓ *Vern Lincoln*

A multi-phase upgrade program for the treatment plant was developed, first to eliminate restrictions in the process that prevent the facility from reaching its permitting potential, second to return the facility to reliable operations, and third to increase the capacity to the maximum extent feasible using the existing SBRs.

To accommodate the increase in effluent discharges resulting from these improvements, EP successfully pilot tested an increased hydraulic loading of the existing disposal fields, avoiding a costly upgrade to wick systems. This allows the Town to maximize the ability of the treatment facility without incurring any major capital expense for new effluent disposal facilities.



## SECTION 4

# New Municipal Water System Development

Eastham, MA

For thirty years, Eastham officials gathered evidence of progressively declining groundwater quality in the community's six thousand private wells. Nitrates, industrial solvents, and emerging contaminants emanating from septic systems and the Town's closed landfill posed immediate and long-term threats to public health. Adding complexity to the situation, most residential areas within Eastham are densely developed with very small lots, and contain both private wells and on-site septic systems supplying all water and wastewater management to the Town's residents.

These conditions limited the Town's economic development, as the area could not accommodate increased density for new properties, such as rental communities and commercial businesses. To combat these harmful contaminants, the Town of Eastham authorized the construction of a municipal water system at their 2014 and 2015 Annual Town Meetings, and retained EP to provide engineering services related to development, permitting, design, and construction of the new Town-wide municipal water supply.



### RELEVANT FEATURES

- ✓ *Cape Cod Commission*
- ✓ *Civil Infrastructure Planning & Design*
- ✓ *Formulation of Recommended Plan*
- ✓ *Geographic Information Systems (GIS)*
- ✓ *Identification of Alternatives*
- ✓ *Inter-Municipal Agreements*
- ✓ *MEPA and DRI Reviews*
- ✓ *MEPA Process*
- ✓ *Needs Assessment*
- ✓ *Water Resources Planning & Design*
- ✓ *Public Participation*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Bob J. Rafferty, PE*
- ✓ *Paul C. Millett, PE*
- ✓ *Ziad F. Kary, PE*
- ✓ *Dave Patangia, PE*
- ✓ *Ryan J. Allgrove, PE*
- ✓ *Sarah F. Price, PE*
- ✓ *Ann Marie Petricca, CPG*

Initial phases of the project focused on permitting and planning to evaluate three potential water supply sites. EP completed file reviews, field investigations, and groundwater modeling for the water supply wells. The design of the water system's well pump stations, elevated water storage tanks, and water distribution system began following successful local, state, and federal approval of the water supply planning effort.

## SECTION 4

EP, working with Town officials, devised a strategy to design and construct the first phase of the project – 45 miles of water main, two well pumping stations, and the first storage tank – in less than three years. Only 30 months later, water service was flowing to high priority areas near the landfill. The remaining 75 miles of water mains, final well station, and water storage tank are expected to be constructed by 2023.

Construction of **Phase 1** of the distribution system was organized into eight discrete areas for design and construction so that the storage tank, well fields, and distribution system could be built simultaneously. Coordinating activities so the well fields and storage tank could be brought online on a schedule that allowed for water main pressure testing to be performed, and subsequent service connections to be made immediately thereafter, was a critical aspect of this fast-tracked effort.

One particular challenge EP overcame was how to efficiently construct six miles of water main within State Highway (Route 6), which was the largest linear utility project in the history of MassDOT District 5. An innovative traffic management plan, allowing construction within the travel lanes in off peak periods accelerated the construction process to as many as 700 linear feet per day of pipe installation. This significantly reduced both cost and time for the Town, and won the praise of the Massachusetts Department of Transportation.



**Phase 2** of the program is currently underway and is anticipated to be completed by 2023. Construction consists of five phases, A through E, to expand water service and fire protection to secondary roadways and neighborhoods Town-wide. Phase 2A is under construction and includes three separate contracts to complete over 20 miles of water mains and associated water services and fire hydrants. Phase 2B, which includes additional water main construction, a water supply wellfield and control building, and a water storage tank, is currently scheduled to be online in 2020.

What the Town of Eastham and EP have accomplished together is truly unique. No other community in the region has built an entire public water supply system of this scale and complexity in such a short timeframe. EP's innovative permitting strategy of engaging multiple agencies simultaneously shaved over a year off the typical permitting schedule, allowing construction activities to commence much earlier than the average project.

The completed phases of this project won numerous awards in 2017 including being selected as a Top 25 Public Works Project by the American Public Works Association. EP also accepted the "Most Innovative Program" award from New England Water Works Association (NEWWA) for their planning, design, and construction of the new system, and The Town of Eastham was named Utility of The Year by NEWWA.



## SECTION 4

# General Consulting Services and Four Corners Sewer Extension

Groton, MA



EP has been assisting the Town of Groton with wastewater planning, design and permitting since 2013.

Groton currently conveys wastewater from the Town Center to the Town of Pepperell's wastewater treatment facility. On behalf of the Groton Sewer Commission, EP led negotiations with the Town of Pepperell for the inter-municipal agreement renewal, a major restructuring of the agreement. EP also contributed to the negotiations with EPA for the Pepperell WWTF's NPDES discharge permit renewal. The EPA sought to further restrict the discharge of copper to the Nashua River. Based on evaluation of water quality data, EP, with both towns, successfully negotiated a stay on the new restrictions.

EP assisted the Town with a successful MassWorks Infrastructure Grant funding application to construct 3,000 feet of new gravity sewer installed via traditional excavation, and 4,000 feet of pressure pipe installed via horizontal direction drilling to convey wastewater flow from Groton's Four Corners Village to Ayer. The project enables economic growth that is currently unfeasible due to limitations of wastewater disposal.

### RELEVANT FEATURES

- ✓ *Two Inter-municipal Agreements*
- ✓ *State Permitting*
- ✓ *Federal NPDES Permitting*
- ✓ *Funding – Grants*
- ✓ *Stormwater Resource Planning & Design*
- ✓ *MEPA*

### KEY STAFF

- ✓ *Bob J. Rafferty, PE*
- ✓ *Paul C. Millett, PE*
- ✓ *Ziad F. Kary, PE*
- ✓ *Dave Patangia, PE*
- ✓ *Ryan J. Allgrove, PE*
- ✓ *Sarah F. Price, PE*
- ✓ *Ann Marie Petricca, CPG*

The project began with comprehensive town-wide planning through the MEPA process and permitting through an inter-basin transfer permit with MA Water Resources Commission. Design stage permitting included MassDEP wetlands permitting and a MassDOT access permit.

Services also included intermunicipal agreement negotiations with Ayer, MA; development of a design that allows for future expansion of the system; coordination with several town boards; and design of a sluice gate for a local dam.

In 2020, EP assisted the Town of Groton with development of a stormwater enterprise funding mechanism. EP provided technical guidance and cost estimates, and established the framework for the overall program. Extensive public outreach, with presentations, hearings, workshops, and coordination with Town committees, was instrumental in the process.

## SECTION 4

# Integrated Water Resource Management Plan

Marshfield, MA

A Town's water resources must be managed and protected to meet current and future needs of its residents. The preparation of an Integrated Water Resource Management Plan (IWRMP) includes evaluation of current and future wastewater, drinking water, and storm water needs, while identifying the most economical and environmentally appropriate solutions. Preparing an IWRMP includes cooperation from all Town departments in order to gain consensus on measures that will have the most positive impact on water resources. The Town of Marshfield's coastal location, paired with the sensitivity of the North and South Rivers, makes it imperative to protect its water resource assets. In February 2012, the Town of Marshfield selected EP Group to conduct an IWRMP.

Since the task of completing an IWRMP is a complex undertaking, we divided the scope into sequential phases. Phase 1 included assessment of existing conditions in the Town. The assessment includes review of land-use patterns, growth plans, soils, hydrology, groundwater and surface water quality. We will also assess the existing water, sewer and stormwater infrastructure. The primary goal of Phase 1 was to catalogue all relevant and existing conditions and to identify information gaps that require additional planning and outline the framework of the subsequent phase, the final IWRMP.

### RELEVANT FEATURES

- ✓ *Civil Infrastructure Planning & Design*
- ✓ *Formulation of Recommended Plan*
- ✓ *Geographic Information Systems (GIS)*
- ✓ *Identification of Alternatives*
- ✓ *Needs Assessment*
- ✓ *Stormwater Resource Planning & Design*
- ✓ *Wastewater Resource Planning & Design*
- ✓ *Water Resources Planning & Design*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Paul C. Millett, PE*

Goals of the final IWRMP included:

- A unified plan that prioritizes all of the Town's water resource management needs in a manner that provides the greatest benefit to the public health and environment.
- Focus attention and resources on the components of the Town's water resources infrastructure that present the greatest benefit to the public health and environment.
- Identify solutions that address multiple problems.
- Promote a "fix-it-first" approach that optimizes existing infrastructure where practical.

## SECTION 4

# Sewer System Needs Assessment & Alternative Analysis & Mapping

Marshfield, MA

During a Sewer Needs Assessment and Alternatives Analysis of the Black Mount and Kent Park Neighborhoods in Marshfield, MA, EP found that there was a lack of a digitized or GIS-based wastewater collection system map. An accurate map and GIS geodatabase of the wastewater collection system would make great tools for planning and daily operation and maintenance of the Town's sewer system.

EP mapped the sewer system and, in addition to locating each sewer manhole located within the 42 miles of the wastewater collection system limits, also field-located water valve boxes and hydrants within the same area.

In July and August 2013, EP mapped 1,220 sewer manholes, 835 water valve boxes and 379 hydrants that were located within an area that encompassed the 42 miles of Marshfield's wastewater collection system.

EP also conducted a feasibility study to determine the accuracy of the sewer record drawings on file for the Town's survey system. This task involved personnel from the Town and EP Group conducting field inspections to verify the data from record drawings to assess the consistency and precision of the selected plans. Primarily, the field investigation was focused on the accuracy of the connectivity of the sewer system as well as the invert data provided on the record drawings.

### RELEVANT FEATURES

- ✓ *Civil Infrastructure Planning & Design*
- ✓ *Formulation of Recommended Plan*
- ✓ *Geographic Information Systems (GIS)*
- ✓ *Identification of Alternatives*
- ✓ *Needs Assessment*
- ✓ *Wastewater Resource Planning & Design*
- ✓ *Water Resources Planning & Design*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Paul C. Millett, PE*



## SECTION 4

# Wastewater Planning and Oyster Reef Restoration

Wellfleet, MA



Like many towns on Cape Cod, Wellfleet had very little stormwater infrastructure and no wastewater infrastructure. With Wellfleet Harbor being home to a world-class aquaculture program, as well as one of the only remaining natural oyster populations in New England, the harbor is the life-blood of the community's shellfishing industry, and its protection and enhancement are paramount. The balance of protection and enhancement was the key to an entirely new and sustainable model for improving water quality while avoiding high infrastructure costs. With limited federal or state grant programs, sewer system costs have been projected to be as high as \$60,000 per lot. Absent the construction grants that funded past infrastructure programs, communities are demanding innovative, affordable, and sustainable alternatives. Unwilling to wait for the Town's MEP report, with its Total Maximum Daily Load (TMDL) limits for nitrogen, Wellfleet engaged EP in June 2011 to undertake its Comprehensive Wastewater Management Plan (CWMP), with the goal of pursuing a natural systems approach to sustaining harbor water quality, including the establishment of a 2-acre, sustainable oyster propagation reef.

### RELEVANT FEATURES

- ✓ *CWMP*
- ✓ *Needs Analysis*
- ✓ *Evaluation of Alternatives*
- ✓ *Innovative Solutions*
- ✓ *Impaired Water Resources*
- ✓ *Nitrogen Loading*
- ✓ *Stormwater*
- ✓ *Funding*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Helen T. Gordon, PE, BCEE*
- ✓ *Bob J. Rafferty, PE*
- ✓ *Paul C. Millett, PE*
- ✓ *Ann Marie Petricca, CPG*

EP's approach for the Town's CWMP to meet state regulations for wastewater management, including reducing nutrient pollution in Wellfleet Harbor. EP calculated the nitrogen load on Wellfleet Harbor from land-based sources and developed a plan to reduce the amount of nitrogen affecting water quality in the harbor. The CWMP highlights the restoration of the natural environment by oyster propagation as a fundamental component of the Town's plan to manage its water resources.

