

LOWER PEMAQUID WATERSHED ASSESSMENT PROJECT #2017PT15 FINAL PROJECT REPORT



FB Environmental Associates

Grantee: The Town of Bristol

Grantee Contact: Christopher Hall, Town Administrator

Project Start Date: 10/05/2017

Project Completion Date: 3/13/2019



Funding for this project, in part, was provided by the U.S. Environmental Protection Agency under Section 604(b) of the Clean Water Act. The funding is administered by the Maine Department of Environmental Protection in partnership with EPA. EPA does not endorse any commercial products or services mentioned.

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I. Project Summary

A. Introduction

The Pemaquid River is located in the town of Bristol, north of Pemaquid Point. This river estuary has been identified by the local shellfish committee as an important resource area and has been the focus for accelerated seawater and stream sampling.

The Pemaquid River is a 19-mile-long river with its headwaters beginning in Tobias Pond in Waldoboro and then flowing generally south through several ponds before its outlet into Pemaquid Harbor and John's Bay in Bristol. The entire watershed area is 46.9 square miles with approximately 43 square miles in the freshwater watershed and 4 square miles below the head of tide. The project focus area was the lower portion of the watershed below the Bristol Mills Dam, approximately 30% of the total, including approximately 5.2 miles of freshwater main stem and 2.6 miles of tidal estuary. 100% of the study area is located within the Town of Bristol.

In the project area, the main stem of the river and its tributaries are categorized as Class A. The tributaries to the tidal estuary are Class B. The tidal section is categorized as Class SB and is impaired for elevated fecal indicator bacteria (FIB) (see Section Problem/Need below for detailed information). Department of Marine Resources (DMR) shoreline surveys have revealed no point sources of pollution affecting the upper portion of the tidal river.

For the purposes of this project, the Town is focusing on the portion of the watershed located below the Bristol Mills Dam, i.e. the lower 5.6 miles of main stem plus Boyd Pond and tributaries. This is based on the fact that this is a large watershed, and sampling data suggest that while water flowing past the Bristol Mills Dam is uncontaminated, there are likely sources of bacterial contamination in the lower areas.

The Town of Bristol is one of the leading softshell clam producers in the State of Maine, despite experiencing frequent closures due to nonpoint source (NPS) pollution (primarily fecal bacteria). The estimated annual value of the clamming harvest is between \$500,000 and \$1,000,000.

In addition to the economic benefit, the diverse terrestrial and aquatic wildlife on the river provides a recreational and scenic destination for outdoor enthusiasts, local community members, and tourists. The lower Pemaquid watershed includes a number of sites of historic value, including Colonial Pemaquid State Park, and the tidal portion of the river is a major recreational sailing venue.

B. Project Purpose

The purpose of the project was to compile and analyze existing data, collect additional sampling data, and identify pollutant sources in the watershed. The project also developed a table of proposed actions to eliminate pollution to Pemaquid Harbor to improve water quality, aquatic habitat, and the shellfish harvesting community. The eventual project goal is to create a watershed plan (to be funded in the future) that will build upon the available data and local support to provide stakeholders with a roadmap to eliminate fecal bacteria contamination and ultimately remove the conditional closures in the estuary.

II. Task Summary

A. Task 1: Project Management

The Town of Bristol entered into a contract with Maine DEP on October 5, 2017 and secured a contract with FB Environmental Associates (FBE) on September 27, 2017. A project kick-off meeting was held with the Steering Committee on November 6, 2017. This contract outlined project roles, responsibilities, and funding arrangements. This document serves as the final project report for the project, summarizing all work completed under the grant. The Town of Bristol, with support from FBE, tracked project progress and completed semi-annual progress reports and the Town tracked municipal expenses and non-federal match related to the project.

B. Task 2: Steering Committee Meetings

The project steering committee met three times over the course of this grant; one additional meeting than required in the grant agreement. Attendees at these meetings included representatives from the Town of Bristol, the Shellfish Committee, Maine DEP, Maine DMR, the harbor master, the Pemaquid Watershed Association, the Darling Marine Center/University of Maine, project consultants, and members of the public.

