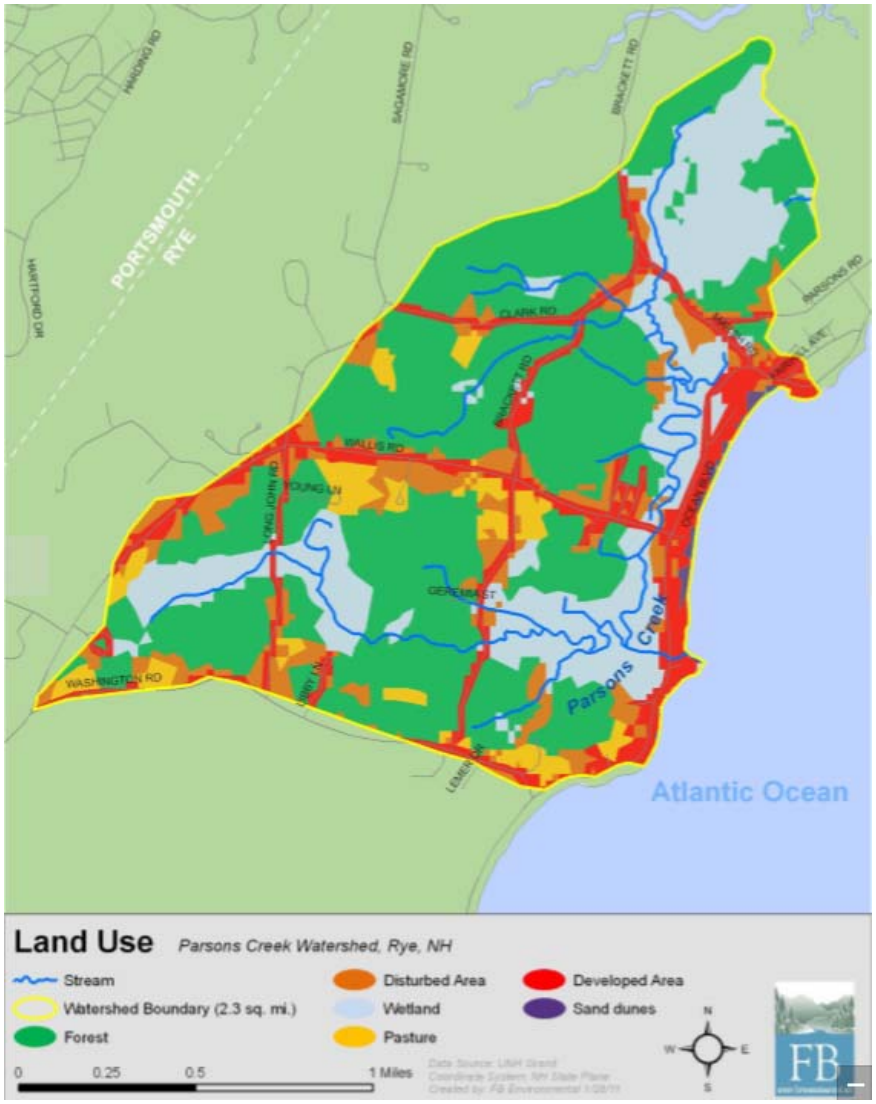
TRACKING BACTERIA SOURCES TO PARSONS CREEK

PROGRESS TO DATE AND NEXT STEPS

Town of Rye Selectboard Meeting
October 26, 2015

FB environmental

INTRODUCTION



- Impaired for bacteria, PCBs, mercury, and dioxin
- Multiple beach advisories posted since 2003
- Wetland-dominated land use

BACKGROUND

GOAL Restore water quality in Parsons Creek by reducing stormwater runoff from IC and bacterial input from malfunctioning septic systems.