On Cape Cod, the Massachusetts Estuaries Project (MEP) has shifted regulatory focus towards reducing non-point sources of nutrients (principally nitrogen) that are degrading coastal embayments, and communities are considering costly wastewater and stormwater management systems to reach compliance. However, the nitrogen problem in many estuaries is caused by an imbalance between food sources- nitrogen and phytoplankton populations- and consumers such as healthy shellfish populations. Twenty-five years of academic research have proven that oysters have a significant capacity to filter phytoplankton and other suspended solids

## SECTION 4

from the water, thus removing nitrogen, and incorporating it into their tissue and shells. This full-scale demonstration project was intended to show that restoring sustainable, natural habitats can be done at low cost to correct the nutrient imbalances in coastal estuaries.

When allowed to propagate and sustain growth, the eastern oyster provides multiple eco-services, including buffering erosion forces, filtering 25-50 gallons of seawater per adult oyster per day, removing nutrient-rich plankton, enhancing habitat conditions for eel grass and other organisms, food provisioning for other species (including humans), and providing habitat and foraging grounds for dozens of species.

EP worked closely with the Town to monitor the impact of oyster propagation in water quality in Wellfleet Harbor based on a pilot, or demonstration, project. For the demonstration site, the Town selected a muddy, sparsely populated two-acre intertidal area where Duck Creek enters Wellfleet Harbor. In June 2011, a layer of sea clam shell, or cultch, was spread over the study area by the Wellfleet Shellfish Constable. Cultch is a natural substrate on which pelagic oyster larvae can attach, or “set”, following a natural spawn cycle. The juvenile oysters, or “spat”, then grow into adulthood.

The study area was monitored by Dr. Anamarija Frankic, director of the Green Boston Harbor Project at the University of Massachusetts in Boston. By September 2012, an estimated ten million new oysters were growing on the two-acre study area, and water quality monitoring showed measurable reductions in nitrogen in the cultched area. If protected and sustained, this population is capable of filtering 250-500 million gallons of seawater per day, while capturing 5,000 kilograms of nitrogen in their body mass alone.

With the phenomenal success of this demonstration project, the Town now recycles local oyster shells from the annual Wellfleet OysterFest, and deposits them at the study area to extend the reef. Over two years, ten tons of shell and one million live spat (attached to the shells) have been returned to the harbor to grow and contribute to water quality improvement.

Associated with the oyster reef propagation project, the Town targeted stormwater runoff that flowed unabated into the harbor, and has constructed stormwater treatment/infiltration systems out of sight, beneath the busy waterfront streets. With a grant from the USDA's Cape Cod Water Resources Restoration Project, the Town constructed a new stormwater collection and infiltration system beneath the busy Commercial Street, which runs along Duck Creek from the Town center to the marina. The new system provides capture for a 1-inch storm from over three acres of pavement, and removes 80% of suspended solids, as well as floatables. The completed project is now contributing to improved water quality in Duck Creek and Wellfleet Harbor.

This project won a 2014 Public Works Project of the Year Award in the category of Small Cities/ Rural Communities – Environment from the American Public Works Association, and a 2013 American Council of Engineering Companies of Massachusetts (ACEC/MA), Engineering Excellence Silver Award



## SECTION 4

# Tri-Town Regional Water Treatment Plant OPM Services

Braintree, Holbrook, and Randolph, MA



The Tri-Town Board of Water Commissioners (Tri-Town) represents the towns of Braintree, Randolph and Holbrook. Tri-Town was created through legislation in the late 1880's to manage the jointly utilized water supply known as Great Pond bordering the towns of Randolph and Braintree. The Great Pond Reservoir System consists of the Upper Great Pond Reservoir, the lower Great Pond Reservoir, and the Richardi Reservoir. The Great Pond Reservoir System is the source of 100 percent of the drinking water for these three communities. Tri-Town maintains the reservoir dam system and provides overall management of the water supply system. Braintree and the Joint Randolph/Holbrook Water Board own and operate individual WTPs on the Lower Reservoir portion of Great Pond.

The Braintree Water Treatment Plant and the Randolph/Holbrook Water Treatment Plant (WTP) are nearing the end of their useful life. The Town of Braintree and the Joint Water Board (Randolph/Holbrook) have completed a number of upgrades at each WTP over the years, however, it has come to a point in time where a new facility is required to replace each of the treatment plants. Rather than construct two separate plants the communities determined the most cost effective approach was to construct one Tri-Town Regional WTP (TTRWTP) on available land adjacent to the town of Braintree's WTP. After many years of

### RELEVANT FEATURES

- ✓ *Civil Infrastructure Planning & Design*
- ✓ *Formulation of Recommended Plan*
- ✓ *Geographic Information Systems (GIS)*
- ✓ *Identification of Alternatives*
- ✓ *Inter-Municipal Agreements*
- ✓ *MEPA Process*
- ✓ *Needs Assessment*
- ✓ *Regionalized Treatment*
- ✓ *Water Resources Planning & Design*
- ✓ *Public Participation*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Helen T. Gordon, PE, BCEE*
- ✓ *Paul C. Millett, PE*
- ✓ *Ziad F. Kary, PE*
- ✓ *Dave Patangia, PE*
- ✓ *Sarah F. Price, PE*

planning and preparing for the construction of the TTRWTP, the Tri-Town Water Commissioners (Tri-Town) have contracted EP (EP) as their Owner's Project Manager (OPM).

As the Owner's Project Manager, EP represents Tri-Town for the project. Services provided include project oversight and all services associated with project management of a publicly constructed water treatment facility. This multi-million dollar project includes a new 12.5 MGD dissolved air filtration regional water treatment plant and redundant sub-aqueous transmission mains.



## SECTION 4

The first phase contracted encompasses a review of the Pilot Plant Study conducted in 2004 to obtain approval from MassDEP on the approach for treatment, reviewing 25% design plans, conducting constructability and value engineering workshop, preparing a new preliminary conceptual design layout, and creating a detailed probable cost estimate and schedule for the overall project. Subsequent phases will include conducting Designer Selection Process for the Tri-Town Board, oversight of Designer services and deliverables, oversight during construction, startup, and warranty periods. In addition, EP will work with the Board on creation of organizational structure for the new regional facility and support on funding opportunities.

## SECTION 4

# Shared Water System

Truro and Provincetown, MA



The water supplies serving all of Provincetown and parts of Truro are all located in Truro. Having only two water supply sources, Provincetown desperately needed a third so that they could meet their summer demands. Environmental Partners conducted a multi-year evaluation of new source alternatives, including a feasibility study of desalinization and site investigations at several locations in both communities. Selecting the preferred approach involved extensive collaboration with Town committees coupled with a public information program, as well as coordination program with the Cape Cod National Seashore. Ultimately, an Intermunicipal Agreement (IMA) was crafted between the two towns that allowed for a new water supply to be designed, permitted and constructed at North Union Field in Truro. The majority of the approximately \$5 Million cost for the project was supported by federal funds, which EP helped the Town secure.

The Town also wanted an additional supply source within the Cape Cod National Seashore to serve as an emergency supply should it ever be needed. EP helped structure an IMA between Provincetown and the Seashore that recognizes this need and the conditions for emergency use of the wellfield.

### RELEVANT FEATURES

- ✓ *Cape Cod Commission*
- ✓ *Civil Infrastructure Planning & Design*
- ✓ *Formulation of Recommended Plan*
- ✓ *Geographic Information Systems (GIS)*
- ✓ *Identification of Alternatives*
- ✓ *Inter-Municipal Agreements*
- ✓ *MEPA and DRI Reviews*
- ✓ *MEPA Process*
- ✓ *Needs Assessment*
- ✓ *Regionalized Treatment*
- ✓ *Water Resources Planning & Design*
- ✓ *Public Participation*

### KEY STAFF

- ✓ *Mark N. White*
- ✓ *Paul C. Millett, PE*
- ✓ *Ziad F. Kary, PE*
- ✓ *Dave Patangia, PE*
- ✓ *Sarah F. Price, PE*

At the same time as these projects were ongoing Truro and Provincetown also needed a treatment plant to remove iron and manganese from their raw water. EP performed the treatment alternatives evaluation for the plant, from which membrane filtration was selected. EP provided the design, permitting and construction oversight of this 1.5 Million Gallon/Day plant, which went into operation. EP was also central in securing nearly \$15 Million of grant and low-interest loan funding from federal and state agencies for the treatment plant, significantly reducing the financial burden on the ratepayers.

SECTION 5

# CLIENT REFERENCES

SECTION 5

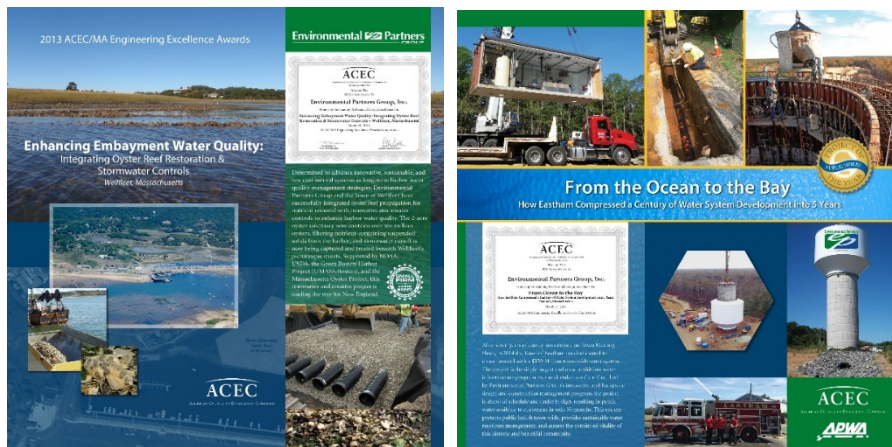
# CLIENT REFERENCES

REFERENCE	PROJECTS
<p><b>Town of Provincetown</b>  <b>Richard Waldo, PE, Director of Public Works</b>                      (508) 487-7060                      rwaldo@provincetown-ma.gov</p>	<ul style="list-style-type: none"> <li>• CWMP Services and Wastewater Facilities Construction</li> <li>• Municipal Separate Storm Sewer Systems (MS4) Stormwater Mapping, Monitoring &amp; Compliance</li> <li>• New Water Source Investigations</li> </ul> <p>Provincetown was one of EP's first clients and we have provided a variety of services for nearly 20 years.</p>
<p><b>Town of Tisbury</b>  <b>Jay Grande, Town Administrator</b>  <b>Kirk Metell, Director of Public Works</b>                      508-696-4220, 508-684-8778 x153                      jgrande@tisbury.ma.gov, kmetell@tisbury.ma.gov</p>	<ul style="list-style-type: none"> <li>• Wastewater Planning and Facility Upgrades</li> <li>• Municipal Separate Storm Sewer Systems (MS4) Stormwater Mapping, Monitoring &amp; Compliance</li> <li>• Septic System &amp; I/A Treatment Systems Design</li> </ul> <p>We have been providing a variety of on-call engineering services to Tisbury and Tisbury Water Works for more than 10 years.</p>
<p><b>Town of Marshfield</b>  <b>Thomas Reynolds, DPW Superintendent</b>                      (781) 834-5575                      treynolds@townofmarshfield.org</p>	<ul style="list-style-type: none"> <li>• Integrated Water Resource Management Plan</li> <li>• Sewer System Needs Assessment &amp; Alternative Analysis &amp; Mapping</li> </ul> <p>We have been providing a variety of on-call engineering services to Marshfield for more than 10 years.</p>
<p><b>Town of Groton</b>  <b>Mark Haddad, Town Manager</b>                      978.448.1111                      mhaddad@townofgroton.org</p>	<ul style="list-style-type: none"> <li>• General Consulting Services and Four Corners Sewer Extension</li> </ul> <p>We have been providing a variety of on-call engineering services to Groton for more than 5 years.</p>
<p><b>Town of Braintree</b>                      (representative for Tri-Town Water Commission)  <b>James Arsenault, DPW Director</b>                      (781) 794-8254                      jarsenault@braintreema.gov</p>	<ul style="list-style-type: none"> <li>• Tri-Town Regional Water Treatment Plant OPM Services</li> </ul> <p>We have been providing a variety of on-call engineering services to Braintree for nearly 10 years, and have been representing the Tri Town Water Commission since 2018.</p>