- The first steering committee meeting was held on November 6, 2017 at the Bristol Town Hall. Nineteen people were in attendance at this meeting. The presentation was a general overview of the project and the fecal contamination concerns in the lower Pemaquid River.
- The second steering committee meeting was held on April 9, 2018 at the Bristol Town Hall. Seventeen people were in attendance at this meeting. Project consultants brought draft sampling site maps with justifications and/or recommendations for each sampling site. Steering committee members reviewed the sampling sites identified for the 2019 storm sampling and provided feedback on their location and access. Additionally, attendees signed up to volunteer for field sampling, including training. This meeting was not included in the original grant agreement but the project team thought it was a valuable and necessary meeting to have prior to summer field work.
- The steering committee held the last meeting on October 18, 2018. The purpose of this meeting was to review the 2019 sampling results and discuss next steps for the river. Seven people were in attendance at this final meeting.

C. Task 3: Sampling and Analysis Plan; Bacteria Storm Sampling

Sampling & Analysis Plan

A sampling and analysis plan (SAP) was written by FBE in the spring of 2018, reviewed by project leads (Christopher Hall and Carolyn Shubert) and reviewed and approved by Maine DEP Project Manager (Kristin Feindel) and Nonpoint Source Program Coordinator (Wendy Garland) on 5/11/2018. This SAP outlined the sampling and analytical methodology for the bacteria storm sampling event, listed team leads and volunteer contact information, and identified the final sites selected for sampling. The applicable quality assurance project plan (QAPP) for this project was the Maine DEP QAPP titled *Quality Assurance Project Plan for Monitoring Nonpoint Source and Total Maximum Daily Load Streams*.

Bacteria Storm Sampling

In accordance with the project SAP, FBE closely monitored the Bristol weather forecast beginning on 6/1/2018 to identify a suitable precipitation event. (A suitable precipitation event was defined as greater than 1" in 24 hrs. to match Maine DMR shellfish closure criteria.) On 6/27/2018, FBE contacted all project stakeholders and volunteers to organize sampling during a predicted storm on 6/28/2018. The storm event produced 1.86 inches of rain over 24 hours¹. Because the storm event occurred on a Thursday, Maine DMR staff could not assist with the sampling, therefore, Scenario 2 was enacted (see the Pemaquid River SAP for more details). Scenario 2 involved sampling Sites 1, 2, 3, 4, 5, 7, 8, 10, 11, 12, and 13 (Figure 1 on the previous page). Site 6, originally listed in the SAP, was replaced by Site 5 due to difficulty with site access to Site 6.

The storm sampling was successful with five local volunteers (Corey Poland, Linda Shaffer, Carolyn Shubert, Chad Hammond, and Amy O'Brien) assisting with sampling before the storm, at the storm peak, and after the storm. Project staff analyzed all samples using the IDEXX Colilert for quantifying *E. coli* at the Damariscotta River Association (DRA) laboratory. A final field report was written and submitted as a project deliverable. This report summarized the methods, sampling, analysis, and provided recommendations.

D. Task 4: Watershed Hotspot Source Analysis & Action Plan

Project consultants compiled all existing data from Maine DEP and Maine DMR into a comprehensive database for the Town. This included previous *E. coli* sampling by Maine DEP and the Pemaquid Watershed Association, as well as fecal coliform data and shoreline septic survey results from Maine DMR. Prior to analysis, a Secondary Data Quality Assurance Guide was written to ensure the quality of existing data to be used in the analysis. This document was submitted to Maine DEP Project Manager Kristin Feindel as a grant deliverable.

Following the completion of the Secondary Data Quality Assurance Guide, project consultants created an action table from the existing data as well as the 2018 bacteria storm sampling. This action table include action items, methods, responsible parties, and a completion timeline. Recommended actions included further monitoring and specific monitoring locations, signage, project collaborations, beaver dam inventories, septic survey inspections, and agricultural landowner outreach and site inspection. This action table was submitted as part of the project database on 2/20/2019, fulfilling the task 4 deliverable requirements.

