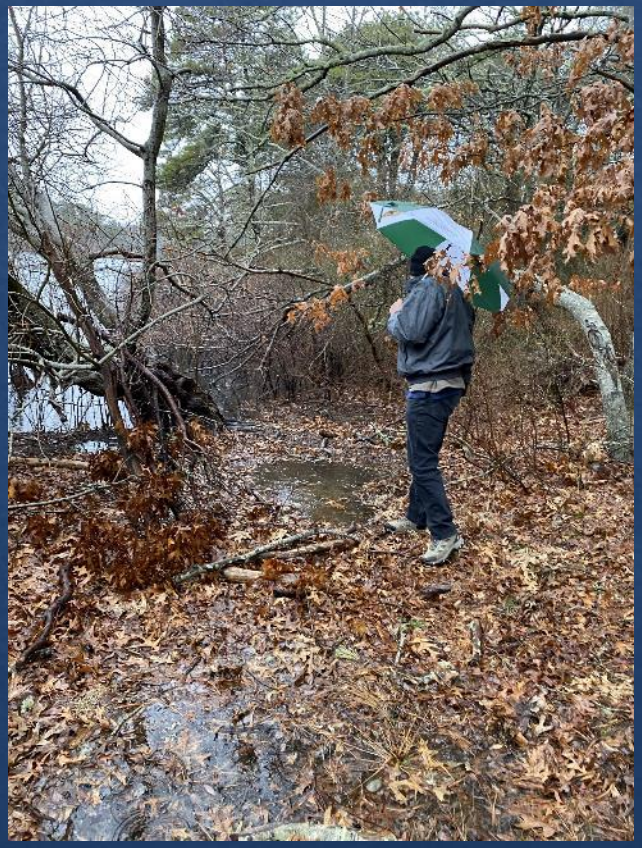
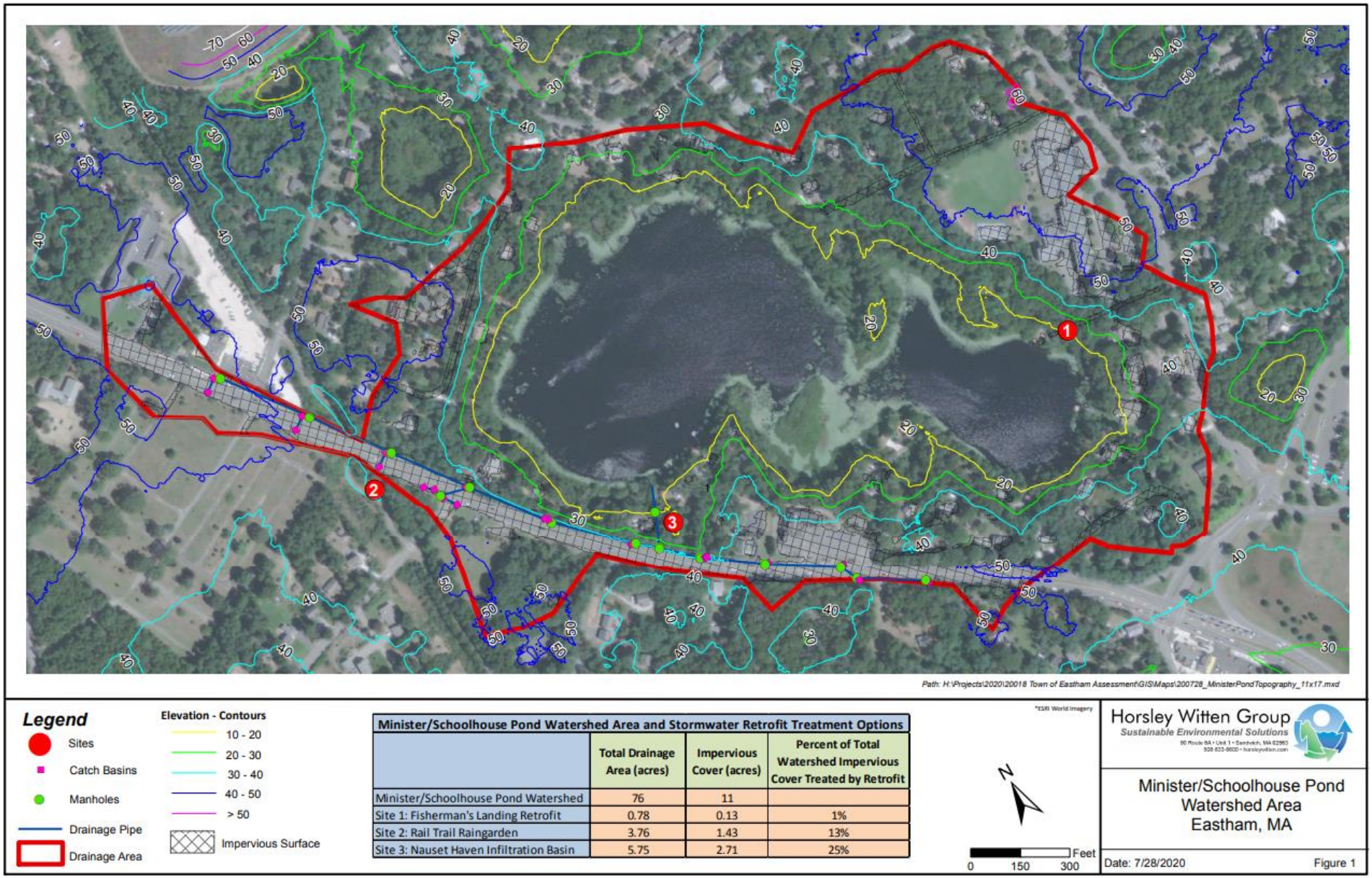
Eastham Minister/Schoolhouse Pond Stormwater Improvements