2004 NHDES Beach Program Monitoring

2008 NHDES/FBE Watershed Monitoring

2010 NH TMDL for Bacteria Reductions (89% reduction in geomean)

Based on 2008-2010 intensive watershed-wide bracket sampling

2011 Parsons Creek Watershed Based Plan (estimated 24% septic failure)

Identified stormwater and septic as primary sources of bacteria

2012 Parsons Creek Watershed Management Plan Implementation, Phase I

Installed 4 BMPs; reduced bacteria by 3.3x10^10 col/100mL

Developed septic database and risk factor priority map

2015 Parsons Creek Watershed Management Plan Implementation, Phase II

Will install 2-4 BMPs

Will draft septic ordinance and replace 2 septic systems in failure

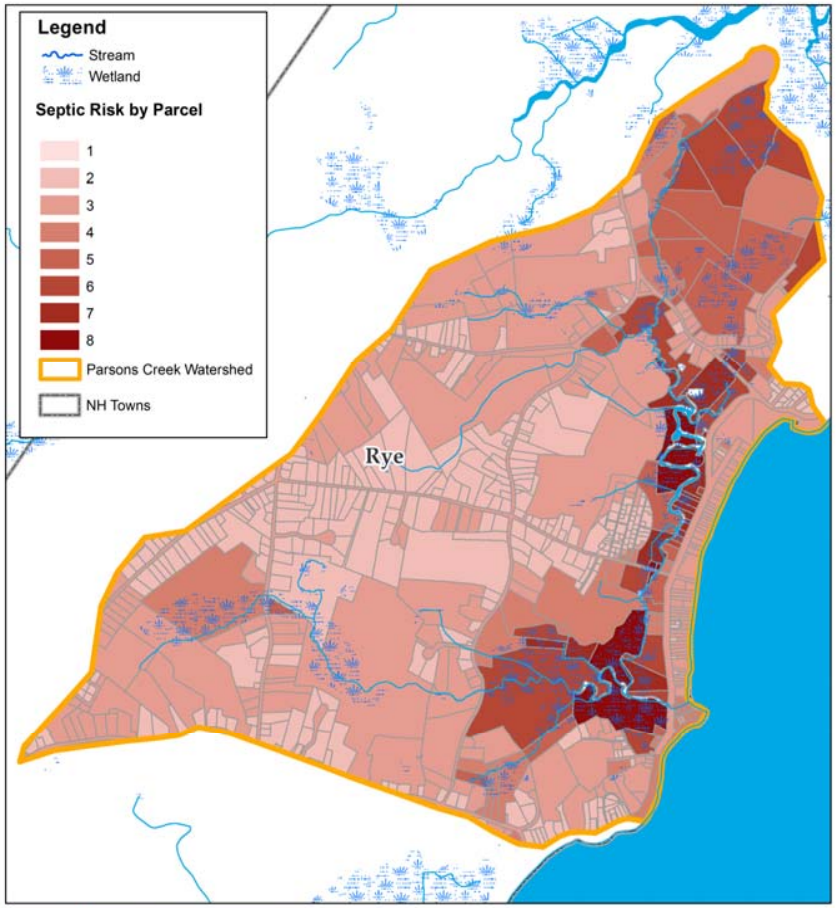
Example BMPs

Marsh Road – Buffer Plantings

BEFORE

AFTER

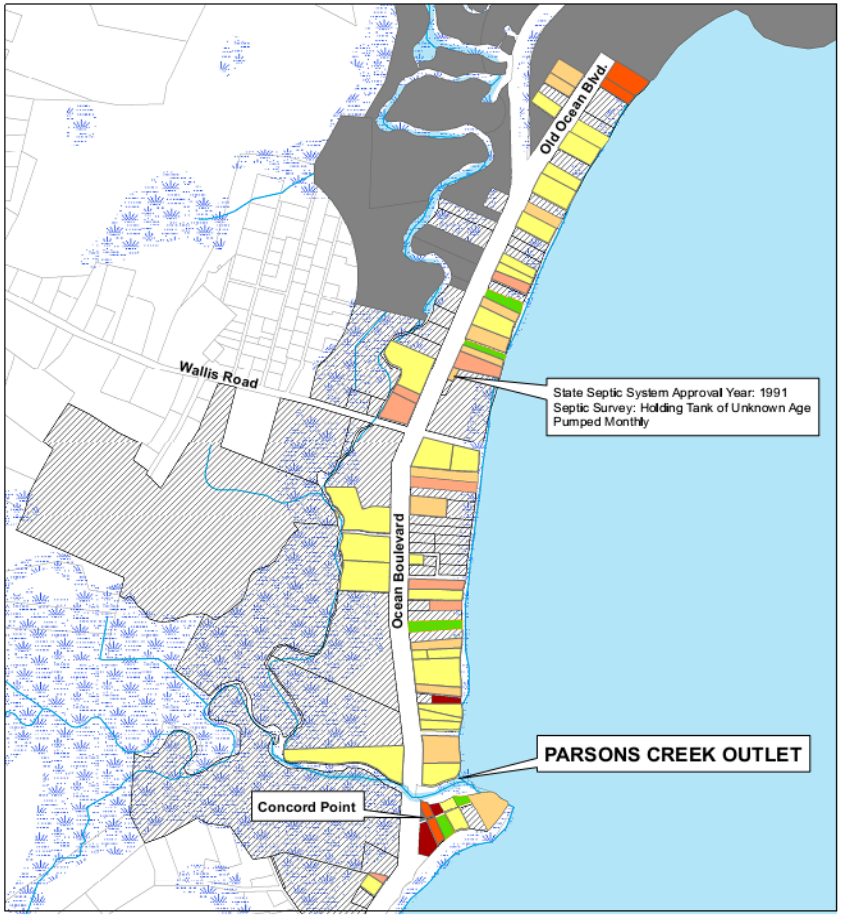
SEPTIC SYSTEMS



Septic Risk Factor by Parcel Map

The Septic Risk Factor by Parcel Map shown above is based on NRCS soil limitations, including filtering capacity, flooding, ponding, depth to bedrock, depth to saturated zone, slope, seepage, and restricted permeability. Additionally, Environmental factors such as wetlands, 100 foot stream buffer, and flood zones (A, AE, AO, VE) were also considered. Each condition was assigned a risk factor of one, and the map indicates the sum of risk factors, ranging from 0 to 9.Though a risk factor of 9 is possible, risk factors did not exceed a total of 8. Soil and Environmental Septic Risk Factors were combined with town parcel data to create a weighted average of each septic risk factor located within each individual parcel. The larger the value, the greater the potential limitation and risk to the environment in case of septic system failure. This map does not alter the need for onsite investigation.