E. Task 5: Education & Outreach

The Town of Bristol conducted all steering committee meetings at the time of regular Shellfish Committee meetings. All shellfish meetings are posted on the town's webpage and are open to the public for attendance. A project press release was sent to local weekly newspapers on October 19, 2018. Additionally, the Damariscotta River Association published an article in their Fall 2018 River Tidings newsletter. This was a two-page spread that covered the collaboration between the Town of Waldoboro, the Town of Bristol, and the Damariscotta River Association. The Pemaquid Watershed Association unified

¹ Data obtained from the Maine DMR. Data sourced from: Weather Underground (Station KMEBOOTH10) or DMR Station ID 201.

with the Damariscotta River Association during the project (9/25/2018), and the project was prominently featured in public discussion of the benefits of the land trusts' merger.

III. Deliverables Summary

Table 2, below, outlines the original deliverables required in the contract and the date that these deliverables were submitted to the DEP Grant Administrator, Kristin Feindel.

Table 1. All project deliverables under grant #2017PT15 and the date submitted.

DELIVERABLE NUMBER	DELIVERABLE	DATE SUBMITTED
1a	Sub-Contract Agreement	11/15/2017
1b	Semi-Annual Progress Reports	05/15/2018; 11/01/2018
1c	Final Project Report (this document)	03/11/2019
3a	Sampling & Analysis Plan (SAP)	05/04/2018
3b	Final Sampling Report	10/31/2018
4a	Secondary Data Quality Assurance Guide	02/20/2019
4b	Watershed Hotspot Source Analysis & Action Plan	02/20/2019
5	Copies of Education & Outreach Materials	03/13/2019

IV. Project Outcomes

A. Major Outcomes of the Project

There were several major outcomes from the Lower Pemaquid River Assessment project:

Bacteria Storm Sampling

An ideal event occurred for bacteria storm sampling in 2018 that provided critical information on identifying sources of fecal contamination in the watershed.

Community Engagement + Collaboration

The local community and the shellfish committee were highly engaged in the project. This project brought stakeholders to the table from the shellfish industry, state regulators, and local conservation organizations. Additionally, the collaboration between the Town of Bristol, the neighboring town of Waldoboro, the Pemaquid Watershed Association, and the Damariscotta River Association was highly successful. This allowed the project team to assess more sites in the watershed by lowering laboratory analysis costs.

B. Environmental Results of the Project

As a planning project, no implementation occurred over the duration of this project. However, through the storm sampling, the project team began building a baseline understanding of pollutant sources across the lower Pemaquid River watershed. Prior to this project, minimal sampling had occurred in the freshwater tributaries and the main stem of the Pemaquid. Sampling was concentrated in the estuary and was primarily only conducted by Maine DMR as part of shellfish bed regulation.

C. Lessons Learned

Project completion required the project team and consultant team to exceed the original intended budget. This was required to complete a high-quality project and products. Administrative time for recording hours worked and completing reporting paperwork was significantly underestimated.

V. Grant Expenditures

A. Summary of Total Expenditures

Table 4 summarizes the total expenditures occurred during the planning project.

Table 2. Total expenditures under the #2017PT15 grant project.

	Federal NPS Grant	Non-Federal Match	Total
Funds Originally Allocated	\$6,525.00	\$9,810.00	\$16,335.00
Funds Expensed	\$6,525.00	\$10,594.49	\$17,119.49
Funds Remaining	\$0	(-\$784.49)	(-\$784.49)

VI. Non-Federal Match Documentation/Certification

Town of Bristol, ME – \$ 6,713.23 (\$2,966.25 of in-kind match and \$3,746.98 cash match; Match breakdown in Table 5 on the following page; a scanned Certification document is attached in Appendix 4 and the original signed copy will be delivered to Maine DEP)

