

Brewster's Integrated Water Resource Management Plan

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Integrated Water Resource Management Planning and Pond Management in Brewster

June 14, 2013



Mark Nelson, P.E and
Susan Leven AICP

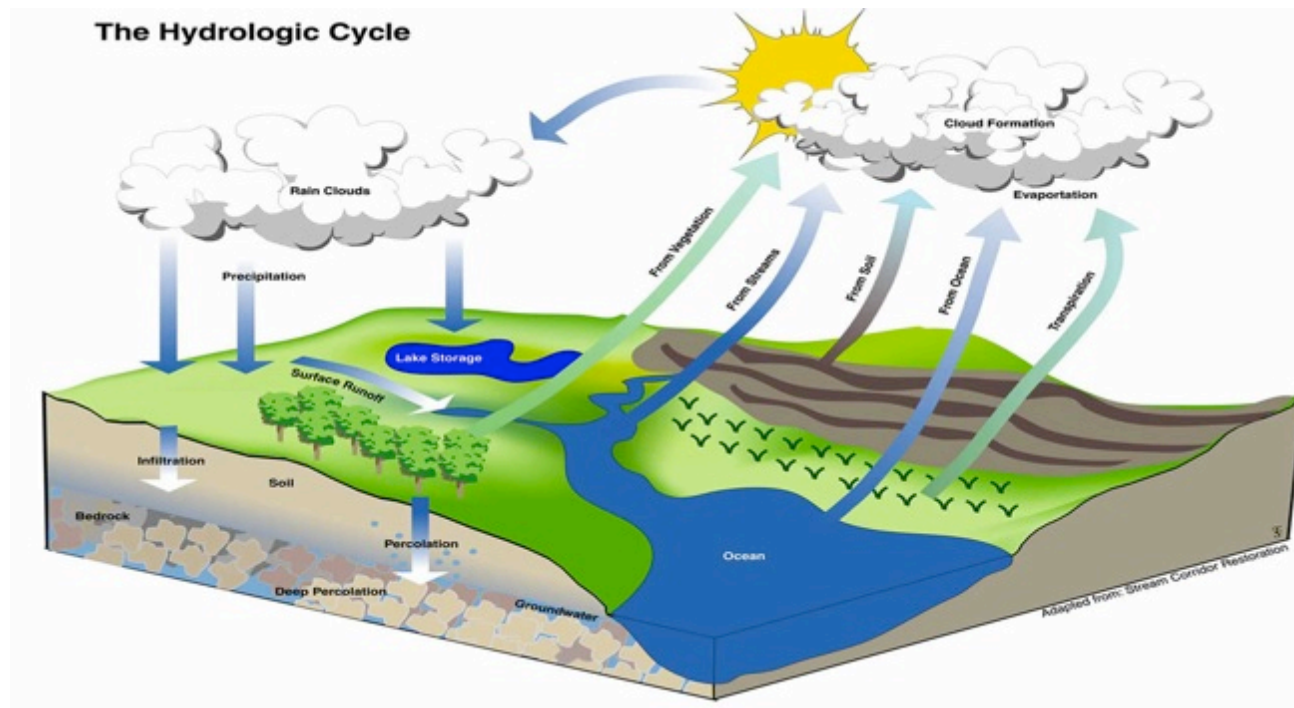
The Big Picture...

Protecting the Town's Waters

- Managing Nitrogen Loads to Coastal Embayments
- Protecting Public and Private Drinking Water Supplies
- Protecting and Restoring Fresh Water Ponds
- Improving Stormwater Management



All Water Resources are Interconnected



- Therefore:



An Integrated Plan!

Why Integrated?

Everything is Connected

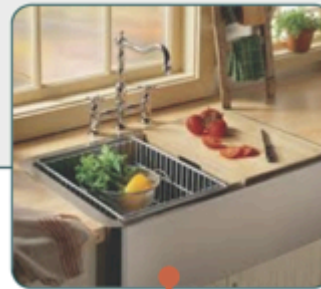
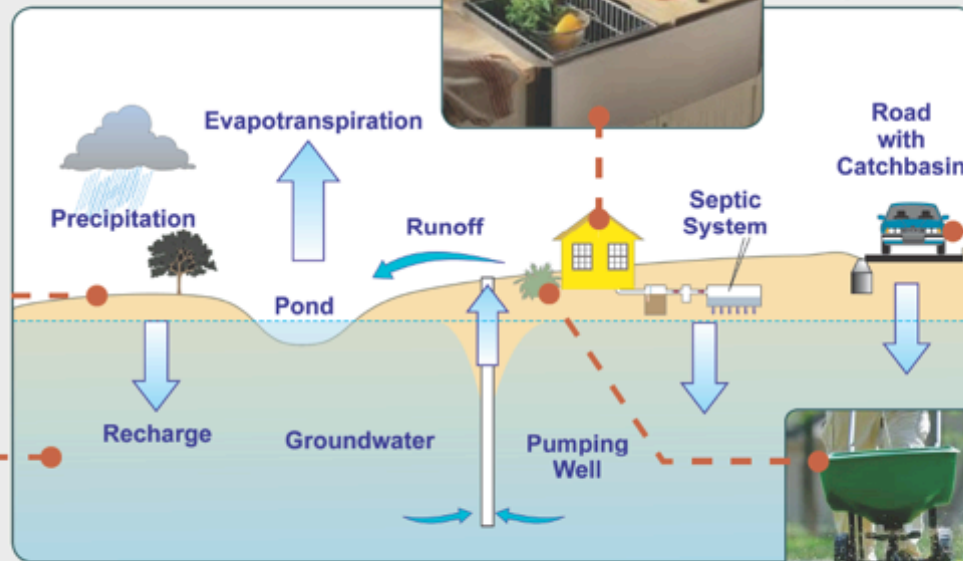
How you manage your property has a direct impact on water quality



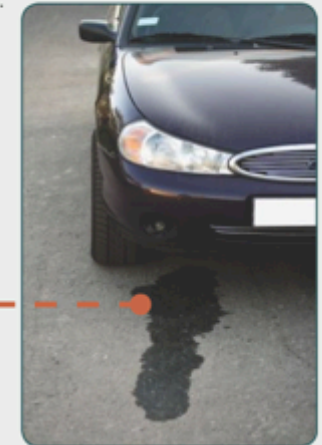
Animal waste...
Also makes it to surface waters.



From the groundwater...
Back to your tap!



From the kitchen sink...
To the septic system...
To the groundwater!