Eastham
MASSACHUSETTS

Horsley Witten Group

APCC
Association to
Preserve Cape Cod



Minister/Schoolhouse Pond Watershed Area and Stormwater Retrofit Treatment Options			
	Total Drainage Area (acres)	Impervious Cover (acres)	Percent of Total Watershed Impervious Cover Treated by Retrofit
Minister/Schoolhouse Pond Watershed	76	11	
Site 1: Fisherman's Landing Retrofit	0.78	0.13	1%
Site 2: Rail Trail Raingarden	3.76	1.43	13%
Site 3: Nauset Haven Infiltration Basin	5.75	2.71	25%

Horsley Witten Group
Sustainable Environmental Solutions

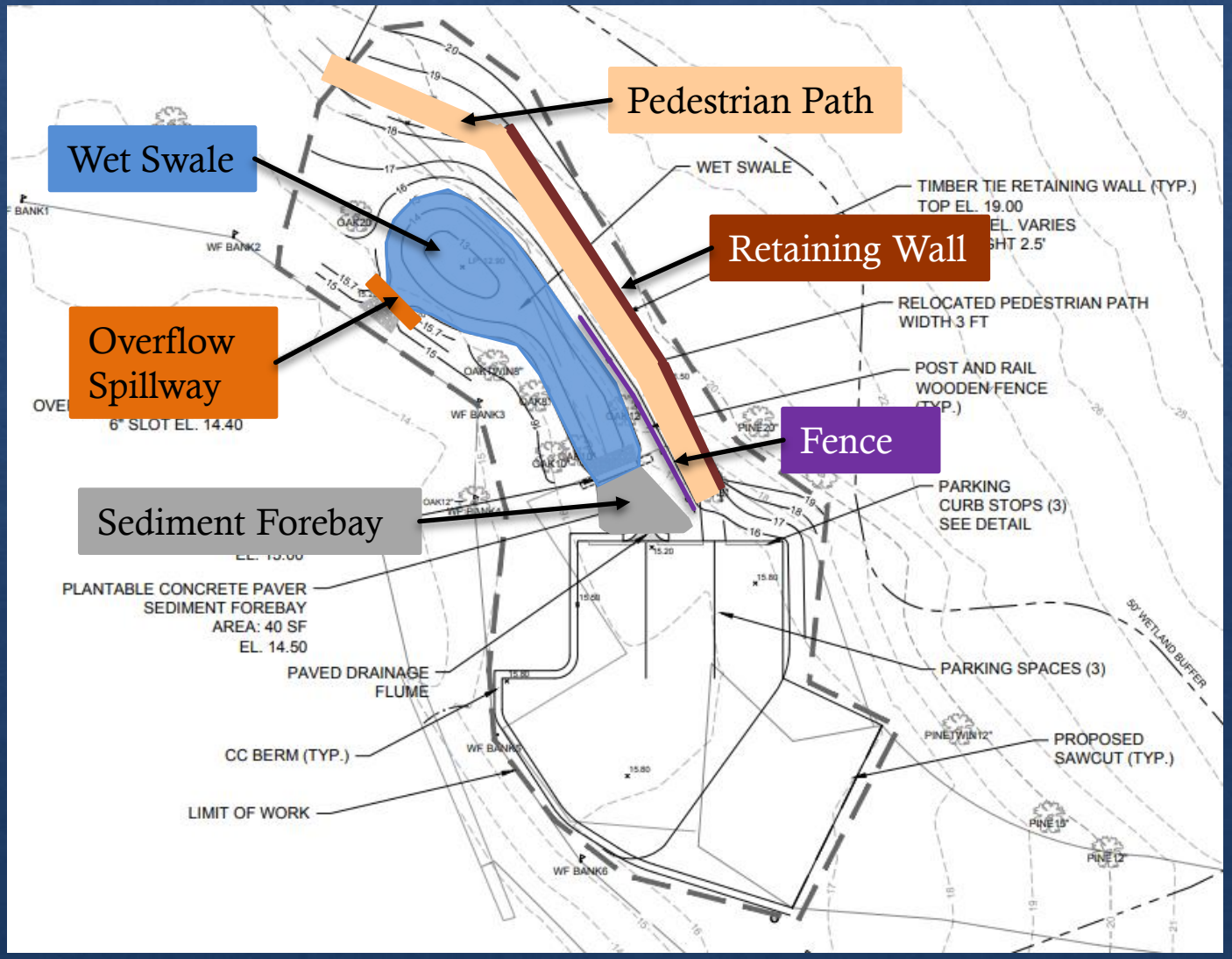
Minister/Schoolhouse Pond Watershed Area
Eastham, MA

Date: 7/28/2020 Figure 1

Site 1: impervious cover treated is 1%

Site 1: Fisherman's Landing

Stormwater retrofit: Wet Swale



Retrofit Overview

Benefits

- Treats stormwater before discharge into the Pond
- Reduces ponding of water
- Preserves character of the site

Site Changes

- Establishment of three parking spaces
- Slight relocation of pedestrian path
- Fence and retaining wall for obvious path entrance
- Public signage for education