FB Environmental Associates Donated Time – \$3,881.26 (certified through invoices)

Total Non-Federal Match – \$10,594.49

Lower Pemaquid Watershed Assessment Project - NPS Project #2017PT15											
Appendix 1: Non-Federal Match Documentation											
Task	Source (Town/ PWA)	Person or purchase	Date(s)	Activity or description	In-kind Rate	Hours contributed	Total in-kind contribution	Cash rate	Hours paid	Total cash match	TOTAL FOR TASK
1 - Project Management	Town	Administrator (C. Hall)	Multiple	Project coordination and reporting				\$35.00	45	\$1,575.00	
		Clerk (R. Bizarro)	Multiple	Project coordination and reporting				\$30.00	8	\$240.00	
		CEO/Plumbing Inspector (J. Rose)	Multiple	Research/advice on plumbing issues				\$30.00	5	\$150.00	
		Office staff	Multiple	Printing, copying, mailing	Item	Estimate	\$250.00			\$0.00	
	Subtotal						\$250.00			\$1,965.00	
	PWA	Executive Director (C. Shubert)		Project coordination and reporting	\$35.00	16	\$560.00				
		Volunteer office staff	Multiple	Volunteer coordination, photocopying	\$20.00	6	\$120.00				
	Subtotal						\$680.00			\$0.00	
TOTAL (1):							\$930.00			\$1,965.00	\$2,895.00
2 - Steering Committee	Town	Administrator	11/6/17, 4/9/18, 10/18/18	Scheduling, payroll, reporting to Selectmen	\$35.00	5.75	\$201.25				
		Clerk (R. Bizarro)	11/6/2017	Minute taker	\$30.00	1.5	\$45.00				
		CEO (J. Rose)	11/6/2017	Plumbing advice	\$30.00	1.5	\$45.00				
		Volunteers	11/6/2017	Steering cttee #1	\$20.00	13.5	\$270.00				
		(Town and PWA)	4/9/2018	Steering cttee #2	\$20.00	26	\$520.00				
			10/18/2018	Steering cttee #3	\$20.00	6	\$120.00				
		FB Environmental (consultant)	11/6/17, 4/9/18, 10/18/18					Per contract	Item	\$1,000.00	
	PWA	Executive Director (C. Shubert)	11/6/2017, 4/9/18, 10/18/18	Steering committee meetings				\$35.00	2	\$70.00	
TOTAL (2):	Subtotal						\$1,201.25			\$1,070.00	\$2,271.25

Task	Source (Town/ PWA)	Person purchase or	Date(s)	Activity or description	In-kind Rate	Hours contributed	Total in-kind contribution	Cash rate	Hours paid	Total cash match	TOTAL FOR TASK
3 - Sampling and Analysis Plan; Bacteria Sampling	Town and PWA	See list	5/22/2018	Bacteria Sampling Training	\$20.00	16	\$320.00				
		See list	6/29/2018	Post-storm sampling	\$20.00	4.5	\$90.00				
		C. Shubert	6/28, 6/29	Drive samples to lab	\$20.00	4	\$80.00				
	Town	Testing lab	6/28 - 7/01	Lab fees/supplies, total \$ 491.98, excess over grant				After grant expense of \$320		\$171.98	
TOTAL (3):							\$655.00			\$171.98	\$826.98
4 - Watershed Hotspot Survey and Action Plan	Town	J. Stolecki	6/28-6/29	Harbormaster reimbursement for boat - transport volunteers				\$50.00	\$8.00	\$400.00	
		Administrator	6/30 - 7/11	Revisit hotspots, compile plan				\$35.00	4	\$140.00	
		FB Environmental (consultant)	6/28 - 8/14	Revisit hotspots, compile plan	Varies. Donated time.		\$3,881.26				
	PWA	Executive Director (as volunteer)	6/28 - 7/11	Revisit hotspots, compile plan	\$20.00	4	\$80.00				
TOTAL (4):							\$3,961.26			\$540.00	\$4,501.26
5 - Education and outreach	Town	Jess Westhaver	Multiple	Web updates				\$25.00	8	\$200.00	
		Administrator	10/17-10/18	Press release				\$35.00	2	\$70.00	
	PWA	Office volunteers	Multiple	Web updates, PWA newsletters	\$20.00	5	\$100.00				
TOTAL (5):							\$100.00			\$0.00	\$100.00
TOTAL MATCH:							\$6,847.51			\$3,746.98	\$10,594.49