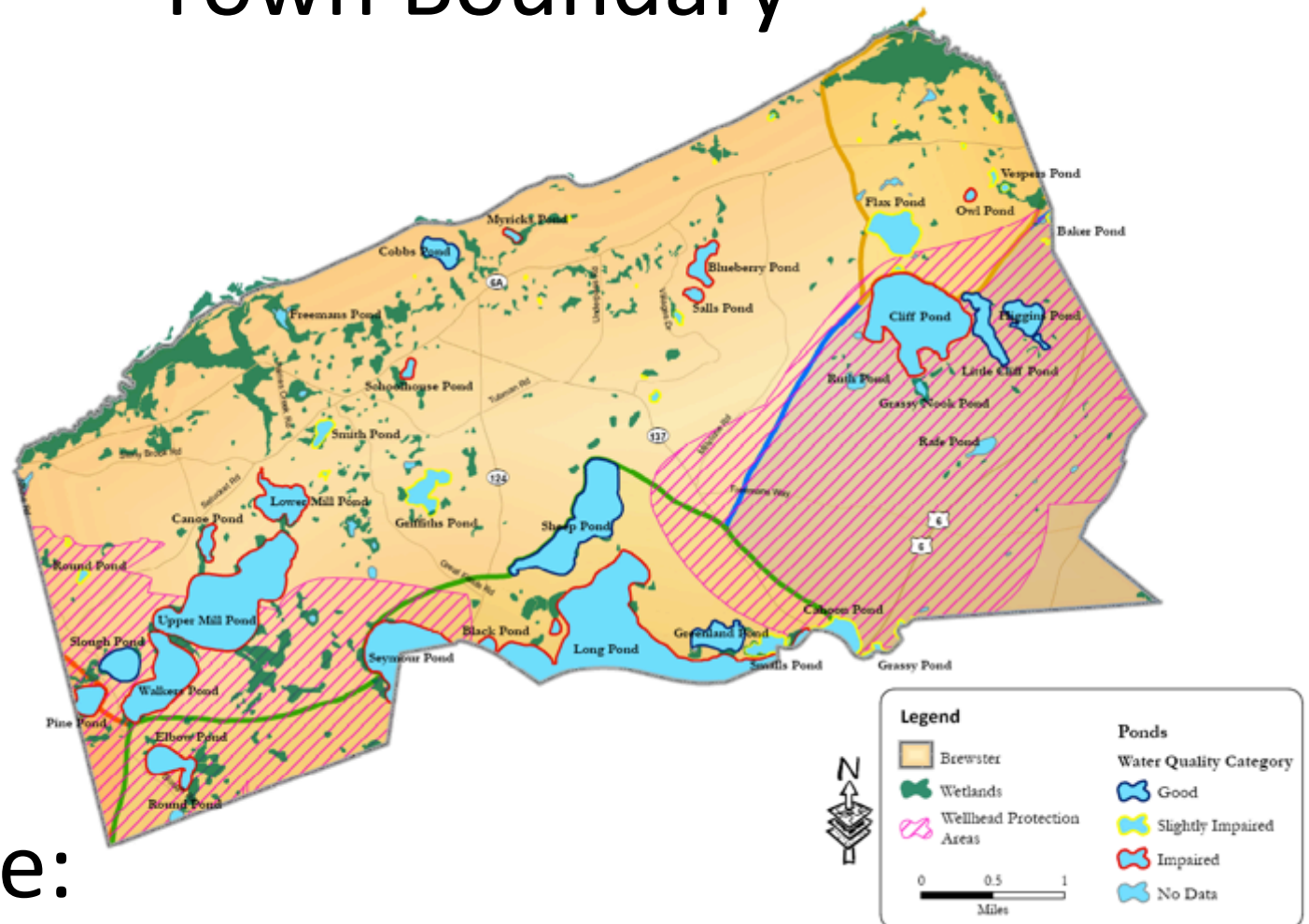
From the oil leak under your car...
To the road drainage...
To the surface water!



From your lawn...
To groundwater and/or
ponds and coastal waters.