Example Wet Swales

Bare Hill Pond, Harvard, MA

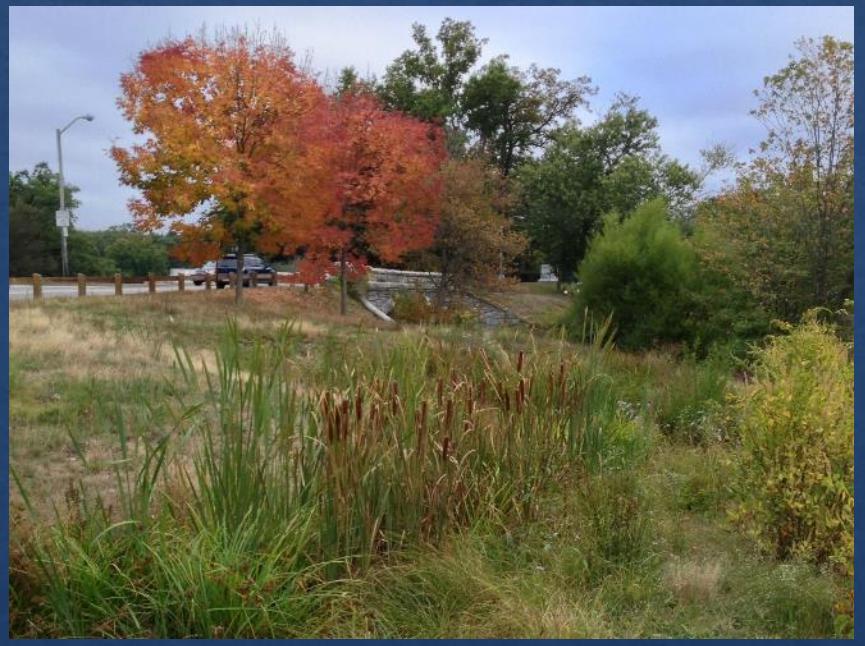
After Construction

2 Years Later

Example Wet Swales

Roger Williams Park, Rhode Island

After Construction



2 Years Later

Maintenance

- Town will manage maintenance.
- Inspect and clean the sediment forebay at least annually and perhaps twice per year (due to the sediment loading coming down Park Street) and after large storms.
- Inspect the swale slope stability twice per year.
- Removal of trash and debris in the swale twice per year.

Other Considerations

- Town-owned property
- Project currently at the permitting stage
- Construction possible for this fall