## Other Relevant References

REFERENCE	PROJECTS
<p><b>Town of Eastham</b>  <b>Silvio Genao, Director of Public Works</b>  <b>Jacqueline Beebe, Town Administrator</b>                      508-240-5900, x207,                      sgenao@eastham-ma.gov,                      jbeebe@eastham-ma.gov</p>	<ul style="list-style-type: none"> <li>• Asset Management &amp; Capital Improvement Plan Preparation</li> <li>• New Municipal Water System</li> <li>• Route 6 Drainage Improvements</li> <li>• Rock Harbor Marina Improvements</li> <li>• Municipal Separate Storm Sewer Systems (MS4) Stormwater Mapping, Monitoring &amp; Compliance</li> </ul> <p>Eastham was one of EP's first clients and we have provided a variety of services for nearly 20 years.</p>
<p><b>Town of Nantucket</b>  <b>Rob McNeil, Director of Public Works</b>                      508-228-7244                      rmcneil@nantucket-ma.gov</p>	<ul style="list-style-type: none"> <li>• Emergency Response Services for Catastrophic Sewer Break</li> <li>• Design for Sea Street Pump Station Force Main</li> </ul> <p>We have been providing a variety of on-call engineering services to Nantucket since 2018.</p>
<p><b>Town of Plymouth</b>  <b>Jonathan Beder, Director of Public Works</b>                      (508) 830-4162, x105                      JBeder@townhall.plymouth.ma.us</p>	<ul style="list-style-type: none"> <li>• Emergency Force Main Break Assistance, Replacement Force Main, and Pump Station Rehabilitation</li> <li>• Water Street Pump Station Rehabilitation</li> </ul> <p>We have been providing a variety of on-call engineering services to Plymouth for more than 10 years.</p>
<p><b>Town of Stoughton</b>  <b>Thomas Fitzgerald, Superintendent of Public Works</b>                      (781) 341-1300, Ext. 942                      tfitzgerald@stoughton-ma.gov</p>	<ul style="list-style-type: none"> <li>• Stormwater System Mapping &amp; MS4 Permitting Services</li> <li>• Park Street Sewer Design</li> </ul> <p>We have been providing a variety of engineering services to Stoughton since 2012.</p>
<p><b>Town of Westwood</b>  <b>Todd Korchin, Director of Public Works</b>                      781-251-2578                      tkorchin@townhall.westwood.ma.us</p>	<p>We have been providing a variety of on-call wastewater and civil engineering services to Westwood since 2014.</p>

The following are two examples of letters of reference for submission to the American Public Works Association annual awards competition. Both Eastham and Wellfleet won in their respective categories.





## TOWN OF EASTHAM

2500 State Highway, Eastham, MA 02642 - 2544  
All departments 508 240-5900 Fax 508 240-1291  
[www.eastham-ma.gov](http://www.eastham-ma.gov)

March 1, 2017

Awards Review Committee  
American Public Works Association  
1200 Main Street, Suite 1400  
Kansas City, Missouri 64105-2100

RE: Nomination – 2017 Project of the Year for Small Cities/Rural Communities –  
Environment Category – Eastham’s Town-Wide Water System

This letter is in endorsement of the application of our town-wide water system project to APWA’s 2017 Awards Program. We believe that this project clearly sets a standard for excellence, creativity, ingenuity, and efficiency with a profound impact on our small community of only 5,500.

The Town of Eastham is a small town that was without any municipal infrastructure for water supply or wastewater disposal. There were several issues driving our community's interest in developing a town-wide water system, not least of which was a well-documented trend of our resident's private wells being increasingly impacted by discharges of nitrates and other compounds from nearby onsite wastewater discharges. In addition, we learned that the closed landfill in our Town is also adversely impacting groundwater and private water wells in that area with volatile organic compounds. Finally, without a municipal water system Eastham had limited ability to provide fire protection to our residents and businesses.

The Town enlisted Environmental Partners Group, Inc. to provide us with evaluative and design expertise as we sought to understand the complexities of initiating new infrastructure, its effect on our community and how we can reasonably manage its cost. Environmental Partners has remained deeply involved with us, from the early phases of the project through the design, permitting, construction and now the operation of the water system to ensure that we were well prepared for each aspect of the system's implementation, and that all of our community's concerns and questions are answered each step of the way. As a result of an extensive educational outreach program that included meetings with individual commercial and residential taxpayers, numerous Saturday and evening workshops, and a concerted effort from Environmental Partners to garner support from key regulatory agencies, including the Department of Environmental Protection and the Cape Cod Commission, the Eastham community ultimately supported the project in overwhelming fashion and authorized funding of \$130 Million for a full town-wide water system that is projected to take approximately eight

years to complete. This was the single largest commitment the Town has ever made in its history. The installation of water mains along a 6 mile stretch of Route 6, to serve the commercial hub of the Town, along with additional residences, is the largest linear utility project in the Massachusetts Department of Transportation's District 5's history, and it was all done working around the heavy seasonal traffic of Cape Cod. Today the first phase of the water system is completed to the point where the system is in operation, we have working fire hydrants and, by mid-November 2016, water was being delivered to properties.

Small towns can hire consultants who minimize the value of their dollars because they are smaller. Environmental Partners have not treated us in any way other than as an important client with an important piece of work to be done. The first phase was completed on time and on budget with change orders at less than .5% for the entire \$45 million first phase. They have been efficient, technically proficient and remarkably responsive at every turn, and have maintained their complete commitment to Eastham every day throughout the project.

Eastham whole heartedly supports this application and sincerely appreciates the opportunity for the Town wide water system project to be considered as a nominee for this prestigious award. Please feel free to contact me with any questions or if additional information is required.

Yours very truly,



Eastham Town Administrator

cc: Eastham Board of Selectmen



# TOWN OF WELLFLEET

300 MAIN STREET WELLFLEET MASSACHUSETTS 02667

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BOARD OF  
SELECTMEN

TOWN  
ADMINISTRATOR

ASSISTANT  
TOWN ADMINISTRATOR

February 28, 2014

Awards Review Committee  
American Public Works Association  
2345 Grand Boulevard, Suite 700  
Kansas City, MO 64108-2625

RE: Nomination – 2014 Project of the Year for Small Cities/Rural Communities  
Enhancing Embayment Water Quality: Integrating Oyster Reef Restoration & Stormwater Controls in  
Wellfleet, Massachusetts

Dear Members of the Awards Review Committee:

The Town of Wellfleet is very pleased and satisfied with the Wellfleet Harbor water quality enhancement project designed by Environmental Partners Group, Inc., and is pleased to support the nomination of Enhancing Embayment Water Quality: Integrating Oyster Reef Restoration & Stormwater Controls in Wellfleet, Massachusetts for ***Project of the Year Small Cities/Rural Communities, Environment category***. The two project elements of sub-surface stormwater controls and construction of the first Massachusetts oyster sanctuary and propagation reef were completed within budget and schedule. Based on the success of this first phase of work, additional stormwater management elements and large-scale expansion of the oyster reef program are now in the planning stages.

The stormwater control project significantly improved water quality in Duck Creek, which flows beneath our iconic “Uncle Tim’s Bridge” and out into Wellfleet Harbor. Duck Creek is a prominent feature of Wellfleet’s environment, and the stormwater controls along Commercial Street now intercept most of the untreated runoff from the Central District that formerly ran unabated into the Creek.

Not only have the new stormwater controls helped to restore surface water quality in the harbor, but they have also enhanced the success of the new oyster sanctuary reef. The oyster sanctuary and propagation reef was constructed at the mouth of Duck Creek, where it enters Wellfleet Harbor. This sustainable, “natural systems” approach to water quality enhancement, with its millions of new oysters, is filtering suspended solids and nutrients from the surface water in Wellfleet Harbor.

We hope that this letter conveys the full measure of our pride and satisfaction in the manner in which Environmental Partners Group, Inc. conducted themselves, and with the successful outcome of the project. Should you have any questions, please do not hesitate to call me directly. Thank you for support of this project.

Yours truly,

Harry Sarkis Terkanian  
Wellfleet Town Administrator



ATTACHMENTS

# ATTACHMENT A: RESUMES



## Mark N. White

### PRINCIPAL IN CHARGE

Mark is a founding partner for Environmental Partners Group and has over 35 years of experience in a broad range of environmental engineering projects that encompass wastewater planning, design, permitting and construction of wastewater collection and treatment systems, development of new public water supplies and water systems. He also has extensive experience in the planning and construction of solid waste and hazardous waste management facilities. His client base consists of municipal, public, and private entities throughout New England. He has worked extensively with federal and regional agencies and is routinely successfully in receiving approvals at all levels ranging from the Environmental Protection Agency to US Army Corps of Engineers to the Massachusetts Executive Office of Environmental Affairs (MEPA, DEP, etc.) to local Boards.

### Education

- M.S., 1984, Environmental Engineering, University of New Hampshire, NH
- B.S., 1979, Environmental Science, Hampshire College, MA

### Certifications

- 40-Hour OSHA Hazardous Waste Operations Health and Safety Training

### Professional Affiliations

- American Water Works Association
- New England Water Works Association
- Massachusetts Water Works Association
- New England Water Environment Association
- American Society of Civil Engineers

### Select Relevant Project Experience

#### **Comprehensive Wastewater Management Planning and Wastewater Treatment Facility Upgrades**

Tisbury, MA

Mark has been supporting the Town of Tisbury on their comprehensive wastewater planning effort, which is in its initial stages. The Town has two embayments that have been assigned TMDL goals for nitrogen reduction. The management strategies being considered by the Town encompass a range of innovative/alternative technologies to conventional collection and treatment systems. Because the embayments are shared watersheds with their neighboring Towns, Intermunicipal Agreements with each community are being sought.

Mark has also been the Principal in Charge for upgrades to Tisbury's SBR wastewater treatment plant, consisting of the installation of a centrifuge, rotary drum filters and a chemical feed system for tertiary treatment to replace sand filters, replacement of their headworks, and SCADA upgrades. He prepared multiple grant/loan funding requests to USDA-Rural Development which were all funded, significantly reducing the Town's costs for these upgrades.

#### **New Wastewater System Design, Permitting, Funding and Construction**

Provincetown, MA

Provincetown decided to develop for the first time a municipal wastewater collection, treatment and effluent disposal system for the Town. A controversial project in terms of its public acceptance and construction, Mark was the Principal-in-Charge and Project Manager for the project. He worked closely with the Town to develop a program strategy with an innovative project approach that ultimately won unanimous Town Meeting approval. Gaining the community's consensus required an extensive and persistent public outreach and participation program. Mark also led all of the permitting activities for the project that required approvals at state, regional and local levels including the

Department of Environmental Protection, Executive Office of Environmental Affairs (MEPA), the Cape Cod Commission and multiple Provincetown Boards. In addition, Mark prepared funding requests under the federal ARRA program, USDA-Rural Development and the Massachusetts Community Development Block Grant program, all of which were awarded and provided the Town with over \$10 Million in grant funds.

### **New Water System Planning, Design, Funding and Construction**

Eastham, MA

Mark is the Principal in Charge for the design, permitting and construction of a new Town-wide water system for the Town of Eastham, where prior to this the Town relied solely on private, onsite well systems.

Implementing the project required years of public participation for what was a controversial project for the community but that eventually achieved unanimous approval at their Town Meeting. Mark has led the extensive permitting requirements for the project, which consists of construction of three well fields, two storage tanks and 120 miles of distribution piping. This multi-phase project required approvals from MEPA (Environmental Impact Reports), Department of Environmental Protection (Water Management Act, New Source, Authorizations to Construct and Operate), Massachusetts Fish & Wildlife, the Cape Cod National Seashore, Mass. Historic Commission, Cape Cod Commission Development of Regional Impact, and several local boards. Working closely and collaboratively with each of these agencies, approvals were received with a minimum or no comments. Mark also led the effort to solicit project funding from the DEP State Revolving Fund program and from USDA-Rural Development, which to date total over \$80 Million in awards. The project is now under full construction and has won numerous national and state recognition awards.

### **Climate Change Resiliency Planning for Water Supply Source**

Oak Bluffs Water District

The Lagoon Pond wellfield is one of only three water supplies for the Oak Bluffs Water District. Located immediately adjacent to a freshwater/saltwater lagoon, the wellfield is threatened by sea level rise due to climate change. Mark was the Project Manager for a study that assessed the risk to the wellfield water quality and infrastructure, and the engineered mitigative strategies for providing sustainable climate resiliency to this important water supply.