Map Created by: FB Environmental; Digital Data Source: NH GRANIT, NHD, NRCS

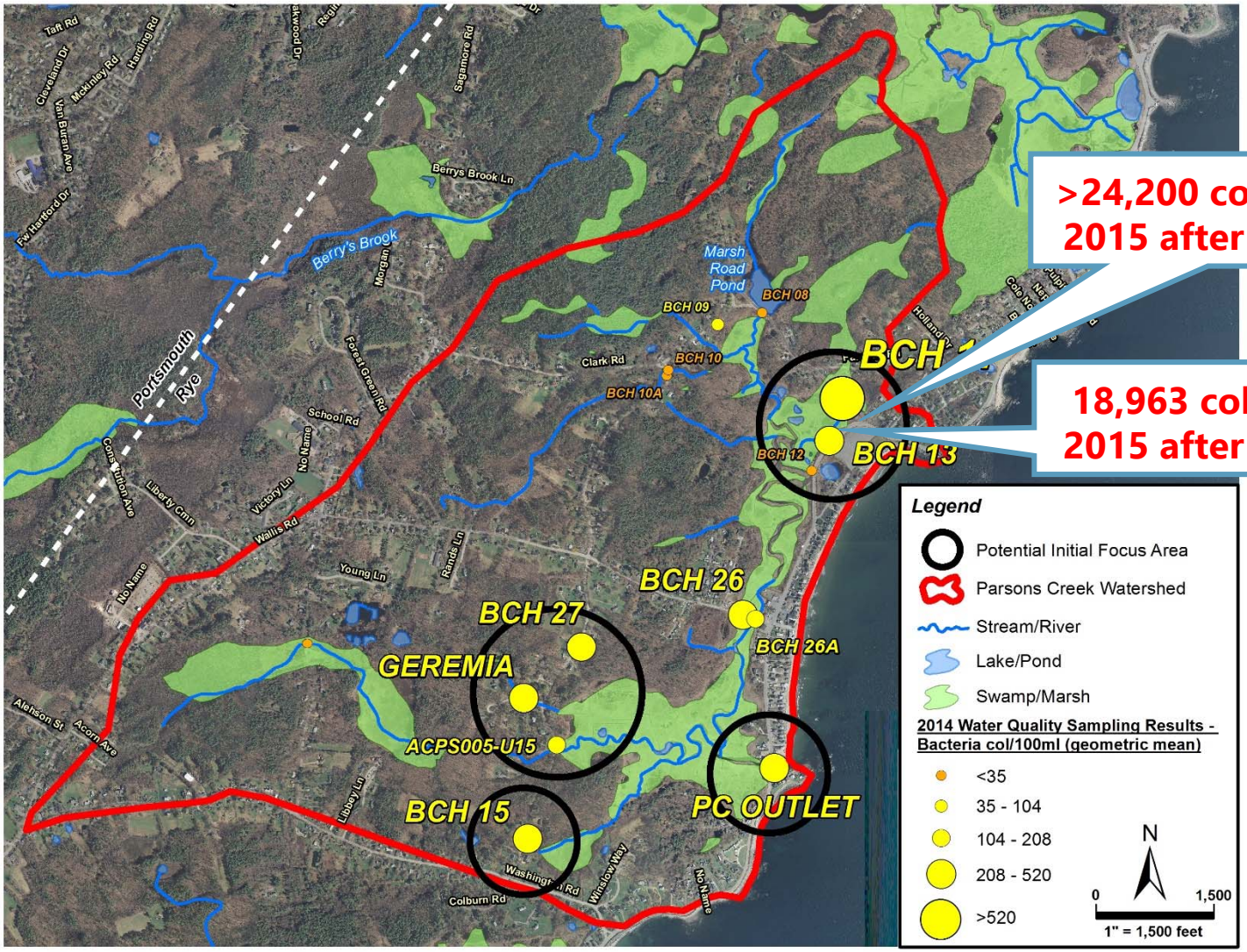


Parsons Creek Watershed Septic Survey

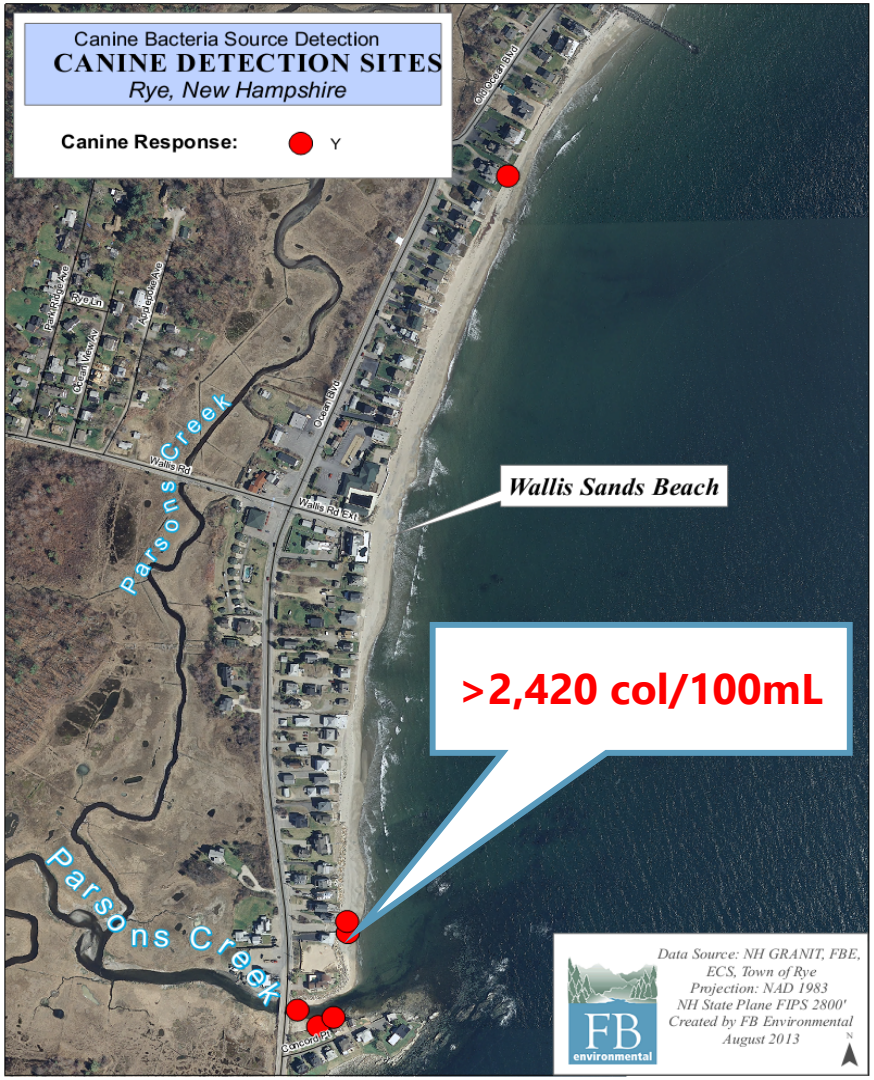
Roads
Streams
Waterbody
Wetlands
NO HOUSE
Before 1975
1975
1980s
1990s
2000-present
I Don't Know
No Information To-Date

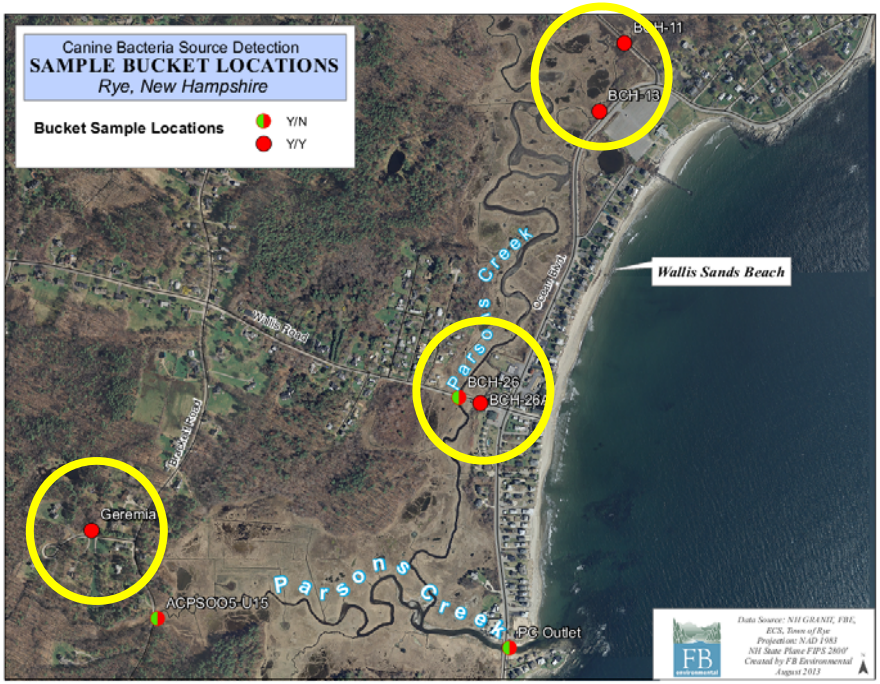
Data Source: NH GRANIT, NWI, NHD, Onestop, Town of Rye
Projection: NAD 1983 NH State Plane FIPS 2800 ft
Map Created by FB Environmental September 2014

BACTERIA RESULTS (2008-2015)



CANINE SCENT TRACKING (2013)





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BEACH SAMPLING (2014-15)

Overnight beach seep and Parsons Creek outlet sampling results.