- Explore future stormwater opportunities with the Elementary school

Path: H:\Projects\2020\20018 Town of Eastham Assessment\GIS\Maps\200728_MinisterPondTopography_11x17.mxd

Legend

- Sites
- Catch Basins
- Manholes
- Drainage Pipe
- Drainage Area

Elevation - Contours

- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- > 50
- Impervious Surface

Minister/Schoolhouse Pond Watershed Area and Stormwater Retrofit Treatment Options

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*ESRI World Imagery

N

Feet
0 150 300

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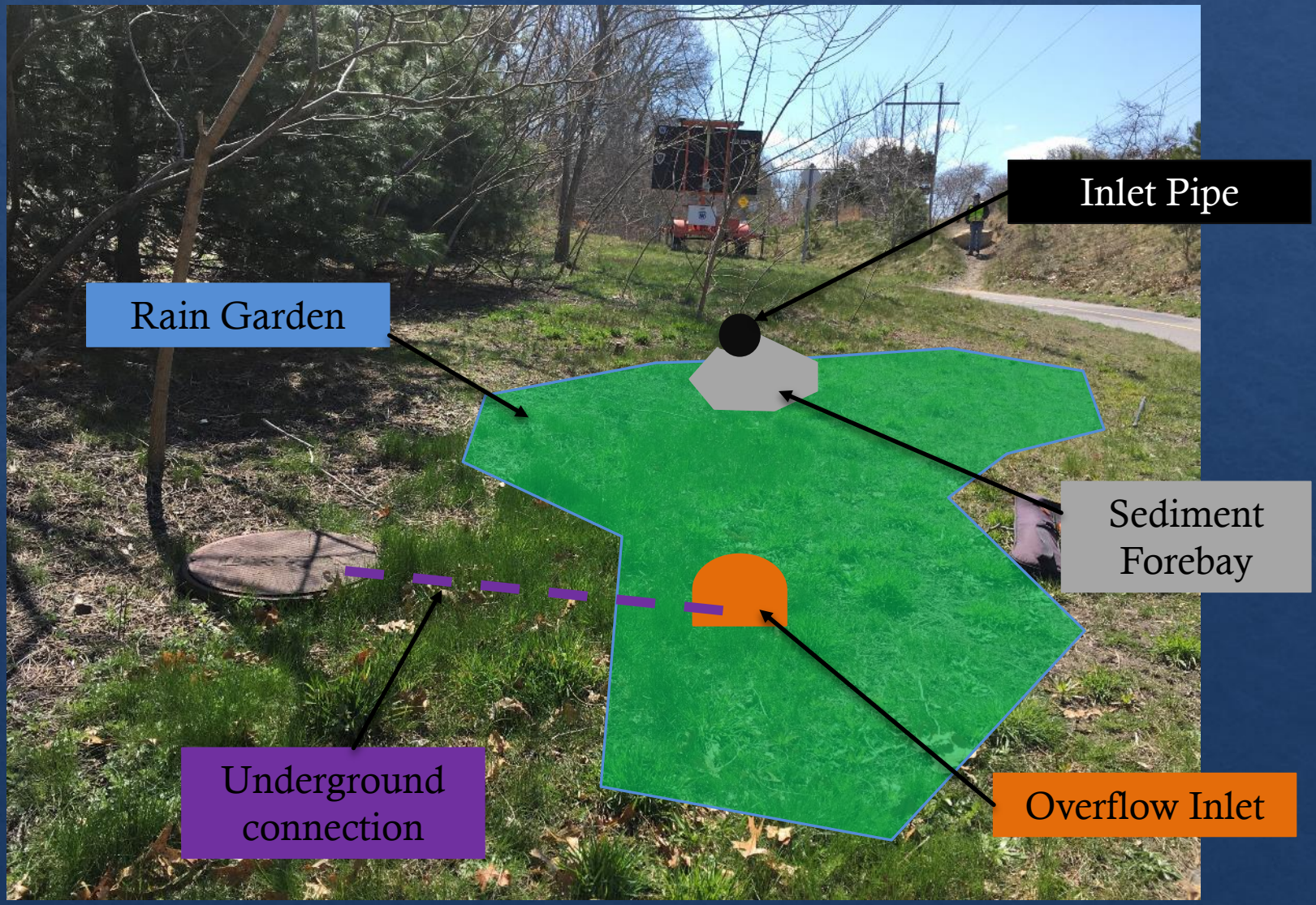
Minister/Schoolhouse Pond Watershed Area
Eastham, MA