### **Water Treatment Plant**

Concord, MA

Mark managed the permitting associated with a proposed water treatment plant for the Town of Concord, a facility located in the neighboring community of Acton. A controversial project by virtue of its location in the neighboring Town of Acton, the permitting included federal and state permitting with the US Army Corps of Engineers, Executive Office of Environmental Affairs (MEPA) and several public hearings with the Acton Board of Selectmen.



## Helen T. Gordon, PE, BCEE, MCPPO

### PROJECT MANAGER

Helen has served both public and private clients on a wide range of civil and environmental engineering projects throughout her 37-year career in New England. During this time, she has been responsible for management and directing resources, establishing standards of work and ensuring quality of deliverables for multi-discipline projects involving water, wastewater and stormwater design and permitting, infrastructure assessment and design and municipal engineering. Her broad expertise includes wastewater management and NPDES compliance, wastewater collection and disposal, water supply and treatment and stormwater management and MS4 compliance.

### Education

- B.S., 1980, Bachelor of Science Civil & Environmental Engineering, Northeastern University, MA
- Women's Leadership Forum -Executive Education Program, Harvard Business School 2008
- Leadership in the 21st Century Year Long Program – Gestalt 2012 to 2013

### Certifications

- Registered Professional Engineer(Civil), MA #41211, CT #21762 , RI #5926
- OSHA 10 Hour Construction
- Certification for School Project Designers & Owner's Project Managers MCPPO
- American Academy of Environmental Engineers: Board Certified Environmental Engineer in the Area of Water Supply and Wastewater 2011
- CTAM (Certificate of Training of Asset Management, Indiana University 2011

### Professional Affiliations

- Water Environment Federation
- New England Water Environment Association
- American Water Works Association
- New England Water Works Association
- Society of Women Engineers

### Select Relevant Project Experience

#### **Comprehensive Water Resource Management Plan**

Nantucket, MA

Principal in Charge for the development of an update of the 2004 CWMP including incorporation of the Massachusetts Estuaries Reports on Nantucket Harbor and Madaket Harbor/Long Pond and Final TMDL plans. Update includes a review of updated regulations, zoning changes, ongoing water quality testing and analysis results and complete MEPA review of the 2004 CWMP/EIR and establish a plan to meet Final TMDL requirements. Alternatives will be discussed and analyzed including, optimization of existing on-site systems, screening of innovative/alternative technology, collection system alternatives, infiltration/inflow and sewer system rehabilitation program update and stormwater recommendations as part of the plan. This project includes substantial public outreach

#### **OPM for Tri-Town Regional Water Treatment Facility**

Braintree, Randolph, and Holbrook, MA

Owner's Project Manager (OPM) for the \$50M regional Water Treatment Plant for the three communities.

#### **Pond St. Water Treatment Plant Emergency Upgrades**

Joint Water Board, Randolph and Holbrook, MA

Sr. Project Manager for the emergency design, construction and startup of \$3M installation of replacement of failed electrical system and finished water pumps.

#### **Middle Fort Pond Brook Wastewater Treatment Plant & Collection System Design and Construction\***

Acton, MA

Senior Project Manager for design, construction services and resident inspection of a new sewer system. This project included the engineering, planning, design and construction of a new sewer system consisting of 70,000 linear feet of sewers, seven pump stations and force mains, and a 250,000-GPD expandable to 1.0-MGD, advanced wastewater treatment plant for Acton, Massachusetts.

## Presentations & Publications

"Asset Management" Ongoing seminar presentations to communities in Massachusetts geared to meeting regulatory requirements such as GASB 34 and CMOM and improve reliability of infrastructure systems. Spring 2003

"Storm Water Phase II and Your Community." Maine Wastewater Control Association. September 27, 2001.

"Comprehensive Storm Water Management Plan: Technical Advancements in Wetlands and Storm Water Management." New England Water Environment Association. January 2001.

"Phase II: What Does It Mean to You?" Ongoing seminar presentations to over 40 Massachusetts communities required to meet new storm water management regulations. Presentation team includes Massachusetts DEP representatives. 2001 and 2002.

## **Comprehensive Wastewater Treatment Plant Evaluation\***

Haverhill, MA

Principal in Charge for the execution of a comprehensive evaluation of the City's wastewater treatment facility. The team assess the plant's process and equipment, including daily maintenance, to identify those areas where plant process can be enhanced to improve the effluent quality and/or save operating costs, and to identify equipment that is becoming unreliable and must be replaced. The assessment considered replacement needs for the existing buildings and building systems. Proposed near-term capital recommendations include: replacement of the aeration system, returned activated sludge pumping capacity should be increase, conduct interim repairs to the existing disinfection system. In addition to these immediate recommendations, the City has proceeded with an odor control system upgrade.

## **CMOM Assessment and Corrective Action Plan**

Haverhill, MA

Principal in Charge for the development of a CMOM program which included a comprehensive self-assessment of the wastewater collection system including a review of the type and quantity of assets (pipes, services, manholes, pumping stations etc.); the collection system management organization, staffing and annual budgets; staff training and safety programs; customer service and communications; emergency preparedness; pipeline capacities; and inspection, cleaning and repair programs. The CMOM program documented the existing system and identified system management strategies to keep track of existing conditions and operational maintenance schedules; to maximize the conveyance of wastewater; and to eliminate sanitary sewer overflows. A recommendation for improvements and a timeline and budgets were provided to the City as an outcome of this project.

## **Wastewater Treatment Plant Upgrades**

Billerica, MA

Principal In Charge. Preparation of an multi-year wastewater treatment plant improvement program. Work included the planning, design, construction services and resident project representation for upgrades to the 5.4 mgd wastewater treatment plant to meet a new NPDES permit with a low seasonal effluent phosphorus limit of 0.2 mg/l, and significantly lower limits expected in the future. Tertiary treatment upgrades, solids management, process optimization, and SCADA implementation modernized the plant and improved overall performance significantly.

## **Town-Wide Water Main Rehabilitation\***

Braintree, MA

Project Manager in charge of planning, design, construction services and resident project representation for the replacement of 15,000 of old 4-inch and 6-inch unlined cast iron water main, cleaning and lining of 9,000 feet of transmission mains. Responsible for preparation of Engineer's cost estimate and for coordination of all construction services.

\* Project experience prior to joining EP



## Robert J. Rafferty, PE

### TECHNICAL LEADER

Bob has over 25 years of environmental engineering experience. He has led projects related to comprehensive planning; stormwater permitting, compliance and design; wastewater designs; and general utility infrastructure improvements. He has special expertise in wastewater pumping station design and construction, and focuses on delivering quality designs to his clients through a collaborative approach.

### Education

- M.S., Environmental Engineering, University of Massachusetts
- B.S., Civil Engineering, University of Massachusetts
- A.S., Computer Science, Northern Essex Community College
- Asset Management, Certificate of Training; BAMU – Purdue University

### Certifications

- Registered Professional Engineer, MA 40937

### Professional Affiliations

- American Society of Civil Engineers
- New England Water Environment Association
- Water Environment Federation

### Select Relevant Project Experience

#### **Town-wide Wastewater System Evaluation**

Tisbury, MA

Project Manager providing systematic evaluation of collection system, main pump station and treatment facility. Recommended upgrades for main pump station including piping modifications, seasonal control strategy, and safety hazard elimination. Evaluation also included recommendations for Operation and Maintenance of WTF equipment, biofilter upgrades, and capital improvement budgeting.

#### **State Road Sewer District**

Tisbury, MA

Project Manager and Lead Engineer to assist the Town with wastewater planning to provide sewer service to a planned economic development for the design of a new sewer district to enable economic growth and mitigate nitrogen discharges from existing septic systems. The project includes a low pressure sewer system combined with a local pump station. Provided capacity assessment and district boundary assistance, general technical assistance to the Town' Sewer Advisory Committee, and led public outreach efforts.

#### **Wastewater Treatment Facility Upgrades**

Tisbury, MA

Designed a multi-phase upgrade of the town's treatment facility, first to eliminate capacity restrictions in the process, second to return the facility to reliable operations, and third to increase the capacity to the maximum feasible using the existing SBRs. The installation of rotary drum filters and a chemical feed system for tertiary treatment eliminated the capacity restriction of the existing sand filters. Designed upgrades to the SCADA system; restoration of the headworks system; enhanced the plant-wide heating, air conditioning, and ventilation system; and miscellaneous other upgrades. Currently designing the expansion of the facility's capacity by 40% through modifications the SBRS and related pumps, tanks, and process controls. Funding has been obtained through USDA-RD.

#### **General Consulting and Four Corners Sewer Extension**

Groton, MA

Client/Project Manager and technical lead for an inter-municipal sewer extension between Ayer and Groton, MA funded through a MassWorks Infrastructure Grant. Project combines low pressure with horizontal direction drilling in Groton with traditional gravity sewer in Ayer, MA. Provided permitting for a watershed inter-basin transfer and led

negotiations with the Town of Ayer for the inter-municipal agreement (IMA) and sewer charges. Worked with local developers to secure funding to apply towards the MassWorks grant. Led negotiations on behalf of the Sewer Commission to renew the IMA with the Town of Pepperell that restructured the original IMA

### **Comprehensive Water Resources Management Plan**

Groton, MA

Project Management and Lead Engineer for long-term planning, which includes the evaluation of areas found to have wastewater disposal problems by using innovative GIS and database applications, and includes significant involvement from the general public and local citizens' organizations. Water balance is a critical component of the final recommended plan which includes an inter-basin transfer of water managed through the state's regulatory program, a dam management plan to provide predictable flow downstream, and a watershed management plan to protect the local lake from excess nutrients. The project team provided a qualitative analysis of the needs areas and potential solutions, ranked needs and solutions, and provided cost estimates of the viable alternatives. Solutions include public education; zoning and land use changes; sewer and stormwater system design, construction and optimization; wastewater treatment and disposal; dam and stream flow management with inter-basin water balance; environmental permitting; innovative financing; stormwater controls; sediment reuse and long term management programs.

### **Comprehensive Water Resources Management Project - Environmental Impact Report**

Acton, MA

Project Manager and technical lead for this project, which includes a long term plan for the Town's water resources, including wastewater, stormwater and drinking water and was funded through the MA Water Pollution Abatement Trust (SRF program). Working closely with a volunteer committee we considered the overall interaction of watershed influences with the Town's water uses and wastewater/stormwater disposal. The process to determine wastewater needs and potential effluent disposal locations uses innovative GIS methodologies that link a wide range of environmental and health information into a powerful evaluation and analysis tool. The project evaluates potential disposal areas and links solutions to areas in need of alternative wastewater disposal. Final recommendations were for neighborhood cluster systems in a commercial area, a short extension of the central sewer system, and wastewater management districts for ecologically sensitive areas.

### **Comprehensive Water Resources Management Project - Environmental Impact Report**

Billerica, MA

Lead technical professional for the development of a comprehensive wastewater management plan and environmental impact report in conformance with both the both the Massachusetts Water Resource Management Planning Guidance and the goals of the state's watershed initiative. The plan presents recommendations for wastewater management in the identified areas where existing on-site disposal systems are inadequate for long-term wastewater disposal.



## Dave Patangia, PE

### TECHNICAL RESOURCE

Dave is a Civil/Environmental Engineer with over twenty years of progressive engineering, management, and project delivery experience. His project work includes municipal and industrial water and wastewater projects throughout New England, Texas, Arkansas, and the Caribbean. He is responsible for completing design management of engineering studies and design, including pilot studies, preliminary engineering, detailed engineering, and services during construction. He has concurrently managed over \$2 million in project budgets for water, wastewater, and civil engineering projects.

### Select Relevant Project Experience

#### **Woonsocket Regional Wastewater Treatment Facility Design/Build Improvements Miscellaneous Projects**

Woonsocket, RI

Project engineer involved with miscellaneous projects at 16 mgd wastewater treatment facility. Projects included septage receiving improvements, scrubber flow metering improvements, aeration basin fine bubble diffuser analysis, primary effluent screw pump station improvements, on-site generated hypochlorite analysis, emergency power study, construction sequencing and scheduling, chemical feed improvements, preparation of Standard Operation Procedures (SOPs) for elected process units, and cyanide destruction construction document QA/QC.

#### **Smithfield Wastewater Treatment Facility Design/Build Improvements**

Weymouth, MA

Lead engineer responsible for process and design modifications to existing 3.5 mgd wastewater facility. Project consists of converting existing carbon removal treatment plant to A2O (Anaerobic/Anoxic/Oxic) process to meet stringent nitrogen and phosphorous effluent limits. Responsibilities included facility plan and engineering report preparation; process modeling with BioWin 32; design of facility improvements; preparation of construction documents; and construction administration services. The facility is currently in compliance with the strict nitrogen and phosphorous NPDES limits.