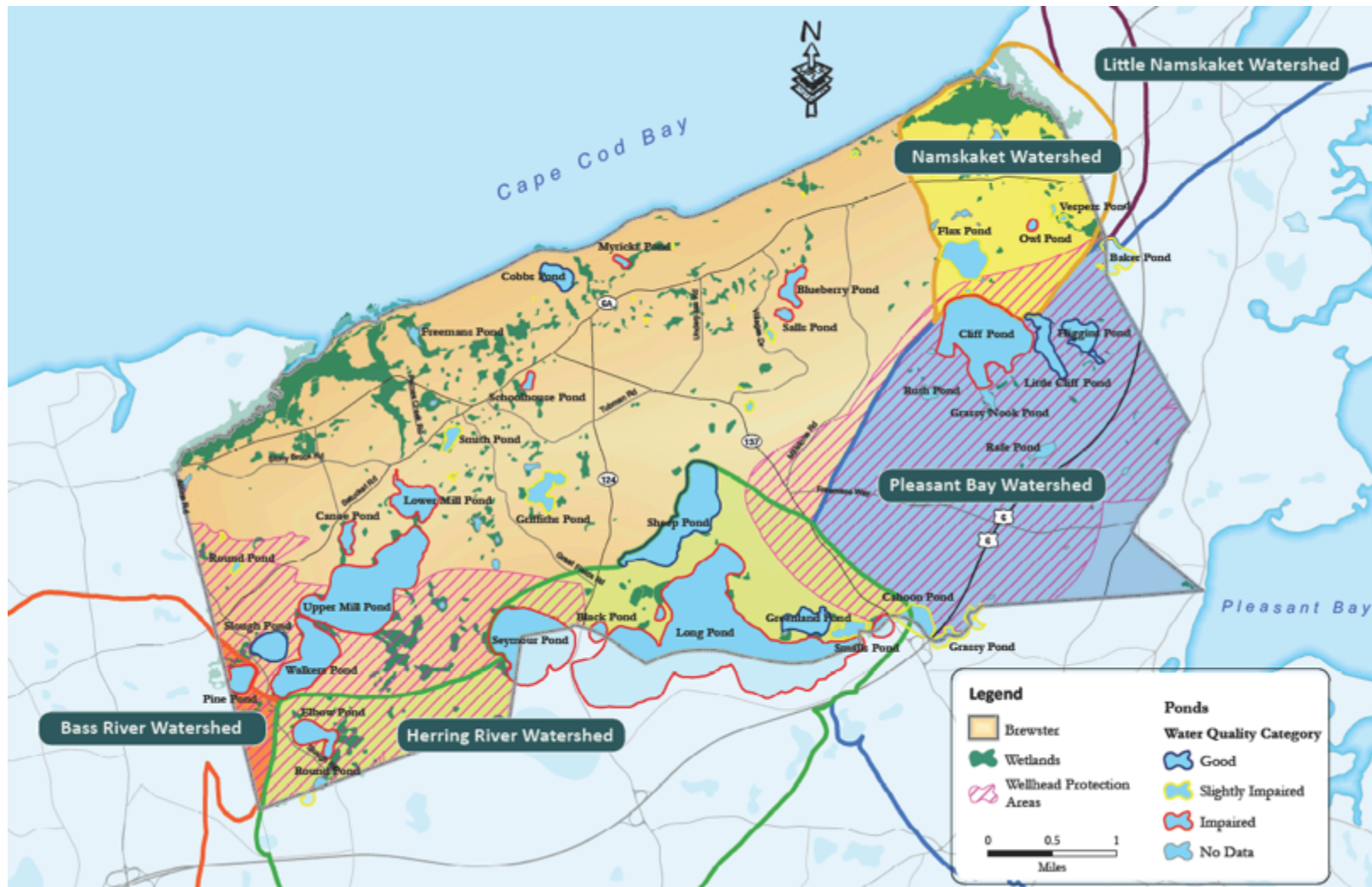


Water Movement Doesn't Stop At the Town Boundary



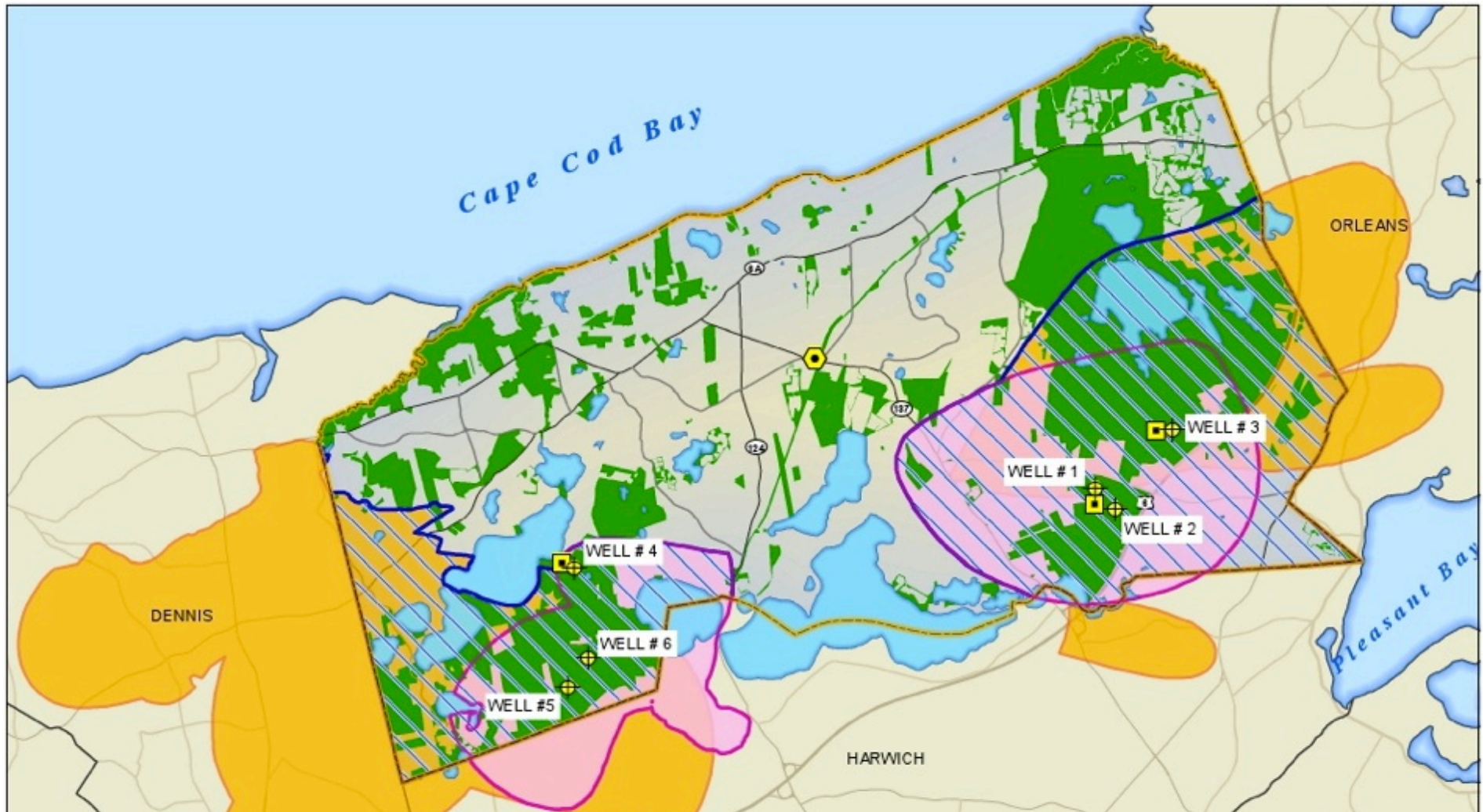
- Therefore:

Regional Management is Important



Components of the Integrated Plan

- Protecting Drinking Water Supplies



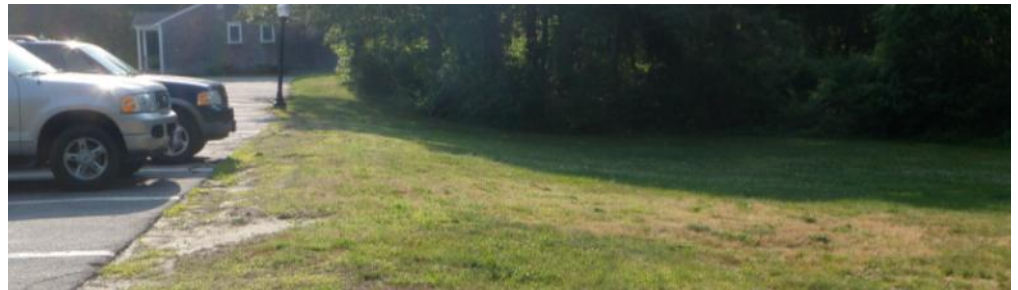
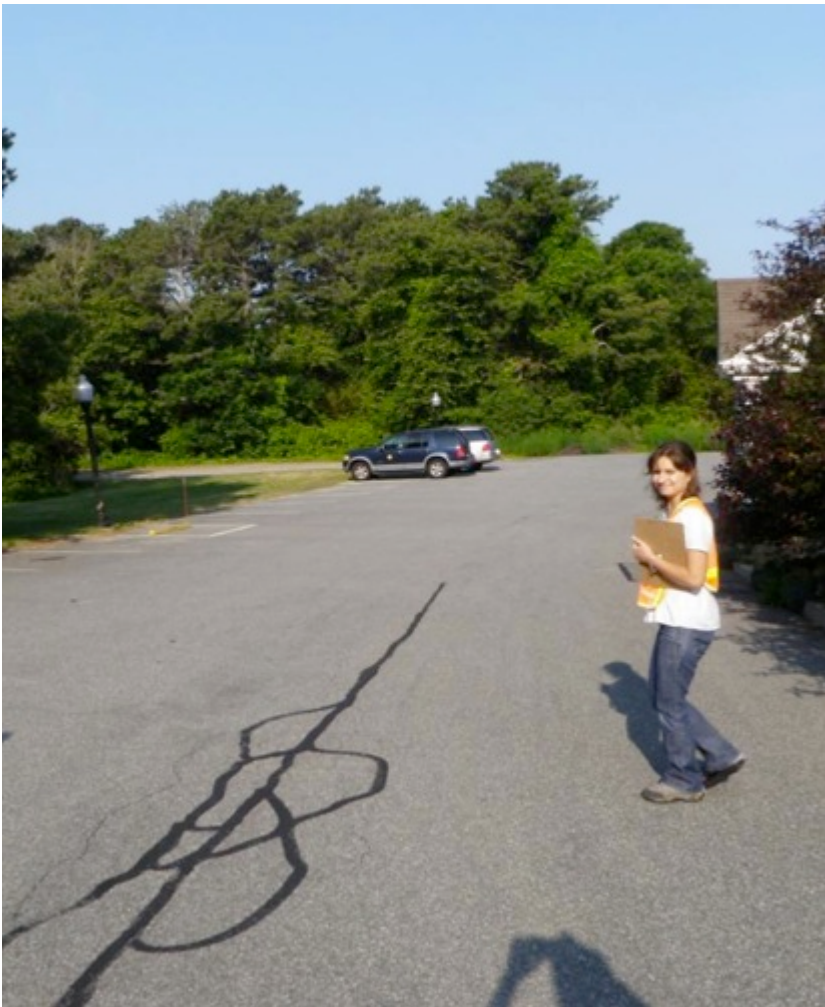
Stormwater Management

- Current work has included:
 - Stormwater code review