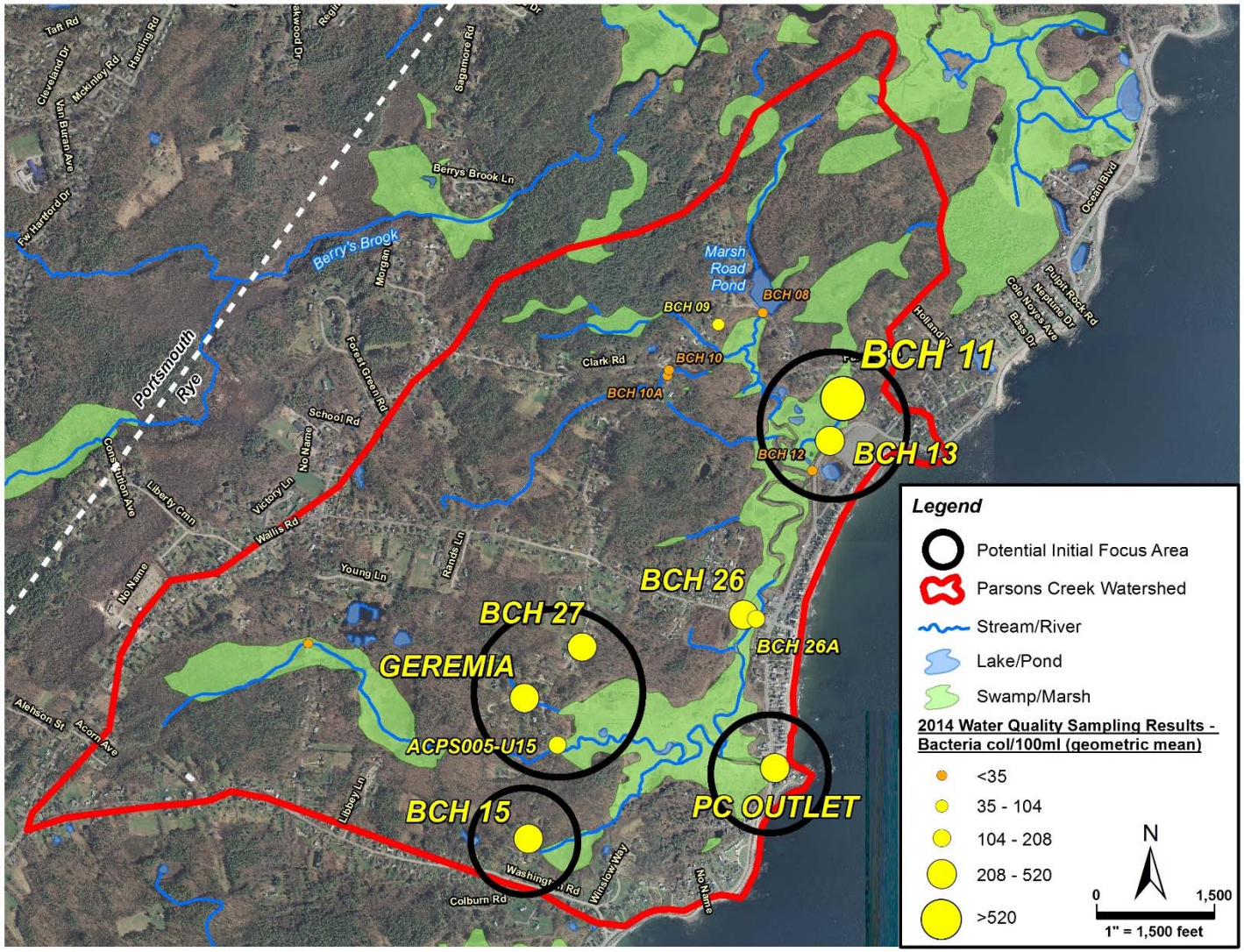
Sample ID	Date	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30
PC-out	8/24/2015	31	63	63	41	75	20	20	30	41
RB-1	8/24/2015	5	243	228	5	5	5	5	20	5
RB-2	8/24/2015	5	197	8164	5	20	5	5	10	10
RB-3	8/24/2015	5	5	5	5	5	10	5	5	5
Sample ID	Date	0:00	0:30	1:00	1:30	2:00	2:30	3:00	3:30	Standard
PC-out	8/25/2015	226	262	292	479	504	355	216	504	<406
RB-1	8/25/2015	5	5	5	5	5	10	5	20	<104
RB-2	8/25/2015	5	10	5	5	10	5	5	5	<104
RB-3	8/25/2015	5	10	41	30	8	10	5	5	<104

BACTERIA RESULTS (2015)

Site	7/28/15 (DRY)	9/3/15 (DRY)	9/11/15 (WET)	9/23/15 (DRY)	9/30/15 (WET)	10/20/15 (WET)	Description	Routing
BCH08						990	East Branch	Upstream
BCH10						**2,098**	East Branch	|
BCH11	**4,884**	**18,963**	**>24,200**	139	3,076	20	East Branch	|
BCH13	3,873	2,909	**>24,200**	10	1,935	31	East Branch	|
BCH26A	85	959	2,909	187	**4,352**	345	East Branch	|
BCH26	20	686	**7,270**	<10	**11,199**	74	Side ditch, East Branch	|
ACPS005-U15	84	464	2,723	431	**4,352**	109	West Branch	V
PC-OUT	20	504	1,274	74	1,333	10	Outlet to Ocean	Downstream

- High bacteria coming from **BCH11** (at Marsh Rd) following wet and dry weather and from **BCH26** (at Wallis Rd) following wet weather
- Late September-October sampling shows shift in dominant bacteria sources (to **BCH26** and upstream **BCH08/10** (seasonal use change?)