#### **Cranston Regional Wastewater Treatment Facility Design/Build Improvements**

Cranston, RI

Project engineer involved in task projects at existing 23 mgd regional wastewater treatment facility. Projects included study and design of a regional septage receiving facility; study and evaluation of RAS system; preparation of updated hydraulic profile; evaluation and selection of influent bar screens; replacement of existing plant wide sodium hypochlorite feed system; and inventory and evaluation of solids handling building instrument air system.

#### **Leominster Wastewater Treatment Facility Phosphorus Loading Evaluation and Reduction Program**

Leominster, MA

Project manager responsible for development of phosphorus loading evaluation and reduction program to meet NPDES permit requirements.

### Education

- B.S., Civil Engineering, Environmental Concentration, Rensselaer Polytechnic Institute
- M.S., Environmental Engineering, University of Arkansas at Fayetteville

### Certifications

- Professional Engineer-Civil, MA (42882), RI (7596), AR (10029), TX (112403)
- 40-Hour OSHA Hazardous Waste Operations Health and Safety Training
- 10 Hour OSHA Construction Safety & Health



Duties included data collection, preparation of mass balance, analysis of current wastewater treatment plant phosphorus removal performance, and conceptual process optimization plan to improve phosphorus removal.

### **Shelton Wastewater Treatment Facility Improvements**

Shelton, CT

Project engineer responsible for odor control system design for sludge storage and processing. Project duties included evaluation of various odor control technologies, odor control system and duct sizing, preparation of plans and specifications, and development of operation and construction cost estimates.

### **New Great Pond Water Treatment Plant**

Weymouth, MA

Design manager involved with the planning and design of a new \$35 million dollar 8.0 mgd surface water treatment plant. Duties included the over-sight and coordination of engineers, designers, and subconsultants in regards to various design aspects of the project including architectural, civil, structural, mechanical process, electrical, and instrumentation and controls. Management responsibilities include coordination of project standards, project quality control and assurance, technical review of mechanical process and instrumentation and controls design elements, and coordination of internal workload to meet project milestones. Completed over-sight and technical review of plant hydraulics, flow and mass balances, raw water screening and pumping, pre-oxidation, dissolved air flotation system, filter washwater supply system, clearwell, finished water pumping, chemical feed systems, residuals pumping and processing, and instrumentation and controls.

### **Lower Central Interceptor Sewer Replacement**

Weymouth, MA

Engineer involved with sewer replacement project, including conceptual design report and specification preparation. Project included replacement of existing 30" central interceptor with 42" RCP to address sewer overflow and surcharge conditions. The interceptor is located in environmentally sensitive areas, including wetlands and tidal areas.

### **Clinton East Wastewater Treatment Plant Expansion**

Clinton, AR

Project engineer involved with conversion and expansion of 0.35 mgd land application system to 1.2 mgd activated sludge treatment plant. Duties included process design; design of 24" influent gravity line, mechanical and fixed bar screen, aeration basin, and clarifier; equalization basin hydraulics; preparation of O&M manual; and equipment/vendor evaluation.

### **St. Thomas Wastewater Treatment Facility Upgrade**

St. Thomas, USVI

Project engineer involved with design of 4.0 mgd sequencing batch reactor treatment facility including aerobic digesters, belt filter press, sludge conveyor, and ancillary mechanical systems.



## Paul C. Millett, PE

### TECHNICAL RESOURCE

Paul is a Project Manager with over thirty years of experience in investigation, design, and construction management on municipal projects, including wastewater, water and stormwater projects. His experience includes wastewater collection, pumping and treatment systems, water supply development, treatment and distribution systems, utilities, pumping stations, drainage systems, and roadway, sidewalks and curbing projects.

### Education

- M.S. Civil Engineering  
Northeastern University, Boston, MA
- B.S. Civil Engineering  
University of Dublin, Ireland

### Certifications

- Registered Professional Engineer (Civil) MA #32750; CT #19517; VT #6352
- 40-hour OSHA Hazardous Waste Operations Health and Safety Training

### Professional Affiliations

- New England Water Environment Association
- Boston Society of Civil Engineers
- American Society of Civil Engineers
- New England Water Works Association

### Awards

- Dexter Brackett Medal, New England Waterworks Association, Best Technical Paper
- Herzog Award for Best Paper, BSCES
- ACEC Design Excellence Awards for projects in 2009, 2011, 2012, 2015, 2017.

## Select Relevant Project Experience

### **OPM for DPW Renovation and New Water Treatment Facility**

Framingham, MA

Mr. Millett is the Project Manager for OPM services for the procurement of design services, and designer oversight for a \$13 million Public Works Facility renovation and new construction, and the \$35 million Birch Road Water Treatment Plant. He interfaced regularly with the PWF Deputy Director and senior engineering management.

### **Hospital Road Water Main and Storage Tank**

Medfield, MA

Project Manager for design, permitting, bidding and construction administration for the \$6 Million tank replacement project and 8,500 feet of watermains, including a CSX railroad crossing.

### **Nagog Pond Water Treatment Plant**

Concord, MA

Mr. Millett provided technical review of the preliminary design drawings and construction cost estimate for the \$9.5M surface water Nagog Pond Water Treatment Plant in Concord, MA.

### **Norwood Connection Feasibility Study**

Sharon, MA

Mr. Millett was the Project Manager for this feasibility study, including hydraulic analysis of an interconnection between the town of Sharon and Norwood. The study included creating a hydraulic model of both Towns' distribution systems, sizing of booster pumps and interconnecting water mains, cost estimating, preliminary siting, and identification of permits.

### **Water Supply System Expansion**

Wellfleet, MA

Mr. Millett was the Project Manager for the design of the phased expansion of the water system including a new well and pump station at the Boy Scout Camp; approximately 19,000 feet of 8-inch and 12-inch water mains and a water storage tank including two directional drillings (195 feet and 650 feet) under Route 6 with a 16" sleeve and a 12-inch HDPE pipe. Responsible for client coordination, presentations to the Water Commissioners, DEP coordination and construction administration.

## Presentations & Publications

"Framingham's Concord Street and School Sewer Project- Construction Challenges during the Last ¼ mile of a \$35M Sewer Project", co-author, *presented at the New England Water Environment Association (NEWEA) annual conference, January 2015.*

"Provincetown's 20 year Wastewater Treatment and Collection System using Design-Build-Operate, 12 years of Perspective", *presented at the NEWEA Alternative Project Delivery Specialty Conference, March 2013.*

"Integrating Combined Sewer Overflow (CSO) Controls, Inflow-Infiltration (I/I) and Sewer Separation in Cambridge, Massachusetts", *presented at the New England Water Environment Association (NEWEA) annual conference, January 2001.*

"Chloramination", *presented at the NEWWA Spring Conference, April 2008.*

"From the Ground Up – The Creation of Wellfleet's Water System", *presented at the NEWWA Spring Conference, April 2012*

"A 21<sup>st</sup> Century Treatment Plant for a 19<sup>th</sup> Century Water Supply", *presented at the NEWWA Spring Conference, April 2014.*

"The Role and Value of the Owner's Project Manager", *presented at the NEWEA Winter Conference, January 2017*

"New Tank on Historical and Contaminated Site, Replacement of the Hospital Road Storage Tank", Medfield, MA, *presented at the NEWWA Spring 2017 Conference*

## Water Supply System Improvements

Provincetown, MA

Mr. Millett was the Project Manager for design, bidding, and construction oversight for upgrades to the Knowles Crossing and South Hollow wellfields. Improvements included new submersible well pumps, variable speed drives, magnetic flow meters, well level and temperature elements, and SCADA system modifications.

## Water Main Projects

Winchester, MA

Mr. Millett was the Resident Engineer for four concurrent water main projects including two cleaning and lining projects, 5 miles of replacement mains and a lead service replacement contract. He negotiated completion of one contract with the surety-bonding company due to contractor default.

## Upgrades to the Water Pollution Control Facility (WPCF)

Middleborough, MA

Mr. Millett was the Project Manager to assist the Town with the upgrades to the 30 year old tertiary treatment facility to meet stricter Nitrogen and Phosphorous limits, and replace aged mechanical and electrical equipment. Developed an innovative and cost effective rehabilitation plan to use existing tankage to provide a 5-stage Bardenpho process. Serving as Owner's Project Manager during the design, bidding and construction phases of a \$27M project. Coordinated all permitting, regulatory compliance with EPA and MADEP, and SRF funding.

## Water System Master Plan

Provincetown, MA

Project Manager for the master plan and hydraulic model for the Provincetown Water system, serving Provincetown and parts of Truro. Evaluated the condition of 3 well fields (10+ wells); 2 storage tanks, AC and CI main replacement needs; and created a 20 year capital improvement plan.

## Knowles Crossing Water Treatment Facility

Provincetown, MA

Mr. Millett was the Project Manager for a membrane filtration pilot study, design and construction administration of a 1140 gpm microfiltration groundwater treatment plant using pre-oxidation followed by membrane filtration, chemical feed systems, I&C and SCADA systems with controls of two well fields and 9 wells. The project included piloting three different membrane systems, and pre-purchase of the Siemens membranes. A dedicated two miles long raw water transmission main contract along the shoulder of Route 6 was bid separately, including two directional drilling crossings. The \$6.5M WTP project was completed with 0.5% change orders. The project was partially funded under the Massachusetts Community Development Block Grant program and the USDA.



## Ziad F. Kary, PE

### TECHNICAL RESOURCE

Ziad is a Senior Principal at Environmental Partners with 25 years of experience in Civil Engineering, Construction Management, Wastewater pumping stations design and construction, Geotechnical Engineering, sewer forcemain, and Emergency Management Services. His project experience includes design, assessments, studies, permitting, construction administration, start-up and commissioning of facilities, alternative analysis for dams, culverts and water structures.

### Education

- B.S. in Civil Engineering  
University of Massachusetts – Dartmouth
- Mechanical Engineering Technology,  
University of Aquila, Aquila, Italy, 1986

### Certifications

- Professional Engineer- MA (Civil 49479);  
NH (Civil 13446)
- Occupational Safety and Health  
Administration (OSHA) 10-hour  
Construction Health and Safety Training  
and Certification
- Soil compaction testing certification  
(Troxler nuclear density gage).
- American Concrete Institute Certification
- OSHA 40-hour Hazardous Waste  
Operations and Emergency Response  
(HAZWOPER) Certification
- Extensive experience in laboratory analysis  
of soils, permeability studies, asphalt  
testing, moisture-density relations.

### Select Relevant Project Experience

#### **16-inch Emergency Wastewater Forcemain**

Nantucket, MA

Ziad is the project manager for the assessment and repairs of a 3.5 mile 16-inch sewer force main in Nantucket, MA. The project includes full assessment of the current pipeline conditions, and design and implementation of repairs of several pipeline failures along the pipeline alignment. Repairs included addition of several features to the pipeline such as air release valves, isolation valves, and blow-off valves for draining and accessing the pipeline.

#### **Emergency Wastewater Forcemain**

Plymouth, MA

Ziad is the project manager for the design and construction of a 4.5 mile 24-inch sewer force main in Plymouth, MA. The project includes installation of a bypass system for the entire forcemain alignment, screening and assessing the existing pipeline and air release valves, and sliplining portions of the pipe with a 24-inch HDPE pipe. The project is currently under construction and a new 24-inch redundant pipe design is underway. The total value of this project is \$48.2M.

#### **Long Pond Road Sewer Pumping Station**

Plymouth, MA

Ziad was the construction manager for a new 1.2 million gallon per day sewer pumping station with a 1.6 million gallon per day fine screening system and odor control unit. Civil/site construction included site clearing, temporary excavation support system, site utilities, forcemain connections and gravity sewer diversion in a very busy highway section. Other activities included preparation of the geotechnical report for the proposed site and review of shop drawings.

#### **Sewer Construction, Gorman Rupp Pump Station**

Stoughton, MA

Ziad was the Chief Resident Engineer for the \$1.6. Million construction of a new pump station and 2,500 lf of gravity sewers in Stoughton, MA. Responsibilities included monitoring contractor's actual progress, shop drawings review and pay requisitions, performed startup and testing on the pump station and provided the Town of Stoughton with an Operation and Maintenance manual for the new pre-packaged pump station.