 - Retrofit assessment of 19 potential sites
 - Selection of three possible sites for more detailed design of stormwater systems



Stormwater - Town Hall

Possible Rain Garden behind Rear Parking Lot



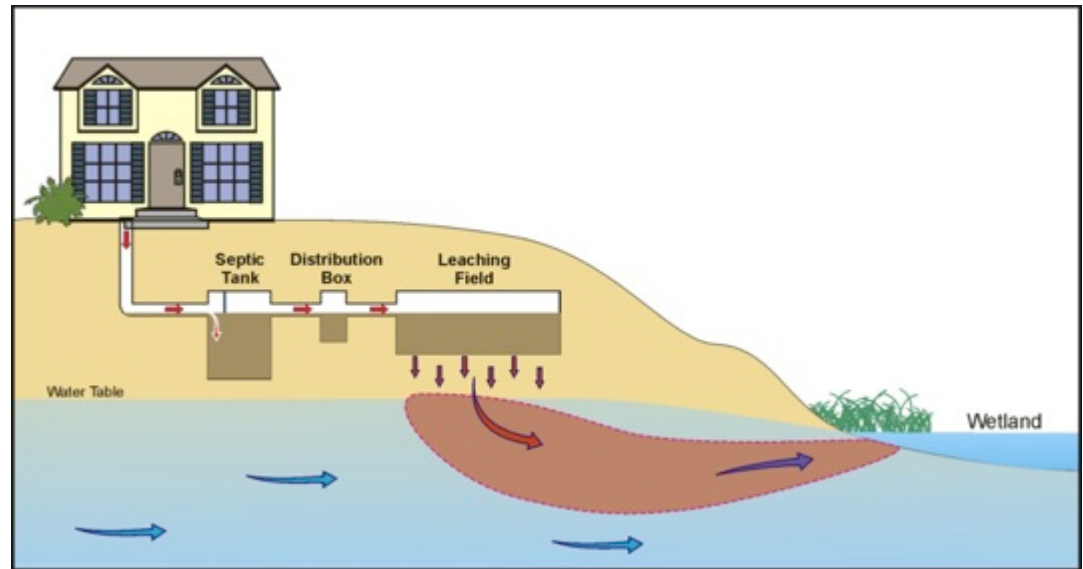
Existing Similar System (below)



Components of the Integrated Plan

- Managing Nitrogen to Protect Coastal Embayments

- Pleasant Bay
- Herring River
- Bass River



- How Are These Watersheds Similar?