Appendix 1: Photographs

Storm Sampling

Above Site 1 (left); Chad Hammond Sampling Site 1 (right)

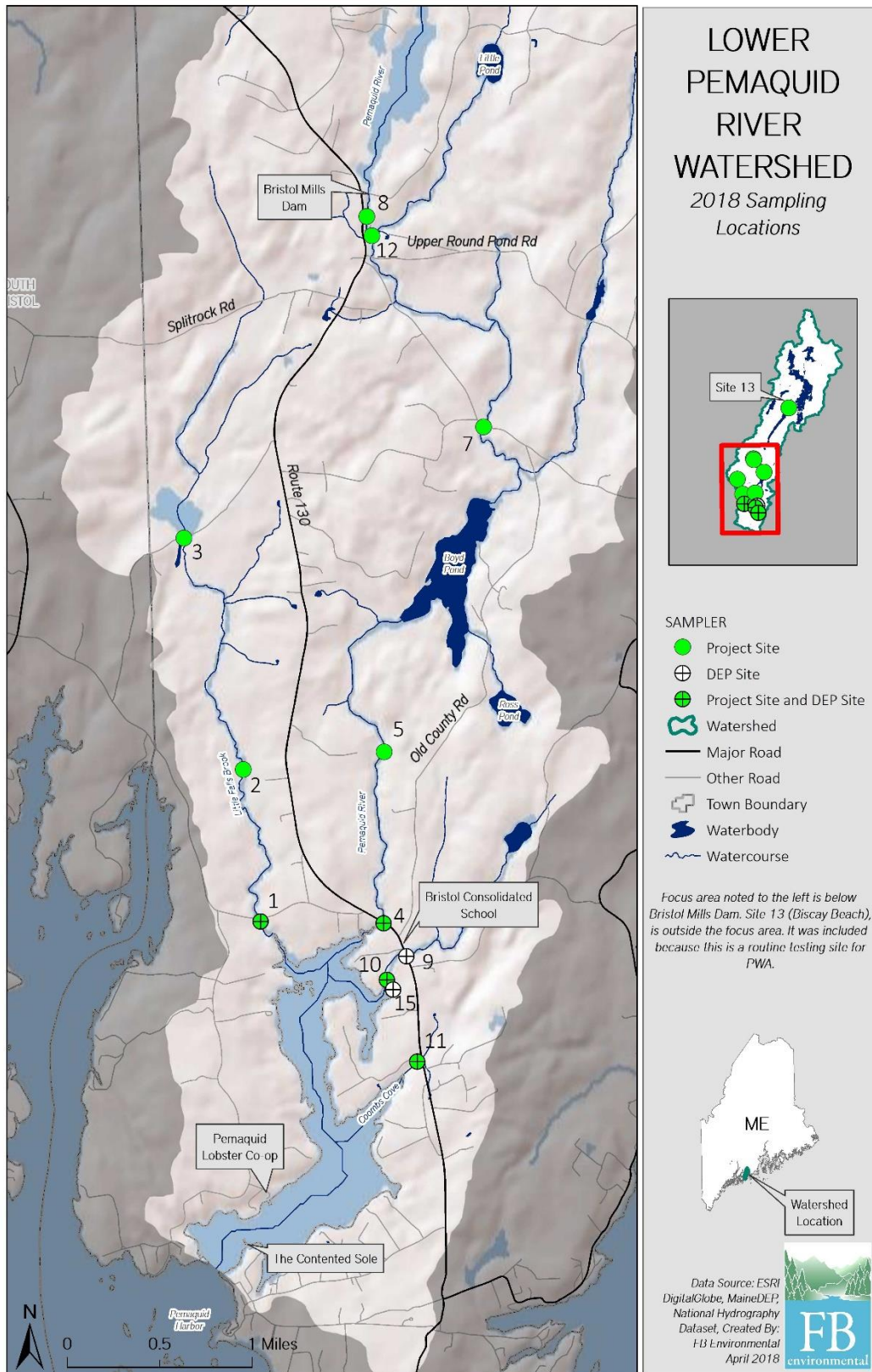


Lab Analysis

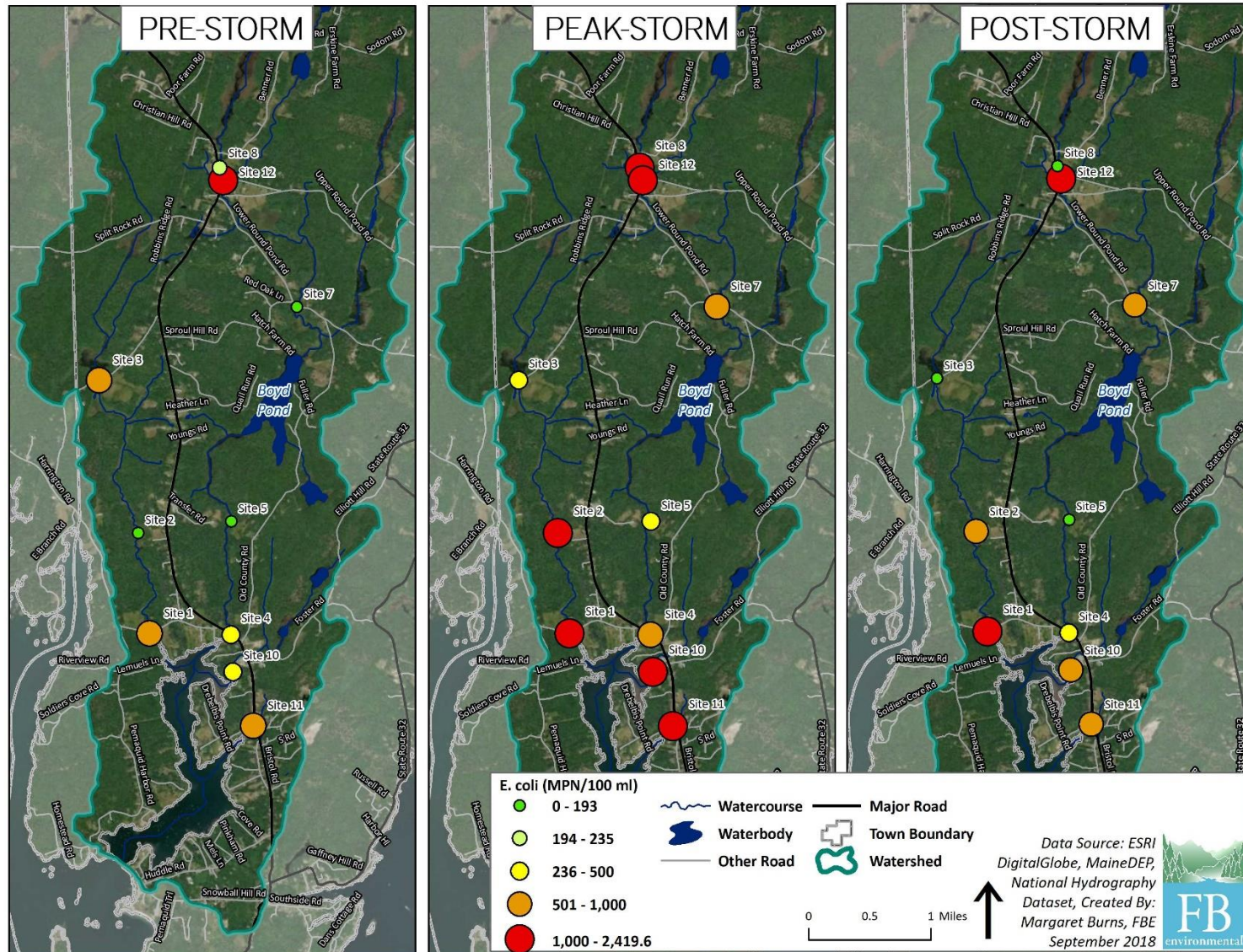
Julie Keizer (Town Manager – Town of Waldoboro) analyzing samples from both the Pemaquid River and the Medomak River at the Damariscotta River Association