### **Water Street Sewer Interceptor Replacement**

Plymouth, MA

Ziad is the Project Manager for the design and construction of approximately 1,600 linear feet of 30-inch gravity sewer interceptor along Water Street in Plymouth, MA, and the abandonment of the existing reinforced concrete pipe, and selective demolition of miscellaneous items along the sewer alignment. The complexity of the project is highlighted with the artesian conditions that exist at the site below the proposed sewer alignment, and the tidal influence on the ground water.

### **Concord Street/School Street Sewer Improvements – Phase I**

Framingham, MA

Ziad was the Construction Manager for the construction of approximately 1000 feet of new 24" PVC sewer pipe and associated manhole structures along the river in Weymouth, Massachusetts. Work also includes pipe jacking of approximately 100 feet under an Army Corp flood control structure and crossing of the Sudbury River. Responsibilities included overseeing construction activities and construction conformance to the design document. Other responsibilities included preparation of pay requisitions, monitoring and reviewing of the geotechnical instrumentation program, review of shop drawings, and public relations meetings and coordination with the client, and abutters along the limit of work.

### **Water Treatment Facility**

Weymouth, MA

Ziad was the Chief Resident Engineer for the construction of a new \$ 40 million Water Treatment Facility for the Town of Weymouth, MA. Responsible for ensuring that all construction activities were performed in accordance with the design plans and specifications, monitored the General Contractor and its sub-contractors on a daily basis to ensure conformity with the design document. Participated in progress meetings, processed pay requisitions and monthly progress meeting with MA DEP, reviewed shop drawings, generated field orders and responded to the Contractor's RFIs. Worked with the O&M manual, spare parts and equipment maintenance plan and participated in a full scale performance testing and startup for the new plant. Assisted the Town with Operations assistance post beneficial use and occupancy and worked on the design and construction of the demolition and final restoration phases of the project.

### **Wannos Pond Replacement Well and Pump Station**

Plymouth, MA

Mr. Kary was the Chief Resident Engineer responsible for the construction of a new 0.94 MGD groundwater pumping station and chemical addition facility.

### **New Water Storage Tank**

Medfield MA

Ziad was the Geotechnical Engineer for the subsurface exploration of a proposed foundation for a 1.25M gallon elevated water storage tank in Medfield, MA. Ziad completed a full scale geotechnical exploration program including borings, core drills through rock, and geotechnical analysis and foundation recommendations for the proposed storage tank.



## Ryan J. Allgrove, PE

### TECHNICAL RESOURCE

Ryan provides project management and design services in wastewater collection, water distribution system design, and landfill gas collection system design. Ryan's responsibilities include planning and design of water distribution and sewer collection systems, oversight of various construction projects including water treatment plants. Ryan has gained experience in Massachusetts state compliance and permitting, and water and wastewater system design, operations, construction and modeling.

### Education

- B.S., Civil Engineering  
University of Vermont, Burlington,  
Vermont, 2005

### Certifications

- Professional Engineer #48413, MA

### Professional Affiliations

- American Society of Civil Engineers
- New England Water Environment  
Association
- Water Environment Federation

### Awards

- Dexter Brackett Medal, New England  
Waterworks Association, Best Technical  
Paper
- Herzog Award for Best Paper, BSCES
- ACEC Design Excellence Awards for  
projects in 2009, 2011, 2012, 2015, 2017.

## Select Relevant Project Experience

### **Town-wide Wastewater System Evaluation**

Tisbury, MA

Lead Engineer providing systematic evaluation of collection system, main pump station and treatment facility. Recommended upgrades for main pump station based on evaluation including piping modifications, seasonal controls and safety hazard elimination. Evaluation also included recommendations for Operation and Maintenance of WTF equipment, biofilter upgrades, and capital improvement budgeting.

### **Annual Water Main Replacement Program**

Tisbury, MA

Project Manager for water main replacement program from 2016 – present to replace approximately 1,500 linear feet of cast iron and AC water mains. Projects include both cut and cover installation of PVC pipe as well as directional drilling of HDPE pipe.

### **Water Main Replacement**

Weymouth, MA

Project Manager for water main replacement projects 2016 -2018 totaling approximately 5,000 linear feet of 8-inch through 12-inch ductile iron main including culvert crossings, MassDOT coordination and public outreach.

### **Main Street and Gardner Street Water Main Replacement**

Groveland, MA

Mr. Allgrove was the Project Manager for the design, permitting, bidding and construction for a \$1.2 million replacement of the Main Street Water Main. The project involved heavy coordination with the system operations as the Main Street water main serves as the transmission line from the largest water supply well to the primary storage tank.

### **Water Main Replacement Program**

Watertown, MA

As project engineer, provided hydraulic study for water main replacement prioritizing and Capital Improvement Plan. Provided design and construction administration for approximately 9,500 l.f of 6", 8" 10", and

12" water main replacements, including temporary bypass water mains, MassDOT permitting, sidewalk reconstruction and coordination with MWRA.

### **Center Street and Fairmount Street Water Main Replacements**

Hartford, CT

Project Engineer responsible for providing design of 1,600 l.f. of 8-inch through 16-inch water main replacements. Design included unique phasing with temporary service connections to multiple mains within street limits to avoid requirement for above ground bypass piping.

### **Bearses Way Phase III Water Main Replacement**

Barnstable, MA

As project engineer, designed 3,800 feet of 8" & 12" replacement water main including coordination with road reconstruction design and replacement drainage system design. Water main replacement was designed to MassDOT standards and coordinated with the Barnstable Water Supply Division.

### **Rehabilitation of 1 MG Storage Tank No. 2**

University of Connecticut

As project engineer, provided tank design for tank valve vault rehabilitation, improvements to passive mixing system and rehabilitation of concrete foundation repair. Provided design assistance for tank coating system and safety appurtenance upgrades to achieve OSHA compliance and construction services including submittal review and inspection. Project included painting University logo on Tank No. 2 and adjacent Tank No. 1.

### **Rehabilitation of Clark Road Water Storage Tank**

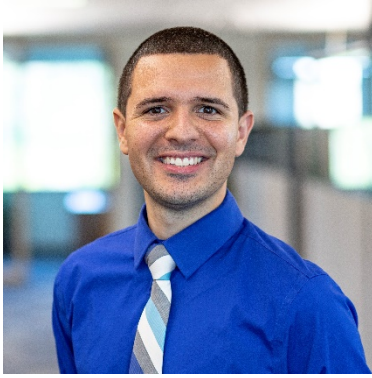
North Sagamore, MA

As project engineer, provided hydraulic study on the effects to the water distribution system of having the Clark Road Tank offline for painting, including projected pressure and fire flow reductions. Provided tank design for tank valve vault rehabilitation and site piping and provided design assistance for tank coating system and safety appurtenance upgrades to achieve OSHA compliance. Also provided construction administration of the overall project and construction monitoring of the vault rehabilitation.

### **Beach Well No. 2 Pump Station**

North Sagamore, MA

Engineer responsible for providing site and process design for pump station expansion. Expansion included flow metering, corrosion control equipment, chemical containment and new motor control center. Provided construction services including submittal review and inspection.



## Andrew T. Grota, PE

### TECHNICAL RESOURCE

Andrew Grota is a Project Engineer at Environmental Partners with 6 years of experience in the fields of civil engineering, construction management, drinking water, stormwater, and wastewater. He specializes in working on wastewater improvements projects, including municipal wastewater treatment systems, wastewater conveyance projects, infiltration/inflow (I/I) and sanitary sewer evaluation surveys (SSES) projects, construction management of wastewater related projects, and hydraulic modeling of pressurized and non-pressurized systems. His project experience includes assessing, evaluating, designing, permitting, and construction of various municipal and private facility upgrade projects.

### Select Relevant Project Experience

#### Education

- B.S., Civil Engineering, University of Massachusetts Dartmouth

#### Certifications

- Professional Engineer (Civil), Massachusetts, 2018, 54124
- Professional Engineer (Civil), Rhode Island, 2018, 12487
- National Association of Sewer Service Companies (NASSCO), PACP, 2016
- ATC Group Services LLC, 8 hour OSHA Class II Asbestos Training, 2017

#### **State Road Sewer District Design**

Tisbury, MA

Project engineer involved in the design of proposed low pressure sewer and pump station improvements for the newly formed State Road Sewer District within the Town of Tisbury. The project involved the expansion of sewer service to residential and commercial properties along State Road (MassDOT State Highway Layout) and tributary side street neighborhoods. Responsibilities included developing a low pressure sewer model for new sewer piping in the sewer shed area, developing pump and wet well design calculations for a new sewer lift station, developing bidding and construction documents for the proposed upgrades project, and drafting a basis of design memorandum for the proposed upgrades.

#### **Assonet Sewer Extension Study**

Freetown, MA

Project engineer involved in the preliminary evaluation and feasibility of extending sewer infrastructure from Route 24 in the Town of Freetown up to the Freetown Town Hall. Responsibilities included completing a desktop hydraulic analysis of expanding sewer service along South Main Street in Freetown, preliminary design and sizing of sewer infrastructure needed for sewer expansion, sewer modeling to determine sewer flows from proposed sewer expansion, development of opinion of probable cost estimates for each recommended improvement option, and development of a technical memorandum summarizing findings and recommendations for improvements.

#### **Park Street and Turnpike Street Sewer Expansion**

Stoughton, MA

Project engineer involved in the preliminary design of expanding sewer service along Park Street, Turnpike Street and Campanelli Industrial Park in the Town of Stoughton. Responsibilities included reviewing existing utility and water usage records, developing a preliminary gravity sewer and force main alignment for the proposed expansion, coordination of a subsurface exploration program to obtain soil parameters required in the



design of future sewer infrastructure, and development of opinion of probable cost estimate for proposed expansion.

### **Cordage Sewer Interceptor Relocation**

Plymouth, MA

Project engineer involved in the design and permitting of a new sewer alignment for an existing 18" RCP gravity sewer interceptor in the Town of Plymouth. The project involved rerouting flow to a new 18" PVC gravity sewer interceptor to increase accessibility, improve resiliency, and decrease sewer system infiltration. Responsibilities included reviewing existing utility records, developing a gravity sewer alignment for the proposed relocation, submission of a Notice of Intent application to the Plymouth Conservation Commission, development of an opinion of probable cost estimate, and development of bidding and construction documents for the proposed upgrades.

### **Peer Review of Interchange 12 Sewer Interceptor Project**

Framingham, MA

Project engineer involved in reviewing a proposed sewer interceptor replacement project in the City of Framingham using both traditional and non-traditional pipe installation methods. The project involved the installation of a new 30-inch CCFRPM (HOBAS) sewer interceptor adjacent to an existing railway using open cut installation, microtunneling, open-faced pipe jacking and auger boring as primary pipe installation methods. Responsibilities included completing a peer review of the project, reviewing existing SewerGEMS model and flow metering data, and summarizing proposed recommendations for project improvements in a technical memorandum.

### **Peer Review of Home Depot Drive Development Project**

Plymouth, MA

Project engineer involved in reviewing a proposed private residential and commercial expansion project off Home Depot Drive in the Town of Plymouth. The project involved the proposed installation of new sewer and water piping and infrastructure needed to accommodate this proposed expansion. Responsibilities included reviewing proposed plans in accordance with local and state regulations, assessing the impact of the proposed expansion on the Town's sewer collection system, and developing a technical memorandum summarizing the findings of this peer review, along with outlining recommendations for system improvements.

### **Peer Review of Framingham City-Wide Sewer Model**

Framingham, MA

Project engineer involved in reviewing the Framingham Bentley SewerGEMS City-wide sewer model for the purpose of reviewing general connectivity, dry weather flows (DWF) and wet weather flows (WWF) in the Western Framingham area and the Farm Pond Interceptor area under various scenarios for which metering data is available for comparison. Metered storm events and DWFs in Western Framingham and the Farm Pond Interceptor area were compared to model simulation results to assess the model's accuracy and provide recommendations for refinement.



## Vern S. Lincoln

### TECHNICAL RESOURCE

Vern is a Project Scientist at Environmental Partners with 5 years of experience in Environmental services and specializes in hydrogeology, stormwater compliance, GIS mapping/analysis, and data collection.

His project experience includes new source site evaluations, aquifer testing, groundwater sampling/monitoring, municipal stormwater compliance, and asset management programs.