Date: 7/28/2020 Figure 1

Site 2: impervious cover treated is 13%

Site 2: Rail Trail

Stormwater retrofit: Raingarden and leaching catch basin



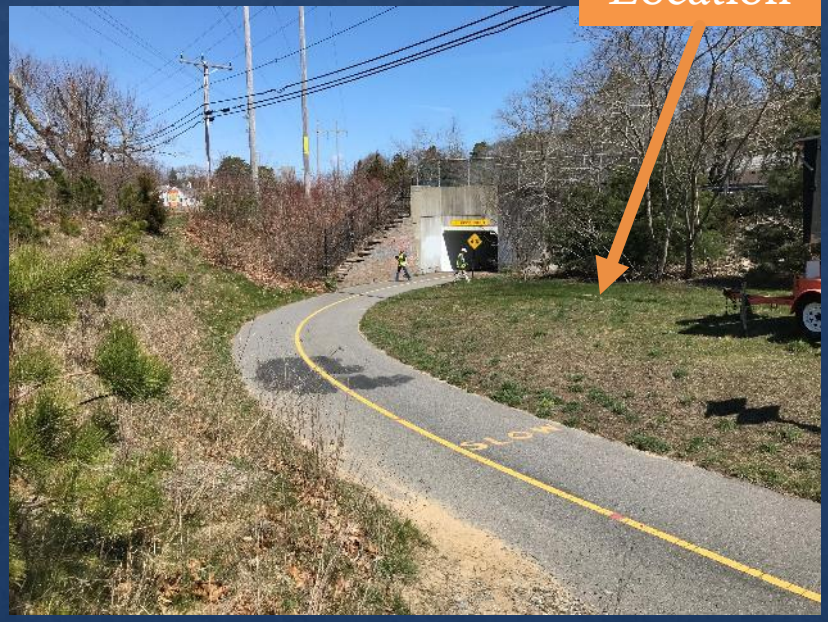
Retrofit Overview

Benefits

- Takes advantage of surface and subsurface opportunities
- No discharge to the Pond – treatment provided far from current discharge point
- Connects into existing structure
- Great educational opportunity!