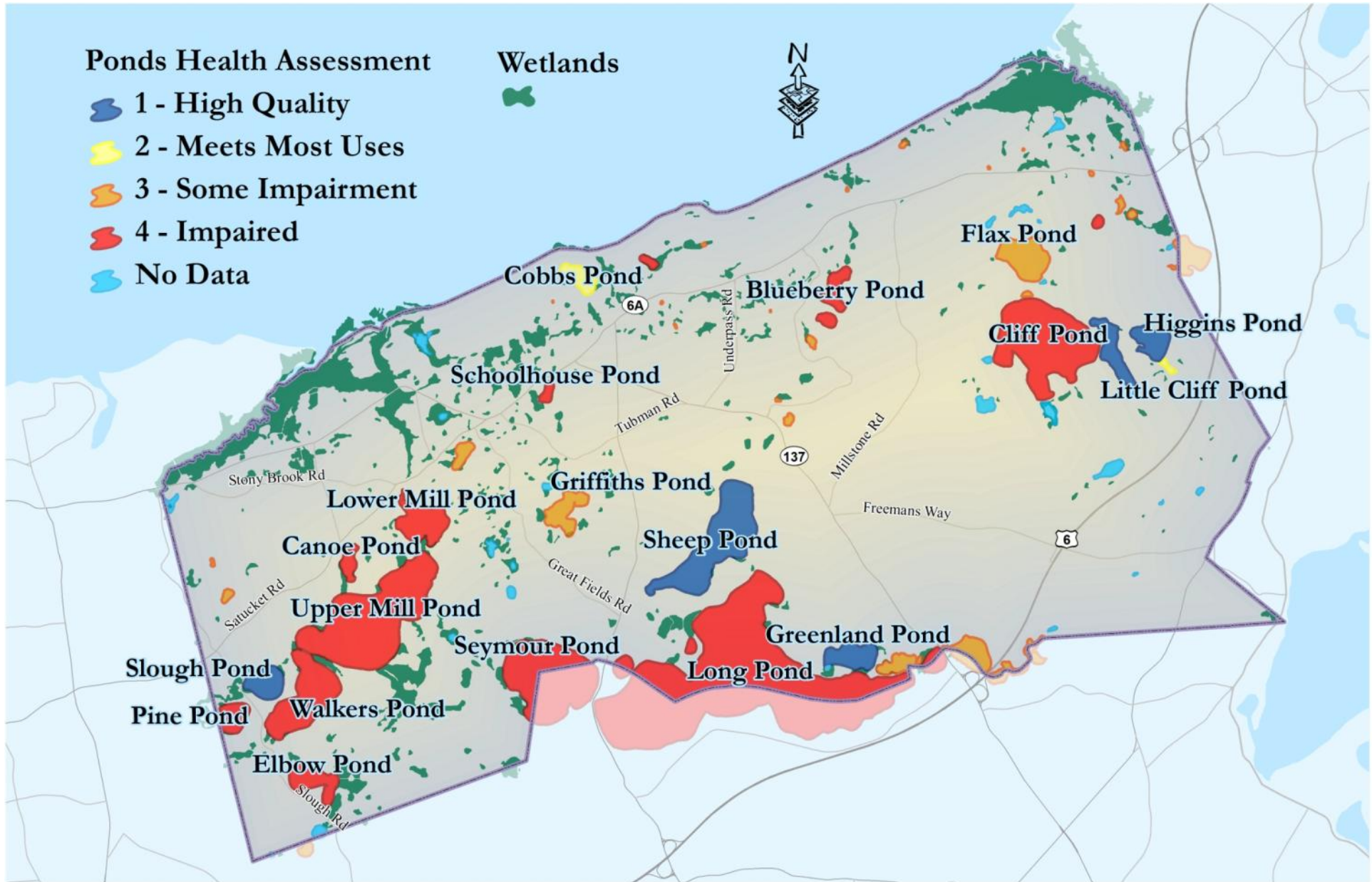


Components of the Integrated Plan

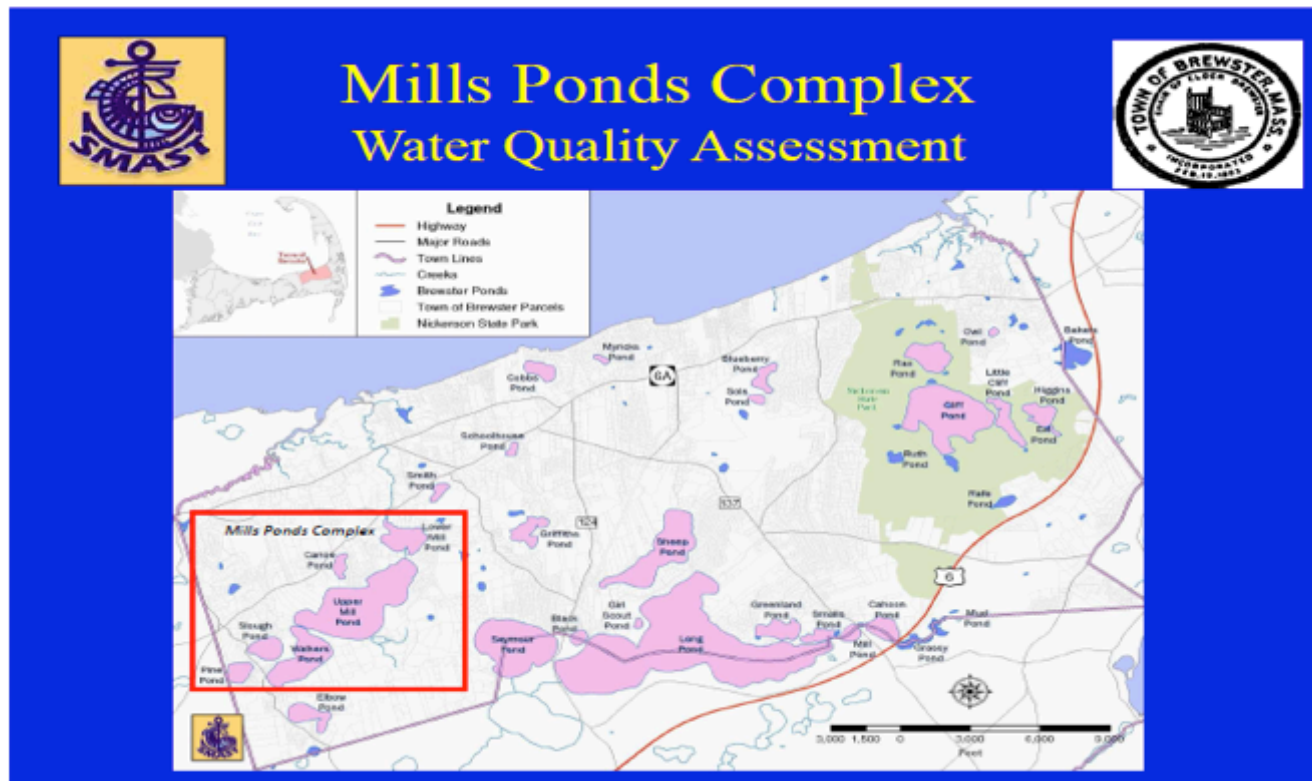
- Protecting and Restoring Ponds



Status of Brewster's Ponds

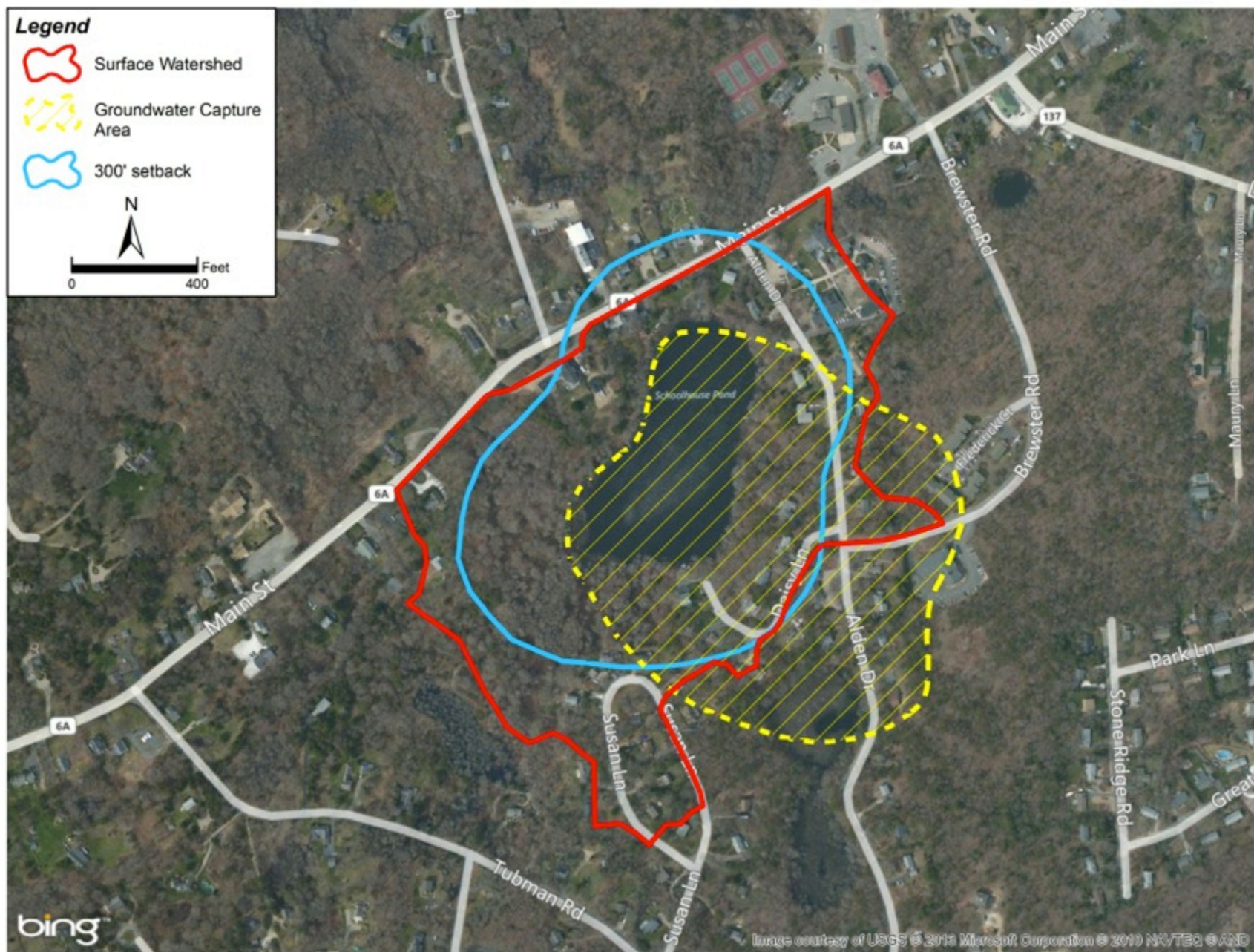


Current pond projects