### Education

- B.A, Environmental Science, Curry College, May 2014

### Certifications

- OSHA HAZWOPER 40-hour
- NASSCO-PACP Pipeline
- Assessment Certification Program
- NASSCO-LACP Lateral
- Assessment Certification Program
- NASSCO-MACP Manhole
- Assessment Certification Program

### Select Relevant Project Experience

#### **MS4 Stormwater General Permit Compliance**

Various Municipalities Within The Commonwealth

Vern assists with the data collection of outfall locations and compliance for several Massachusetts towns including Norwell, Pembroke, Stoughton, and Marshfield. Work includes stormwater mapping and sampling activities, and assisting with making recommendations to Towns to ensure proper documentation/follow-up. NOI and Stormwater Management Plans drafted for several Massachusetts towns including Duxbury, Hanover, Medford, and Brewster.

#### **Town-wide Stormwater System Mapping**

Milford, MA

Collected data during field investigations of the Town's stormwater system. Located, inspected, and recorded structure locations and pipe information throughout the Town. Using GIS data, multiple maps and reports were compiled to assist the town.

#### **Town-wide Stormwater System Mapping and Sampling**

Stoughton, MA

Collected data during field investigations of the Town's stormwater system. Located, inspected, and recorded structure locations and pipe information throughout the Town. Using GIS data, multiple maps and reports were compiled to assist the town. Used GPS surveying devices for locating and recording outfall locations; utilized field kits to test for field parameters and collected samples for laboratory analysis. Proficient at sampling in accordance with EPA and laboratory protocols.

#### **Town-Wide Stormwater System Mapping**

Milford and Pembroke, MA

Collected data during field investigations of the Town's stormwater system. Located, inspected, and recorded structure locations and pipe information throughout the Town. Using GIS data, multiple maps and reports were compiled to assist the town.

#### **Outfall Mapping and Sampling**

Duxbury, Waltham, and Norwell, MA

Environmental Scientist and GIS specialist for the field investigation, sampling and laboratory analyses of the Town's stormwater system and outfalls. Used GPS surveying devices for locating and recording outfall locations; utilized field kits to test for field parameters and collected

samples for laboratory analysis. Proficient at sampling in accordance with EPA and laboratory protocols.

#### **Prioritization Plan Preparation**

Newton, MA

GIS specialist for the preparation of the inventory relative to the City's Prioritization Plan as part of Tier 2 requirements of the Complete Streets Funding. He is assisting with setting up GIS mapping and programming of prioritization calculations (relative to needed improvement projects) within the software and to assist Senior Engineers in the data collection and summary efforts in both map and chart formats.

#### **Pavement Asset Management**

Provincetown, MA

GIS specialist for the collection of data during field investigations of the Town's paved roads. Identified pavement conditions, distresses, and additional field information using the PeopleGIS online mapping platform.

#### **Pavement Condition and Sign Mapping**

Eastham, MA

GIS specialist for the collection of data during field investigations of the Town's pavement condition and roadway sign system. Compiled all data collected to a geodatabase format, and exported and integrated with the Town's existing PeopleGIS online mapping platform. Using the data collected, he assisted with a Capital Improvement Plan to assist in the Town's asset management of roadways.

#### **Pedestrian and Roadway Planning Services**

Waltham, MA

GIS specialist for inventory and planning services to the City of Waltham relative to sidewalks, wheelchair ramps and roadway pavement along all City-owned roadways. The program will include inventorying pedestrian accommodations for ADA compliance, condition, continuity, and missing ramps and crosswalks. This information in combination with roadway pavement condition will be used in planning priority projects for several future years for City consideration. Assisting with GIS setup and preparing rating systems within the software to assist in project prioritization and anticipated construction costs will be prepared for planning purposes. Mr. Lincoln will assist in summary efforts, presenting various types of data and plans for future improvement in both map and chart formats.

#### **Pavement Management Program**

Waltham, MA

Mr. Lincoln is currently providing data collection for the Pavement Management program in Waltham, MA that includes the inventory of all sidewalks, wheelchair ramps, and roadways in the City.



## Benjamin J. Mangan, PE

### TECHNICAL RESOURCE

Ben is a Senior Project Engineer at Environmental Partners with 7 years of experience in the Drinking Water and Wastewater industry. Specializing in potable water and wastewater design and construction projects, his roles have included project planning, technical design, construction administration, and project management. Project experience includes new design and upgrades of potable water and wastewater linear infrastructure, pumping stations and treatment facilities, hydraulic modeling assessment and unidirectional flushing program development. Ben is experienced with design and modeling software's including AutoCAD, Civil3D, ArcMap, WaterGEMS and SewerGEMS.

### Education

- B.S., Civil and Engineering  
University of Massachusetts, Amherst,  
2012

### Certifications

- Professional Engineer (Civil),  
Massachusetts, 2018, 54124
- National Association of Sewer Service  
Companies (NASSCO), PACP, 2016
- ATC Group Services LLC, 8 hour OSHA  
Class II Asbestos Training, 2017

### Professional Affiliations

- New England Water Environment  
Association (NEWEA)
- New England Water Works Association  
(NEWWA)
- Massachusetts Water Works

### Select Relevant Project Experience

#### **Sewer Pump Station Replacement**

Framingham, MA

As project engineer, designed four (4) recessed wet well submersible sewer pump station including existing pump station demolition, miscellaneous utility replacement, Curved in place pipe (CIPP) lining, and drainage and roadway rehabilitation. Responsibilities include bidding assistance and construction administration services.

#### **Oakwood Avenue Water Main and Sewer Main Replacement**

Hartford, CT

As civil designer, designed 2,700 feet of 8", 10" and 12" replacement water main including plan preparation and profiles for water distribution system. Responsibilities also included coordination with sewer design, traffic management and local utility providers.

#### **Southbridge WWTF Bypass Piping and Demolition**

Southbridge, MA

As civil designer, responsibilities included development of plans and profiles for bypass piping to existing bio-towers and demolition work. Assisted in compiling and reviewed specification.

#### **Hydraulic Model**

West Groton, MA

Created hydraulic model of water distribution system that included over 20 miles of distribution main, water treatment, well pumping stations, booster pumping stations and storage facilities. Integrated GIS spatial data to create system demand and use of GIS topographic data to assign nodal elevations. Performed hydrant flow tests throughout system to calibrate model.

#### **Hydraulic Model**

Tyngsboro, MA

Created hydraulic model of water distribution system that included distribution main, well pumping stations and storage facilities. Input all pump station settings and pump curve data. Analyzed available fire flows and system pressures.

### **Dennison Hill Storage Tank Rehabilitation**

Southbridge, MA

Civil Designer responsible for preparing and reviewing specifications, drafting site layout plans, reviewing contractor shop drawings and providing on-call services as one of the primary contacts for the client.

### **Unidirectional Flushing Program**

Foxborough, MA

As civil designer, responsibilities include preparing unidirectional flushing maps and data sheets for flushing sequence flows, volumes and duration. Present the plan to the client and incorporate changes as issues occur in the field.

### **Washington Street Water Main Replacement**

Topsfield, MA

As civil designer, designed 6,000 feet of 12" replacement water main including preparation of plans, details, and specifications. Also coordinated water main replacement design with state and town authorities.

### **Main Street and Gardner Street Water Main Replacement**

Groveland, MA

As project engineer, designed 5,000 feet of 12" and 8" replacement water main. Responsibilities also included existing conditions survey, preparation of base maps, quantity take-off, cost estimate, specifications, permit applications, bidding assistance, construction administration and periodic construction inspection. Future responsibilities include preparing project close-out documents and record drawings.

### **Water System Improvements Phase 2**

Hamilton, MA

As civil designer, designed 16,000 feet of 8" replacement water main. Responsibilities also included preparation of the quantities, preliminary cost estimates, specifications and coordination with design team.

### **Belmont Street Water Main Replacement**

Watertown, MA

As civil designer, designed 1,000 feet of 10" replacement water main including plan preparation and details of the water distribution system. Responsibilities also included preparation of the preliminary cost estimates and coordination with design team.

### **Center Street Water Main Replacement**

Hartford, CT

As civil designer, responsibilities included development of plans and profiles for water distribution system upgrade involving installation of 1000 feet of 16" water main and 650 feet of 8" water main. Also, prepared preliminary cost estimates and coordinated project information with local and state agencies.



## Sarah F. Price, PE

### TECHNICAL RESOURCE

Sarah is a Senior Project Engineer at Environmental Partners with 8 years of experience in Civil and Environmental engineering. She specializes in hydraulic modeling, stormwater, and drinking water and is proficient in various computer programs including AutoCAD, HydroCAD, and PCSWMM. Her project experience includes hydrologic/hydraulic modeling, dam breach and repair design, water treatment plant design, drainage studies and design, permitting, and construction contract administration.

### Education

- M.S. Environmental Engineering, University of California, Berkeley, 2011
- B.S., Civil and Environmental Engineering, Education Minor, University of California Berkeley, 2010

### Certifications

- Civil Engineer: MA#52741, CA #81379, NV #23471
- 40-Hour HAZWOPER Certification
- OSHA 8 Hour HAZWOPER Refresher, 2015
- Qualified SWPPP Practitioner/Developer

### Select Relevant Project Experience

#### **Nagog Pond Water Treatment Plant**

Acton, MA

Project Engineer for the design of the Nagog Pond Water Treatment Plant upgrades for the Town of Concord. Project duties included filter design, site/civil design, and permitting for a 1.5 MGD treatment plant. Permitting activities included the preparation of an Environmental Impact Report for submittal to the MEPA office as well as preparation of a Site Plan and Special Use Permit Application.

#### **Eastham Water System**

Eastham, MA

Project Engineer for the development of a Town-wide water system in Eastham, Massachusetts. Responsibilities included permitting for the construction of a Town-wide water system as well as the preparation of applications for funding through the DEP State Revolving Funds and USDA Rural Development Program. Permitting activities include coordination with MEPA, MESA, Massachusetts Historic Commission, MassDEP, and the Cape Cod Commission.

#### **Water Street Pump Station Rehabilitation**

Plymouth, MA

Project Engineer for the rehabilitation for the Water Street Pump Station. Responsibilities include the grit system design for the 9.1 MGD pump station. Ms. Price is currently working on the 30% preliminary design package and coordinating with vendors for the pre-bid selection of the grit equipment.

#### **Pilot Treatability Study**

Stoughton, MA

Project Engineer for the pilot treatability study. Performed field work for the two week pilot study to evaluate chemical oxidation and pressure filtration for the production of high quality drinking water, meeting or exceeding applicable drinking water standards.

#### **Winter Street Drainage and Roadway Improvements**

Kingston, MA

Project Engineer for the drainage improvements project. Ms. Price's responsibilities included providing technical input and guidance for hydraulic model and design of the proposed network of drainage

structures and piping completed by staff Engineers and coordinating and completing permit applications for the local conservation commission.

### **West Street Dam Phase II Inspection/Evaluation Report**

Foxborough, MA

Project Engineer for the inspection and evaluation of a small, significant hazard dam. Conducted field investigation, survey, and modeling of the watershed followed by a dam breach analysis. Prepared a Phase II Report detailing the evaluation and providing alternatives for dam rehabilitation and removal.

### **Ardenwood Creek Flood Protection and Restoration Project**

Zone 5 Line P, Fremont, CA

Ms. Price performed a technical Phase I Environmental Site Assessment in support of the flood control and creek restoration project with respect to a hazardous materials potentially present in the flood channel, bypass channel and future wetlands area due to surface water and storm drain outfalls that discharge to the flood channel and historic agricultural practices in the area. Ms. Price played a key role in developing engineering design details for many of the project's components including pollution prevention, storm drain outfall reconstruction, embankment stabilization, tree removal and demolition plans, and planting plans. Ms. Price worked in AutoCAD Civil 3D software and adhered closely to the Client's CADD procedures and formatting structure. Ms. Price also prepared technical specifications, calculated construction quantities, and developed cost estimate information to support the Construction Bid Package for this \$8M flood control improvement project.

### **City of Oakland, Drainage Studies**

Oakland, CA

Sarah performed multiple technical studies of drainage patterns using Hydrologic Modeling System software for watersheds along various roadways in undeveloped areas of Oakland, California. Sarah performed topographical analysis to determine discharge points within the watersheds and estimated peak discharge using the modified rational method or hydraulic modeling software. Based on the findings, best management practices to prevent sediment runoff were recommended.