Existing Leaching Catch Basin

Proposed Location

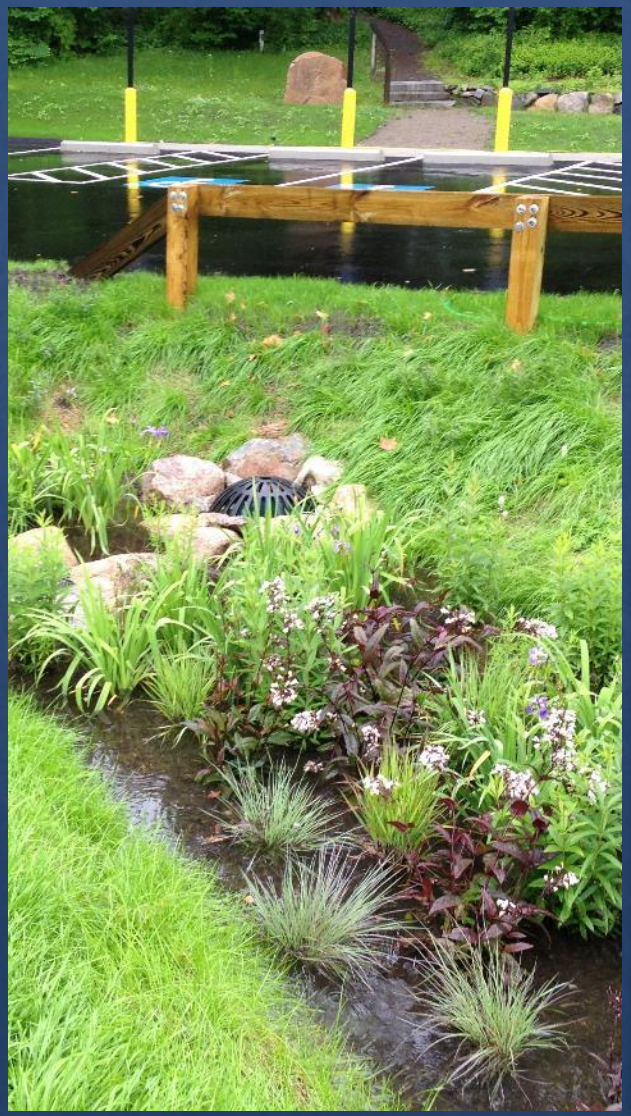


Example Rain Gardens

Osterville Library

Walton's Cove, Hingham

Example Rain Gardens



Sandwich Public Library

Maintenance

- Maintenance done by DCR or Town.
- Inspect and remove trash annually.
- Prune, or remove and replace any dead vegetation annually.
- Leaching catch basins need to be inspected regularly to remove trash and debris.
- Since there is an existing leaching catch basin at this site, DCR is familiar with the maintenance of leaching catch basins.

Other Considerations

- Site operated by DCR: need to coordinate with DCR and obtain approval to allow for construction access as well as access for long-term maintenance
- Educational signage

Path: H:\Projects\2020\20018 Town of Eastham Assessment\GIS\Maps\200728_MinisterPondTopography_11x17.mxd