Legend

-  Surface Watershed
-  Groundwater Capture Area
-  300' setback



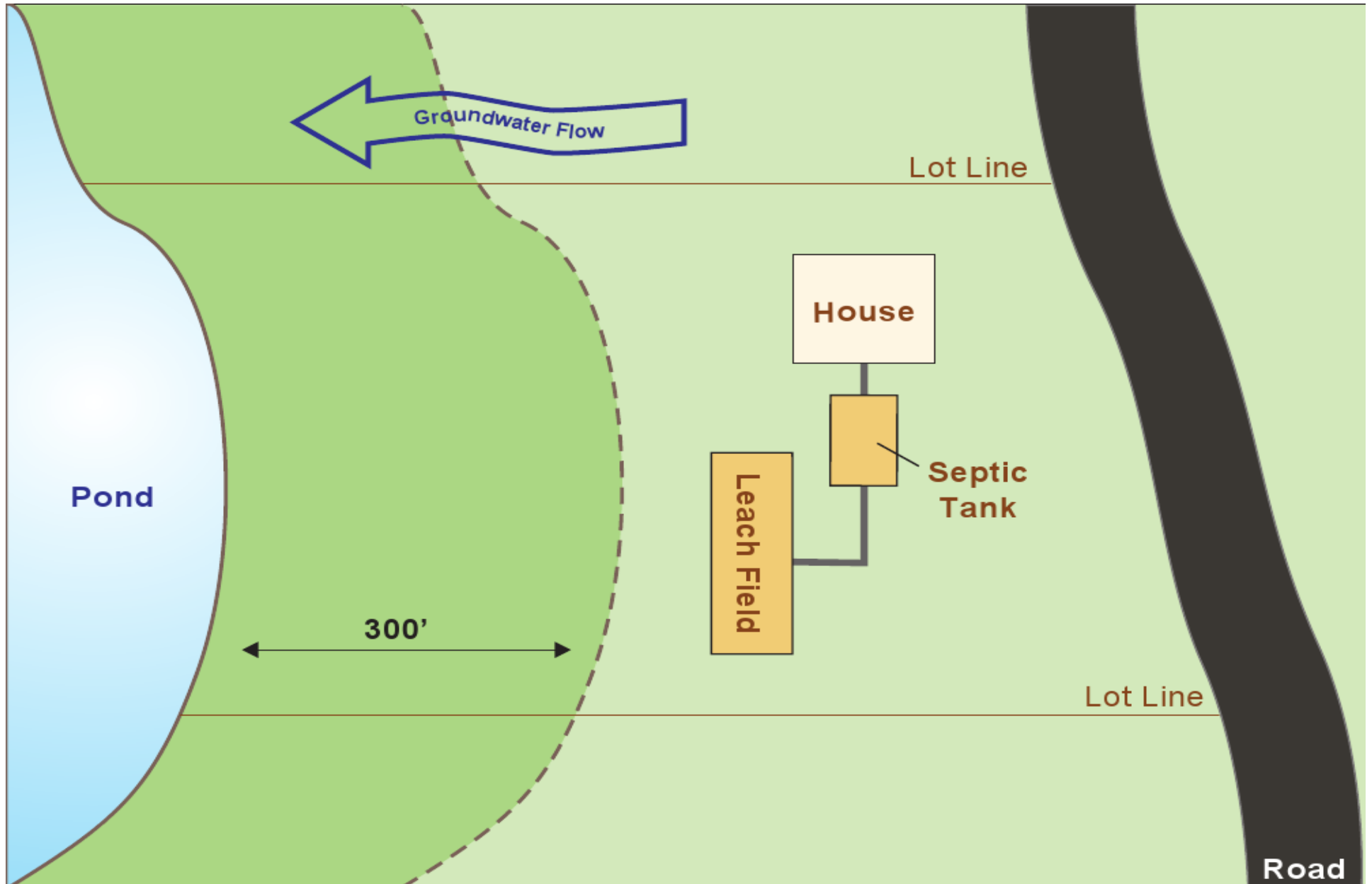
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Image courtesy of USGS © 2013 Microsoft Corporation © 2010 NAVTEQ © AND