Appendix 2: Sampling Site Map



Appendix 3: 2018 Storm Sampling Results Map



Appendix 4: Sampling Training Attendance (5/22/2018)

NAME	AFFILIATION	CONTACT
Scott Burke	Bristol Shellfish	207-563-1214
Corey Poland*	Bristol Shellfish	207-350-0479
David Cheney	Bristol Shellfish	207-350-0847
Jen Casad	Bristol Shellfish	207-315-1379
Chad Hammond*	Bristol Shellfish	207-592-7178/207-563-6130
Steve Lackovic	Bristol Shellfish	207-242-6934/207-563-1078
Philip Studley	Bristol Shellfish	207-563-6874
Steve Termine	Bristol Shellfish	207-449-8321
Rachel Bizarro	Bristol Shellfish	207-563-5270
Amy O'Brien*	Bristol Volunteer	207-385-1704
Martha Gifford	Bristol Volunteer	207-677-2218 (not available in June)
Jim Daniels	Bristol Volunteer	207-677-2218 (not available in June)
Maggie Burns	FB Environmental	603-534-0600
Rich Brereton	FB Environmental	207-650-7597
Kristin Feindel	Maine DEP	207-215-3461
Jack Boak	Pemaquid Watershed Association	207-790-1315
Steve O'Bryan	Pemaquid Watershed Association	207-592-5454
Linda Shaffer*	Pemaquid Watershed Association	207-350-2318
Carolyn Shubert*	Pemaquid Watershed Association	

**Indicates members who were able to help during the 6/28 – 6/29 sampling.*

Appendix 5: Non-Federal Match Certification

Non-Federal Match Documentation / Certification

NPS Grants Program, Maine Department of Environmental Protection

Grantees need to document matching funds or services contributed to the project. The amount of match required is listed under 'Budget Information' in the project work plan. Grantees must submit this form as part of the Final Project Report to certify that match has been properly documented before closeout of the Grant Agreement.

To efficiently meet documentation requirements, Grantees should accumulate match information as the project proceeds and record information in a table. See *Nonpoint Source Grant Administrative Guidelines* (2016) Appendix A for an example. The following information is needed to adequately document match.

1. Source. Identify the source of the funds or services;
2. Activity. Describe the activity and the amount of activity; and
3. Valuation. Describe the basis for assigning the amount of dollar value to the activity.

Important: This signed certification form must be accompanied by supporting information that documents (source, activity and valuation) the matching funds or services claimed by the Grantee. The Certification Statement alone is not sufficient to document the non-federal match.

GRANTEE INFORMATION:

Grantee Name:	Bristol, Town of
Address:	PO Box 339, 1268 Bristol Road
	Bristol, ME 04539
Telephone:	(207) 563-5270
Contact Person:	Christopher Hall, Town Administrator

PROJECT INFORMATION:

Project #:	2017PT15
Project Title:	Lower Pemaquid River Watershed Assessment Project

Match Amount Planned Under the Grant Agreement:	\$ 9,810.00
Match Amount Claimed:	\$ 10,594.49

CERTIFICATION STATEMENT:

I certify that the non-federal match summarized in the attached information was expended in the course of completing work described in the Grant Agreement for the Project referenced above. Supplemental match documentation is available for review in Grantee files.

March 13, 2019

Signature of Grantee – Authorized Official

Date