Legend

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N

0 150 300 Feet

Horsley Witten Group
Sustainable Environmental Solutions

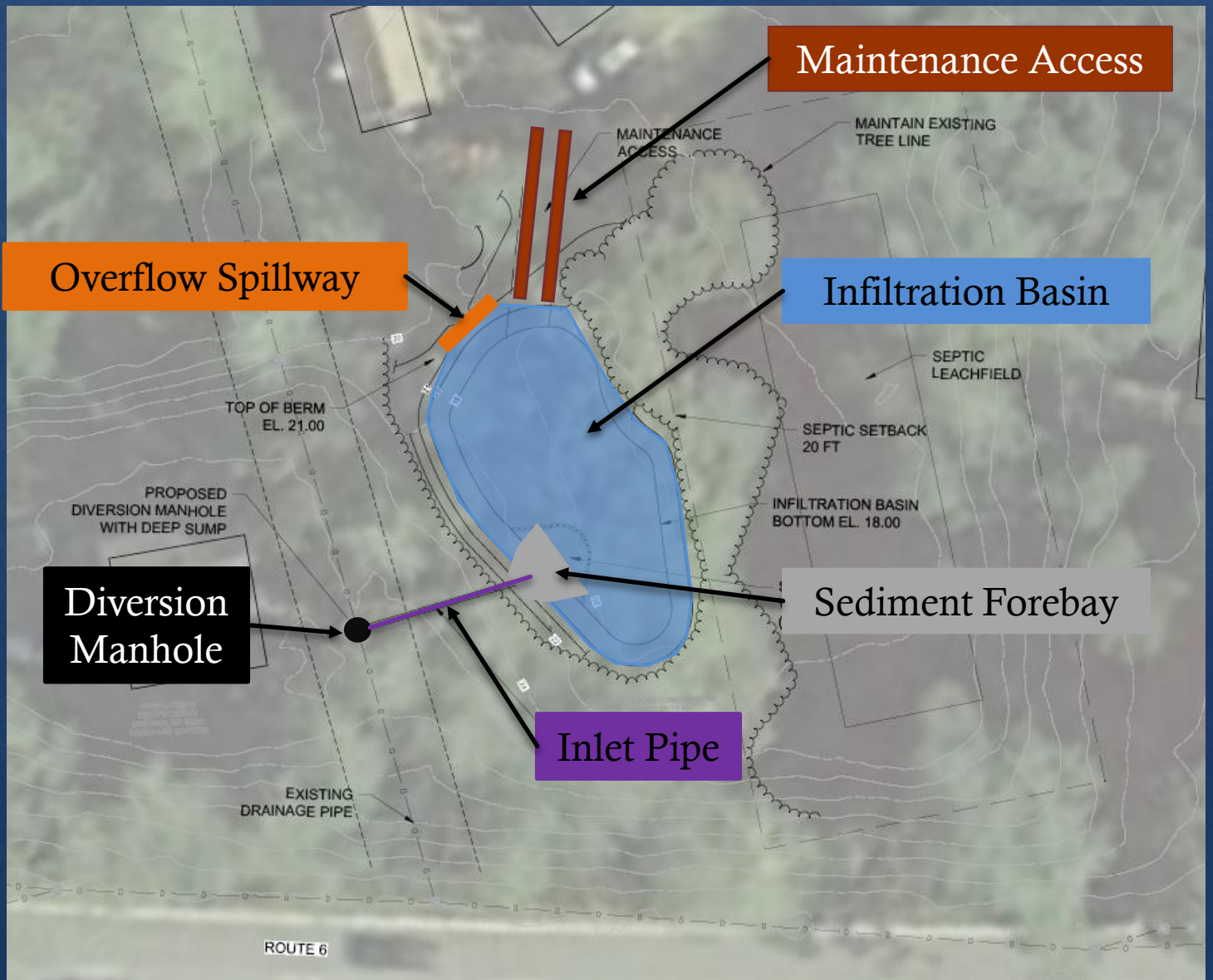
Minister/Schoolhouse Pond Watershed Area
Eastham, MA