WHY WE NEED MORE DATA This Fall



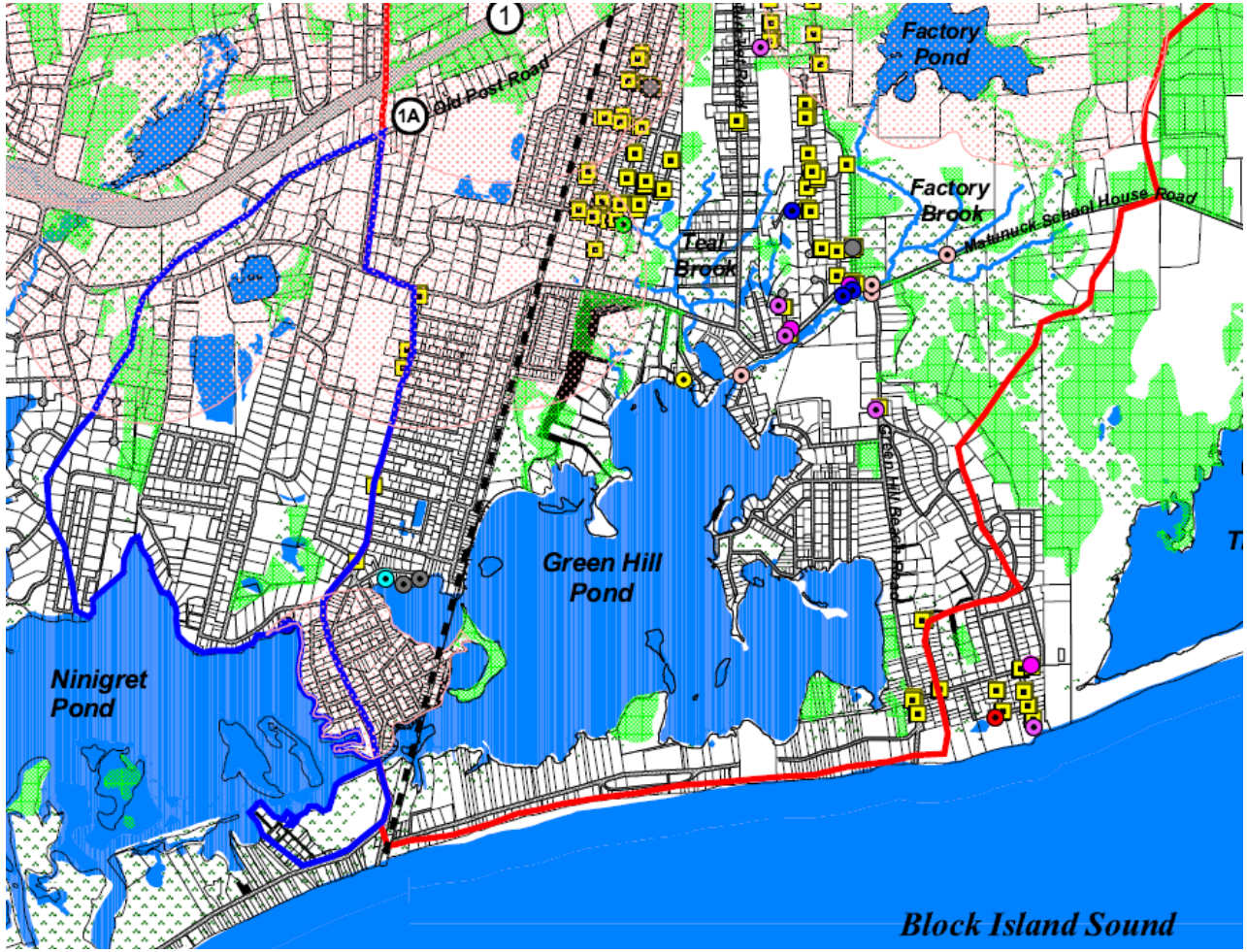
SRF PROPOSAL DETAILS – Sally Soule/Barbara McMillan

- SRF program overview
- Purpose – why SRF for Parsons Creek?
- Status – approved borrowers list
- Loan terms
- Next steps and timeline