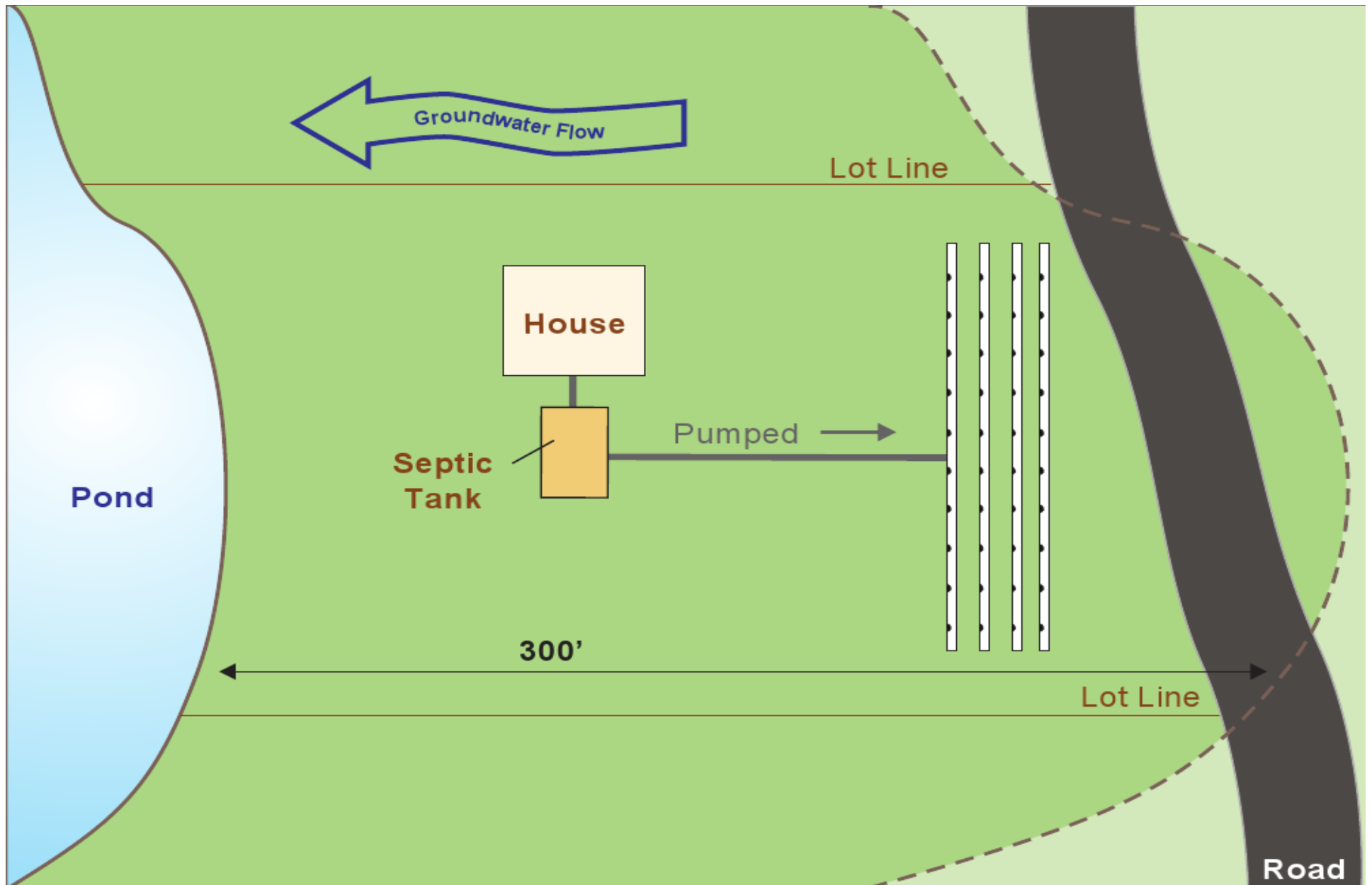
Vegetated Pond Buffers



Septic Management Near Ponds



Septic Management Near Ponds



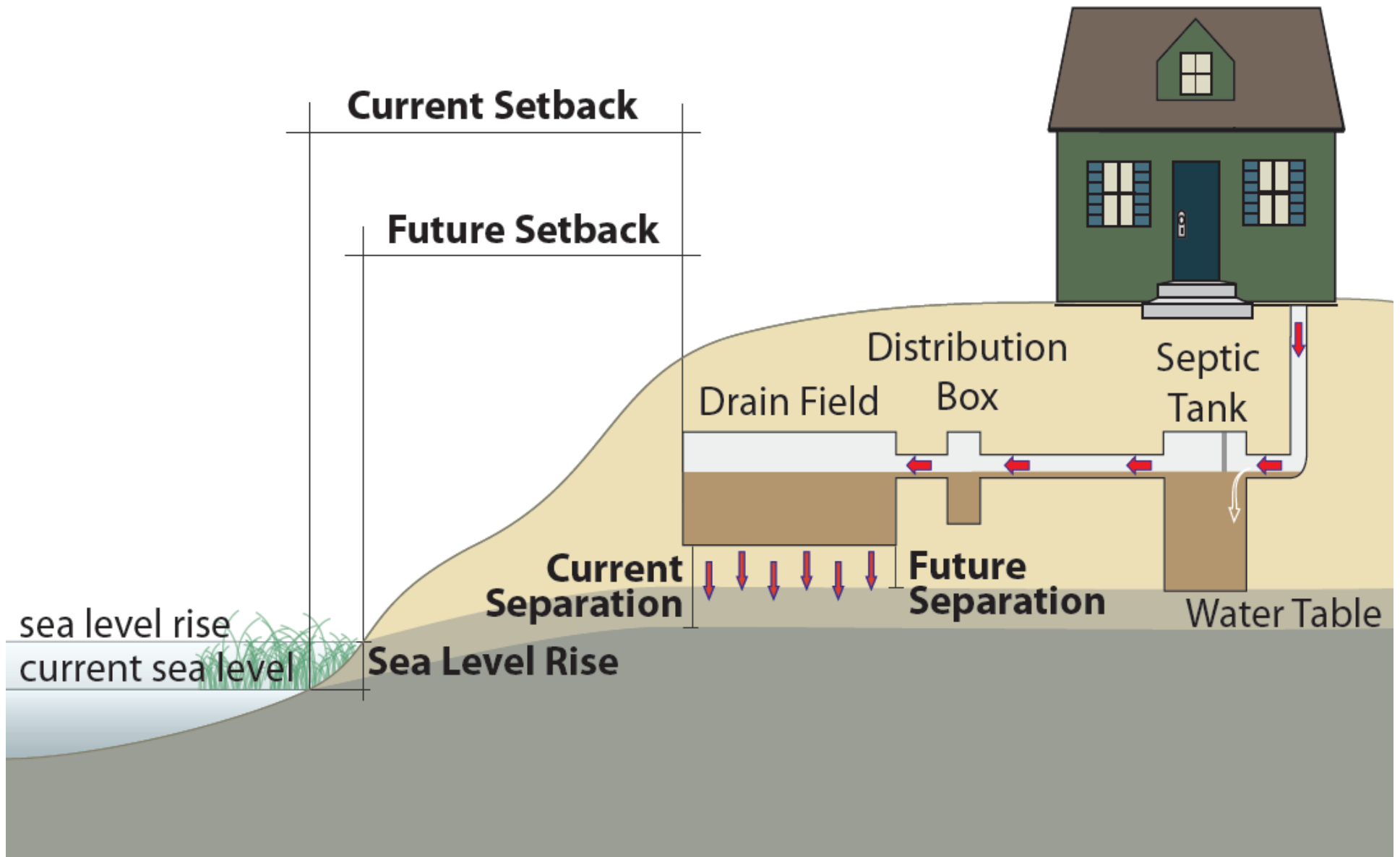


Golf Course Fertilizer Management

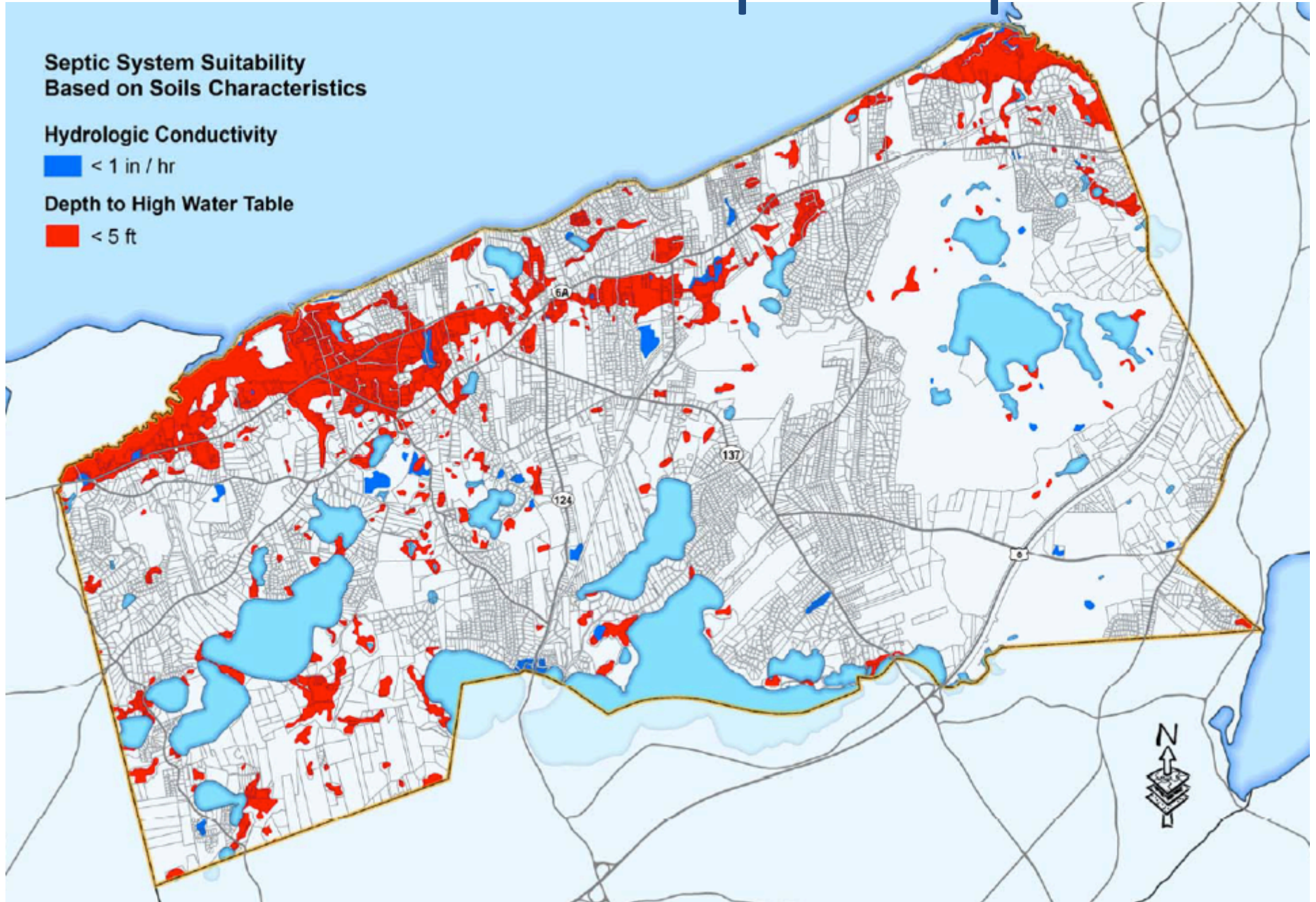
Voluntary Nitrogen Reductions Since MEP Model

Captain's Golf Course	2,050 lbs N/yr
Cape Cod National	200 lbs N/yr
Watershed Improvement Achieved (20% Leaching Rate)	2,250 lbs N/yr
Pleasant Bay Planning Area Nitrogen Reduction	3,000 – 3,100 lbs N/yr