Date: 7/28/2020 Figure 1

Site 3: impervious cover treated is 25%

Nauset Haven Condominiums

Stormwater retrofit: Infiltration Basin



Retrofit Overview

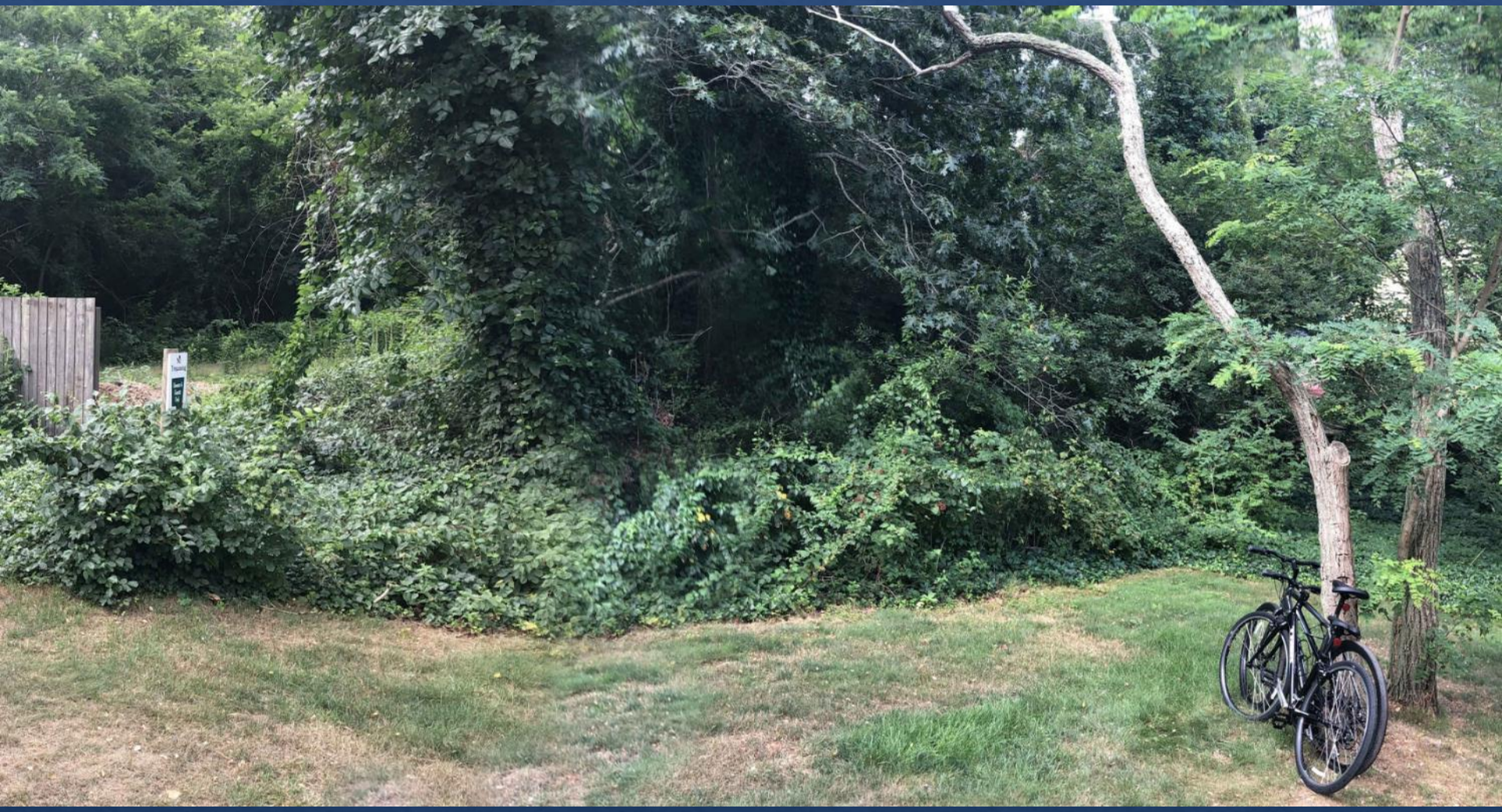
Benefits

- Treats the largest volume of stormwater of all options discussed
- Treats stormwater before discharging to the Pond
- Preserves character of the site
- Offline practice, designed to drain in 24 hours

Site Changes

- Open basin beside the leach field
- Preservation of large trees
- Site access for maintenance

Current View



Future View

Example Infiltration Basins

Barnstable Municipal Airport, Hyannis, MA

Canal Bluffs, Bourne, MA

Maintenance

- Maintenance managed by DOT.
- Inspect the system twice per year and after larger storms.
- Mow the berm and side slopes regularly.
- Inspect pretreatment devices twice per year. Clean-out of the pretreatment systems will likely be needed on an annual basis for the manhole, and likely every two years for the forebay.
- Maintenance access would be best done through the condo road.
- Maintenance performed during off-season (Spring and Fall).
- Aesthetic maintenance could be performed in part by condo association, if interested.

Other Considerations

- Approval and coordination with the condo property management to allow construction access as well as access for long-term maintenance.
- Construction would happen during the off-season.
- Vegetation will take 6 months to 1 year to establish.

Path: H:\Projects\2020\20018 Town of Eastham Assessment\GIS\Maps\200728_MinisterPondTopography_11x17.mxd

Legend

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*ESRI World Imagery

N

0 150 300 Feet

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508 833-6600 • horsleywitten.com

Minister/Schoolhouse Pond Watershed Area
Eastham, MA

Date: 7/28/2020 Figure 1

Total impervious cover treated by three practices: 39%

Thank you for listening!

Questions?

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