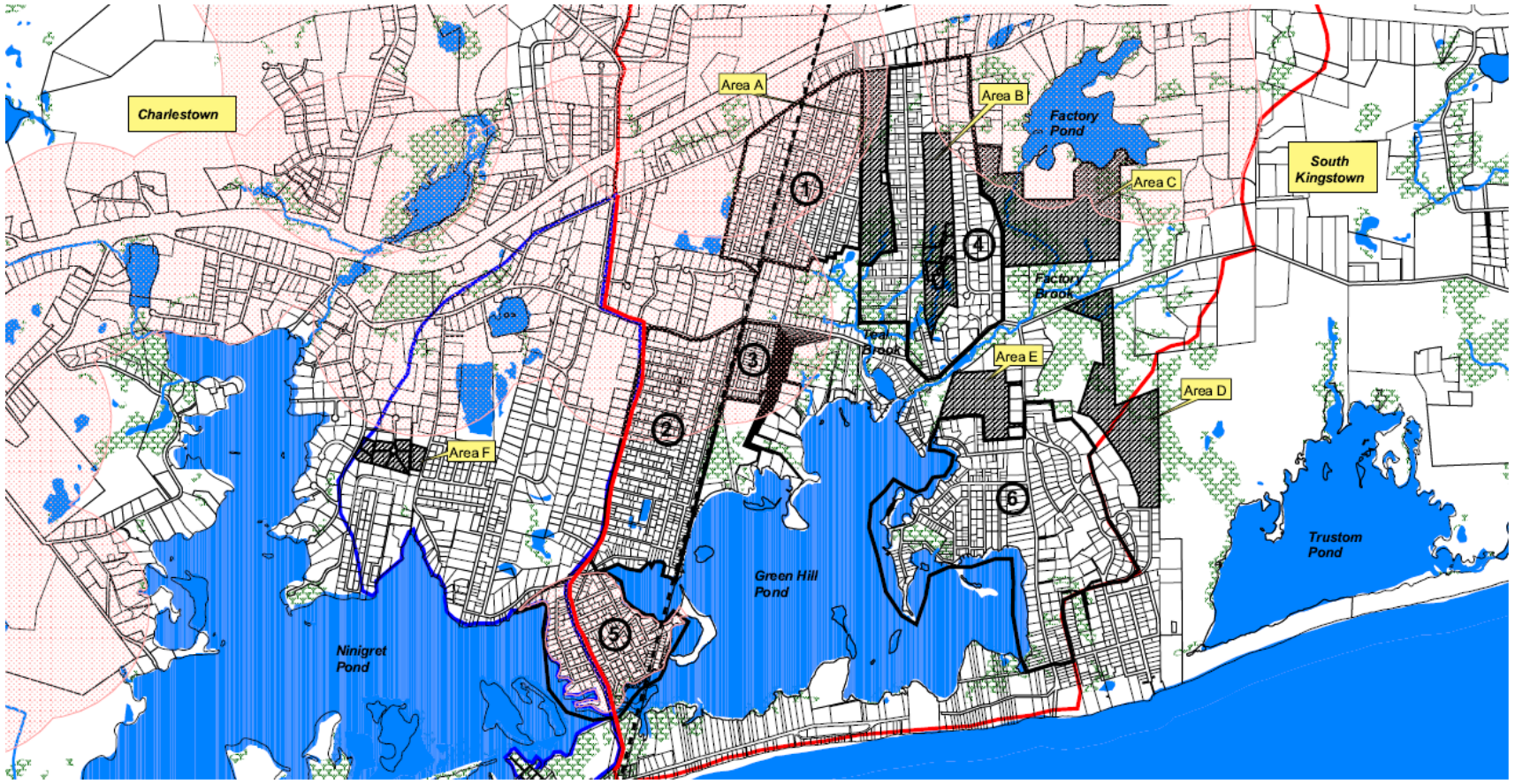
Horsley Witten Group, Inc. (a little background)

- 27 years in business, headquartered in Sandwich, MA
- Environmental Engineering, Planning, Landscape Architecture, Emergency Preparedness, Remediation, Surveying and Ecological Services
- 50+ employees with offices in MA, RI, GA and now in Exeter, NH -11 PEs, 2 RLSs, 2 RLAs
- Significant coastal experience with wastewater assessment, design, and construction admin.
- System installed ranging from single septic systems, clustered systems up to 50k gpd, to 0.5 mgd for Mass Dept. of Correction

Rhode Island Salt Pond Wastewater Facilities Plan



Service Area/Parcel Assessment



Legend

- Green Hill Pond Watershed Study Area
- Eastern Ninigret Pond Watershed Study Area
- Preliminary Parcel Analysis Results
- Potential Sewer Service Areas
- (1) Sewer Service Area ID
- Parcels
- Wellhead Protection Areas
- Wetlands
- Surface Water
- Streams
- Town Line

N

0 1500 Feet

Horsley Witten Group
phone: 508-833-6600
www.horsleywitten.com

Wastewater Management Assessment
Preliminary Parcel Analysis Results
Rhode Island
South Shore Salt Ponds