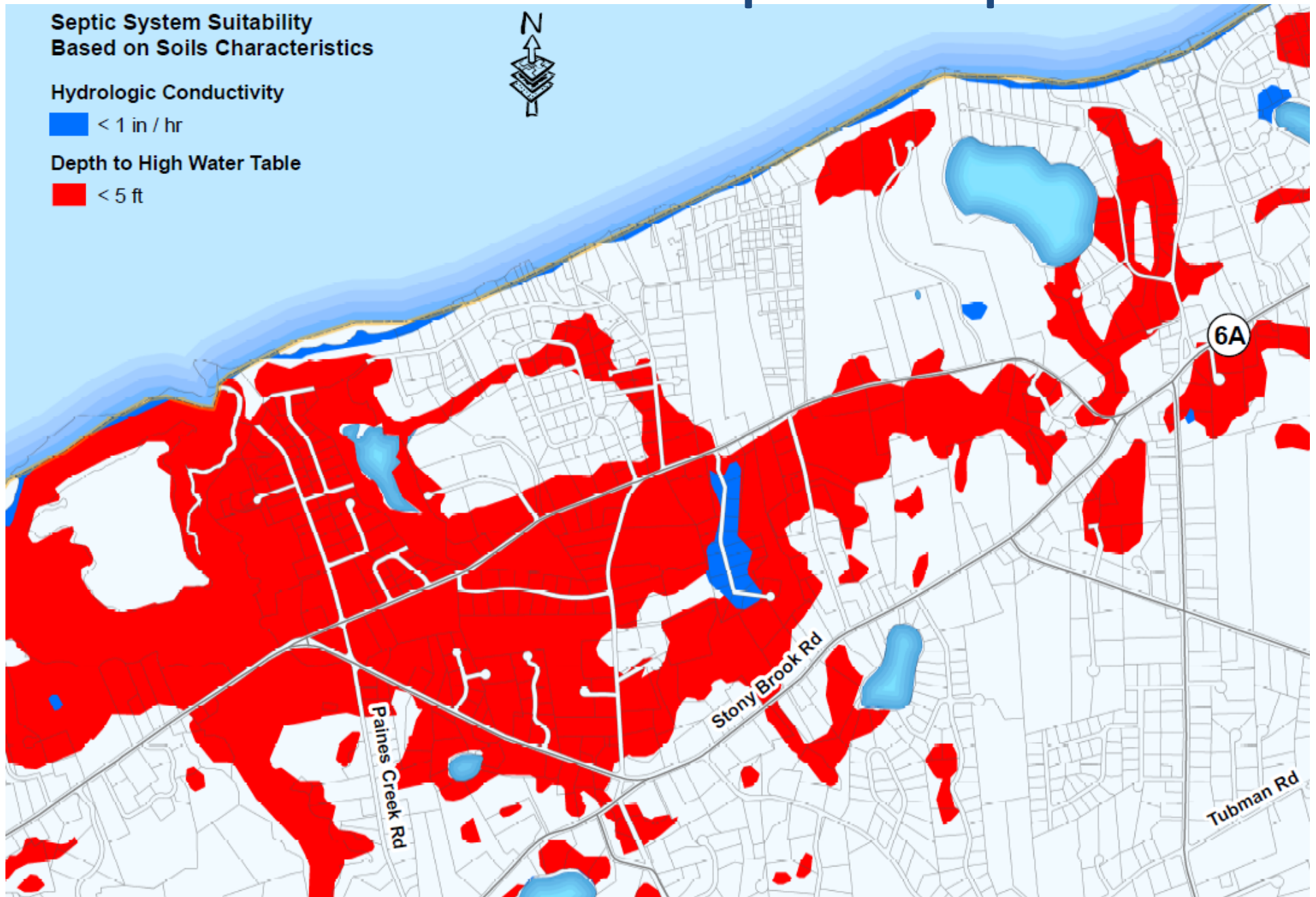
Sea Level Rise - Septic Impacts



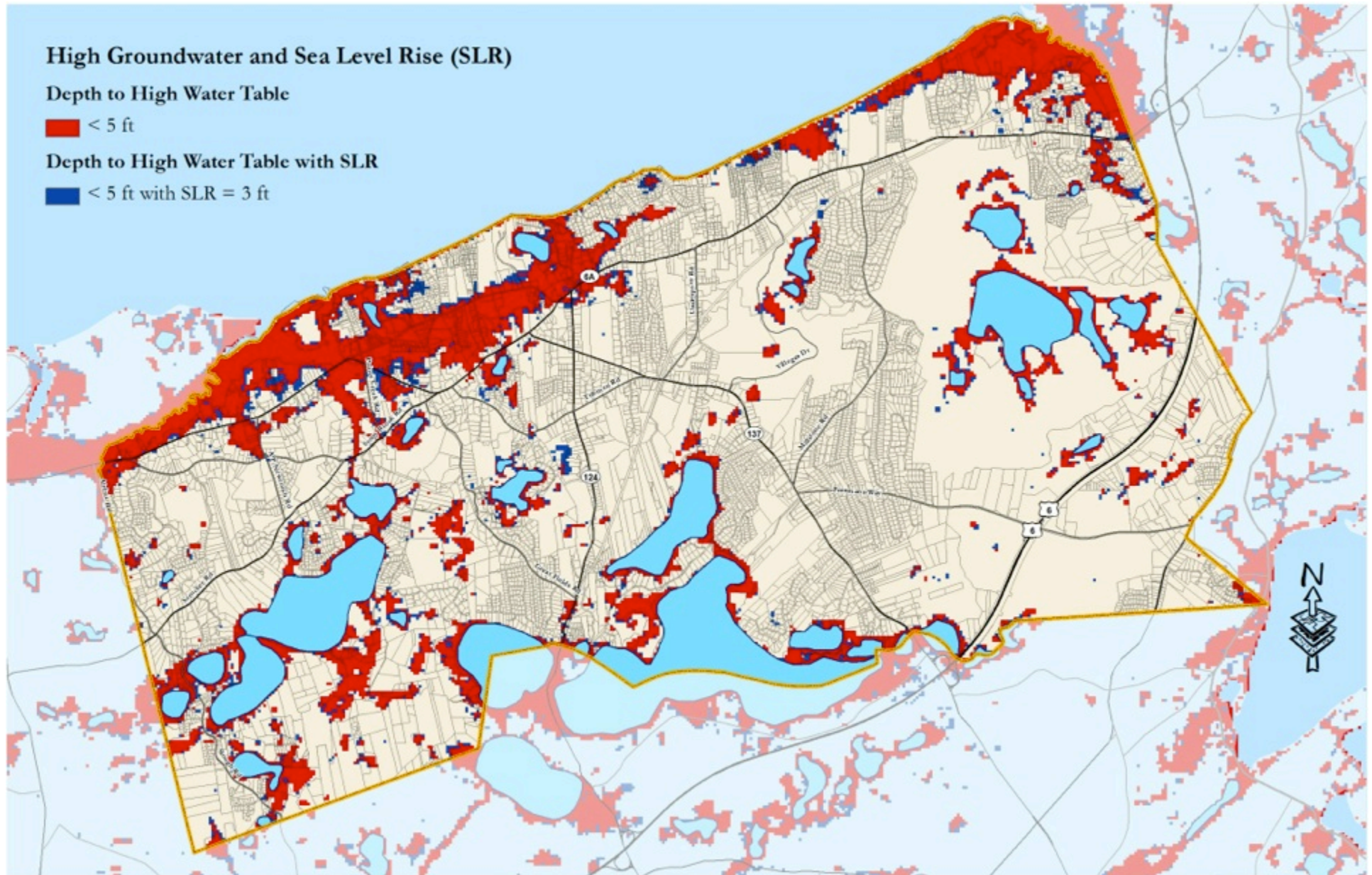
Sea Level Rise - Septic Impacts



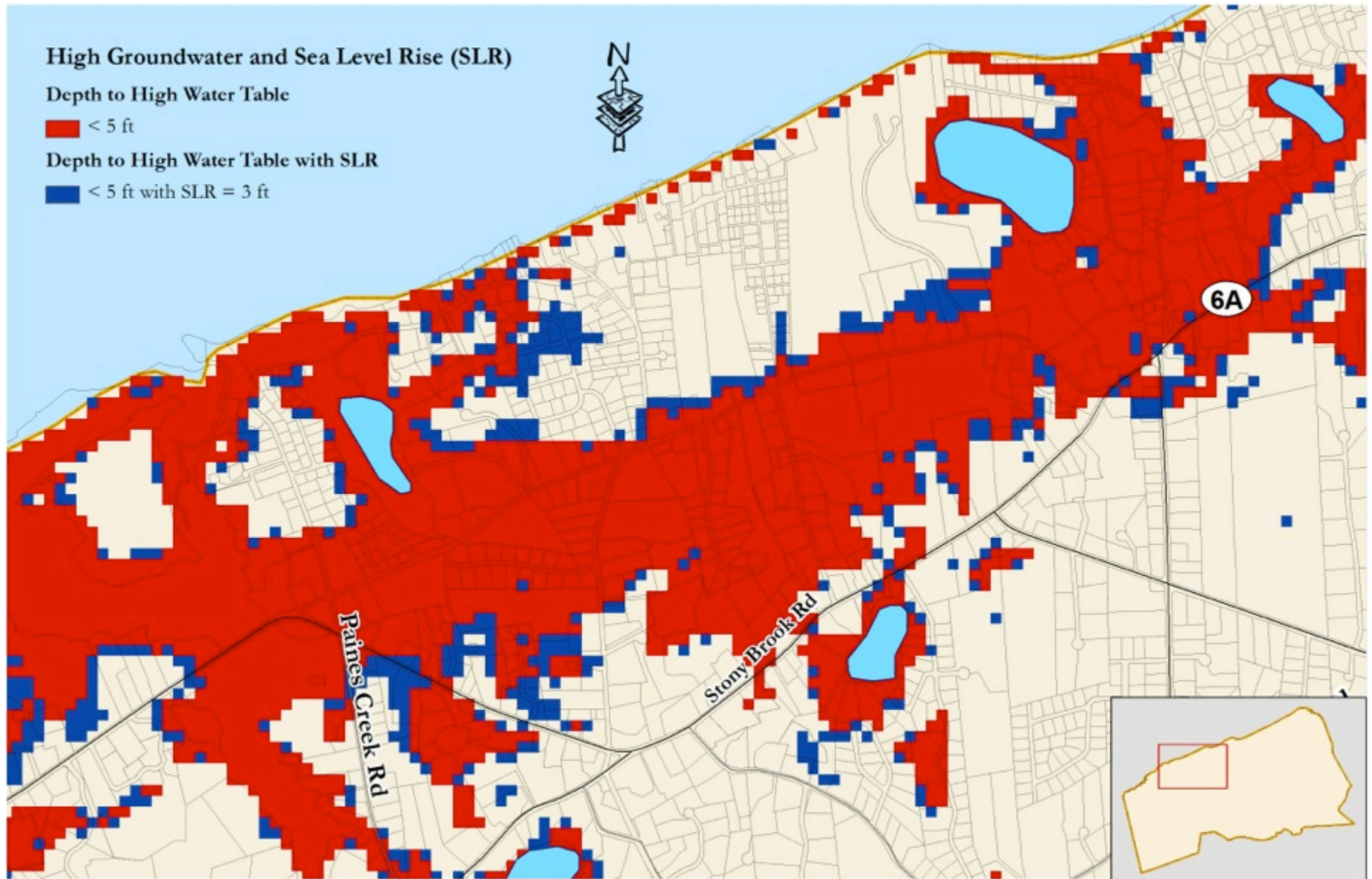
Sea Level Rise - Septic Impacts



Sea Level Rise - Septic Impacts



Sea Level Rise - Septic Impacts



Questions?

www.town.brewster.ma.us

Click on Water Planning Button

WATER PLANNING