### **Oakland Army Base**

Oakland, CA

After working with the Client, City of Oakland, Port of Oakland, and the Bay Area Air Quality Management District to develop a monitoring program for PM2.5 and diesel particulate ambient air quality, Sarah is the lead field staff ensuring the program is implemented to standard. Her responsibilities include routine maintenance of field equipment, data validation, management of the project web portal, and quarterly reporting.



## Ann Marie Petricca, CPG

### TECHNICAL RESOURCE

Ann Marie is the Director of Geosciences and an Associate at Environmental Partners with over 30 years of experience in Geology, Hydrogeology, Environmental, Drinking Water, Hazardous Waste, Solid Waste, and Stormwater. She manages numerous geologic and hydrogeologic projects, including: site characterization; water supply exploration, pump testing and development; groundwater modeling; Massachusetts Contingency Plan (MCP) and Superfund Remedial Investigations and implementation of remedial measures; landfill assessments; landfill and transfer station third party inspections; geophysical investigations; ASTM Phase I and II environmental assessments (domestic and international); wastewater effluent monitoring; and MS4 stormwater compliance.

### Education

- M.S., Geology, Indiana University, 1985
- B.S. Geology, Duke University, 1982

### Certifications

- Certified Professional Geologist – American Institute of Professional Geologists
- 40-Hour OSHA Hazardous Waste Operations Health and Safety Training
- 8-Hour OSHA Hazardous Waste Operations Supervisors Training

### Professional Affiliations

- Licensed Site Professional Association
- American Institute of Professional Geologists

### Awards

- Winner 1995 ERM Group Excellence Award – International Category - for paper on Due Diligence Environmental Assessment of 14 Razor Blade Manufacturing facilities in India.
- Winner 1996 ERM-New England Excellence Award for Technical Excellence
- Winner 1997 ERM-New England Excellence for Client Service

### Select Relevant Project Experience

#### **New Source Water Supply Investigations and Permitting**

Eastham, MA

Ms Petricca was the lead hydrogeologist for a water supply new source development project for the Town of Eastham. The goal of the project is to develop and permit a Town-wide municipal water supply system with average daily demand of 1 MGD and peak demand of 2.6 MGD. She managed a preliminary investigation phase to evaluate geology, aquifer characteristics and compliance with state public water supply requirements in Eastham, including land uses, aquifer testing and preliminary groundwater modeling. Specific issues of concern at the water supply sites included potential impacts to surface water streams and vernal pools and the potential for saltwater upconing or intrusion. Ms. Petricca prepared and submitted to DEP three Requests for Site Examination and Approval to Conduct Aquifer Performance Tests (for sources greater than 100,000 gallons per day) for each of the sites.

Under the second phase of this project she managed the installation of 22 observation wells, surface water piezometers and staff gauges, and four 12-inch test production wells at the three sites. Aquifer performance tests (5-8 days) were performed at each of the sites. Ms. Petricca worked with the groundwater modeling team to incorporate site data into the Nauset Lens SEAWAT groundwater model to delineate the Zone II, Zone III and sustainable yield for each site. Hydrogeologic investigations and modeling included potential impacts to nearby vernal pools in the Cape Cod National Seashore and nearby streams, and evaluation of the potential for saltwater up-coning of the saltwater layer that underlies the freshwater aquifer lens, due to wellfield pumping. She prepared Source Final Reports to permit four public water supply wells for the Town that are approved by DEP for a total of 3.1 MGD. This project also included coordination with the NPS-Cape Cod National Seashore, whose property abuts two of the sites.



### **Wastewater Effluent Discharge Monitoring**

Provincetown, MA

Wastewater effluent from the Provincetown treatment plant is discharged at several locations along Route 6. Ms. Petricca manages the effluent discharge monitoring program, including monitoring of water levels upgradient, downgradient and within the groundwater discharge sites, water quality sampling, and DEP coordination and reporting.

### **Groundwater Flow Study and Replacement Well**

Seekonk, MA

Ms. Petricca was the lead hydrogeologist for a groundwater flow study for the Newman Avenue Wellfield, a sole source aquifer. The Wellfield supplies 80 percent of the water for the Seekonk Water District. This project included performing a hydrogeological study of the Newman Avenue Wellfield for water supply protection, planning, and management purposes. The study includes field investigations (soil borings, monitoring wells, stream piezometers, water level monitoring, and aquifer tests) to characterize the hydrogeologic properties of the overburden aquifer surrounding the Newman Avenue Wellfield and development of a groundwater flow model to examine impacts of current and potential future nitrate sources to groundwater within the capture zone of the Wellfield. Following the groundwater flow study, the results of the 48-hour pumping test were compiled and a replacement well permitted through the MassDEP, with an estimated capacity of over 1 MGD. Data from this study was subsequently used to re-delineate the Zone II for the Neman Avenue Wellfield and update the Town's aquifer protection bi-laws.

### **New Source Water Supply Exploration and Permitting**

Plymouth, MA

Ms Petricca is the Project manager and hydrogeologist for a new source water supply exploration and permitting project at two sites for the Town of Plymouth. This project includes exploration at the Forges Field site to identify a potential water supply site. A well site has been identified and we are preparing the Request for Site Exam. At the 200-Acre Site a Request for Site Exam was permitted through MassDEP and a preliminary Zone II mapped using the USGS Modflow Groundwater Flow model for the area. Observation wells, a pond piezometer and a vernal pool piezometer, and a test production well were installed. Environmental Partners performed a 5-day pump test in August 2016 at a rate of 1.1 MGD. We are currently evaluating the Aquifer test data and in conjunction with our groundwater modeling team will be preparing Zone II and Zone III delineation as well as evaluating potential pumping impacts to nearby surface water bodies.

### **Replacement Water Supply Wells**

Tisbury, MA and Easton, MA

Ms Petricca is the Project Manager and hydrogeologist for projects with the Towns of Easton and Tisbury, both of which are looking to replace aging water supply wells. These projects include exploratory drilling to identify a suitable replacement site, regulatory permitting, conducting a 48-hour pumping test, pump test data evaluation and reporting to MassDEP.

## **Mark D. Abrahams, CPA, MBA, CGFM**

Mr. **Mark D. Abrahams**, President of The Abrahams Group is an independent consultant and has served on numerous similar projects. Mr. Abrahams has:

- Developed five best practices for the Massachusetts Clean Water Trust including enterprise funds.
- Developed water-financing plans for the towns of Charlton, Eastham, Provincetown, and Wellfleet.
- Developed sewer-financing plans for the City of Gloucester and the towns of Norton, Webster, West Boylston, Hopkinton, Millbury, Nantucket, Provincetown and Whitman.
- Developed water and sewer rates for the cities of Chelsea, Everett, Gloucester, Lowell, Quincy, New Bedford, Newport, Providence, and Pawtucket, the Narragansett Bay Commission, the Hull Permanent Sewer Commission, and the towns of Andover, Arlington, Ashburnham, Ashland, Canton, Concord, Franklin, Hopkinton, Longmeadow, Marblehead, Millbury, Natick, North Andover, Norwell, Plymouth, Provincetown, Southbridge, Tyngsborough, West Boylston, West Groton, the Wayland Sudbury Septage Treatment Facility and the Wayland Wastewater Commission..
- Assisted several communities implement enterprise funds in Massachusetts including the cities of Holyoke, Cambridge, Lowell, Somerville, Lawrence, Newton, and Worcester, and the towns of Canton, Hopkinton, Stoughton, Bridgewater, Warren, Braintree, Milton, Nantucket, Northborough, Provincetown, Winchester, and Westwood. He has also developed many indirect cost plans.
- Assisted the Department of Revenue rewrite the Enterprise Fund Accounting procedures within the Uniform Massachusetts Accounting System (UMAS).
- Provided financing workshops to Connecticut municipalities.
- Developed a new chart of accounts for the City of Hartford.
- Developed a performance management system for the City of Hartford.
- Conducted management operational reviews of 10 State agencies for the Connecticut Thomas Commission, including the Connecticut Department of Environmental Protection.
- Developed a performance measurement system for the City of Stamford.
- Developed a performance measurement system for the City of Norfolk.
- Developed a water and sewer rate study for the Town of Stonington.
- Conducted financing reviews of the cities of West Haven and Waterbury for the Office of Policy and Management.
- Developed water financing plans for the Towns of Charlton, Eastham, Provincetown and Wellfleet.

In addition, Mr. Abrahams has served the Massachusetts Water Resources Authority as a rate design and technical accounting specialist to its member communities. He has also served the Environmental Protection Agency, the New England Interstate Water Pollution Control City, and other water and wastewater organizations and is the author of several articles and manuals on costing government services. He serves as co-chair of the New England Water Works Association's Financial Management Committee. Mr. Abrahams has over 30 years' experience in the conduct of water and sewer rate studies. He has been an instructor in municipal finance for 30 years and is a Certified Public Accountant.

ATTACHMENTS

# ATTACHMENT B: REQUIRED FORMS

## ADDENDUM NO. 1

DATE ISSUED: 4/3/2020  
FROM: Town of Bourne  
TO: All Parties of Record  
SUBJECT: RFP CWMP-2020-1

This addendum shall be part of the Town of Bourne CWMP Request for Proposal.

**Question:** Could you confirm when the RFP proposal is due....Page 5 indicates May 7th while Page 6 indicates April 30th.

**Response:** The RFP is due May 7<sup>th</sup> at 2pm.

**Question:** The RFP requires that ink signatures be provided on the cover letter and all forms. Given the social distancing requirements at this time due to COVID-19, are electronic signatures acceptable instead?

**Response:** Yes

**Question:** The RFP states that five hard copies are required of the technical proposal and an additional five copies of the cost proposal are required to be submitted. Given the social distancing requirements at this time due to COVID-19, are electronic submittals acceptable in place of hard copies?


**Response:** Yes, please send documents to [tlydon@townofbourne.com](mailto:tlydon@townofbourne.com); [shaines@townofbourne.com](mailto:shaines@townofbourne.com)

**Question:** Will past wastewater reports be made publicly available?

**Response:** Yes, due to the recently issues with the pandemic, these reports are scheduled to be scanned in next week (4/6/20-4/10/20) and further notification will be sent out upon completion.

**IMPORTANT:** Please acknowledge receipt of this addendum by signing below and including this form in your proposal package. Failure to do so may subject the proposer to disqualification.

Company Name: Environmental Partners Group, Inc.

Authorized Signature:  Date: May 5, 2020

1. CERTIFICATE OF NON-COLLUSION

The undersigned certifies under the penalties of perjury that this bid proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

A handwritten signature in black ink, appearing to read "Raltzer", written over a horizontal line.

(Signature of person signing bid or proposal)


2. CERTIFICATE OF TAX COMPLIANCE

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b), I, Paul F. Gabriel,  
authorized signatory for Environmental Partners Group, Inc., do hereby certify under the pains and penalties

(Name of Contractor)

of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

CONTRACTOR

By: 

(Signature of Authorized Representative)

Title: President

Date: May 07, 2020

**3. CERTIFICATE OF CORPORATE AUTHORITY**

At a duly authorized meeting of the Board of Directors of Environmental Partners Group, Inc.

(Name of Corporation)

held on 12/05/05 it was VOTED that:

(Date)

Paul F. Gabriel, PE, LSP

President

(Name)

(Officer)

of this corporation, be and he/she hereby is authorized to execute contracts, deeds and bonds in the name and on behalf of said corporation, and affix its corporate seal hereto; and such execution of any contract, deed or obligation in this corporation's name on its behalf by such

President under seal of the company, shall be valid and binding upon this

(Officer)

corporation.



A True Copy,

ATTEST: *Maria J. Allen* exp 8/7/2026

TITLE: *Office Manager*

PLACE OF BUSINESS: 1900 Crown Colony Drive, Suite 402

Quincy, MA 02169

DATE OF THIS CERTIFICATE: May 07, 2020

I hereby certify that I am the clerk of the Environmental Partners Group, Inc.

that Paul F. Gabriel, PE, LSP is the duly elected President of said corporation, and that the above vote has not been amended or rescinded and remains in full force and effect as of the date of this contract.

\_\_\_\_\_

(Clerk)

CORPORATE SEAL:

**ENVIRONMENTAL**  
 **PARTNERS**

1900 Crown Colony Drive, Suite 402

Quincy, MA 02169

P: 617.657.0200      F: 617.657.0201

[envpartners.com](http://envpartners.com)