3/12/07 EC
J:\4095 R.I. South Shore Salt Ponds\GIS\

Figure 11

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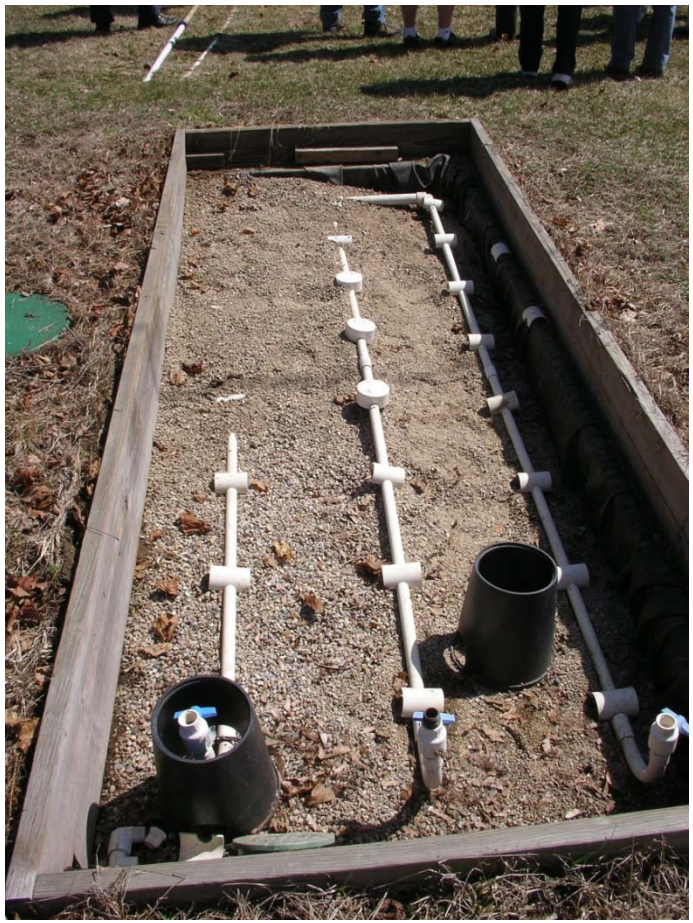
Septic Disposal Options – shallow depth to groundwater



Bottomless sand filter

Shallow-narrow drain field

Treatment systems

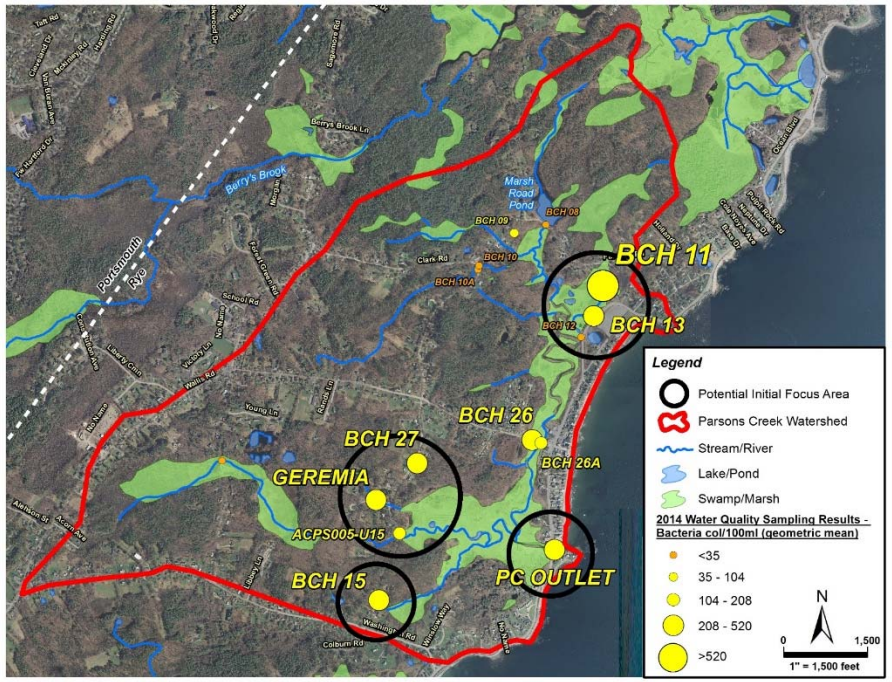
Orenco's – AdvanTex Trickling Filter

“Innovative/Alternative Systems

- Several Alternative Systems:
  - Recirculating Sand Filter;
  - Ruck Systems
  - FAST
  - Bioclere
  - AdvanTex
  - Nitrix
  - Waterloo Biofilter
  - Many others

Parson's Creek Scope of Work

1. Project Coordination
   - Up to 6 meetings, including at least one with Selectmen
2. Public Outreach
   - Two public meetings (gage interest and concept design stage)
   - One ½ day owner workshop
3. Community Septic System Facility Assessment and Conceptual Design
4. Final Feasibility Report



Task 3: Facility Assessment and Conceptual Design

- Finalize Evaluation Assessment Areas
- Refine Risk Assessment
- Map Candidate Septic Disposal Areas
  - Conduct up to 8 test pits
- Complete Conceptual Designs
- Perform Pollutant Loading Analysis
- Develop Implementation Plan

THANK YOU