



WATER AS A RESOURCE OPPORTUNITIES AND COSTS

PAUL NIEDZWIECKI | CAPE COD COMMISSION

SCOTT HORSLEY | HORSLEY WITTEN GROUP



CAPE COD
COMMISSION



PAUL NIEDZWIECKI
Executive Director of the
Cape Cod Commission



CAPE COD
COMMISSION

MISSION OF THE CAPE COD COMMISSION



...To protect the unique values and quality of life on cape cod by coordinating a balanced relationship between environmental protection and economic progress.





INVEST IN INFORMATION

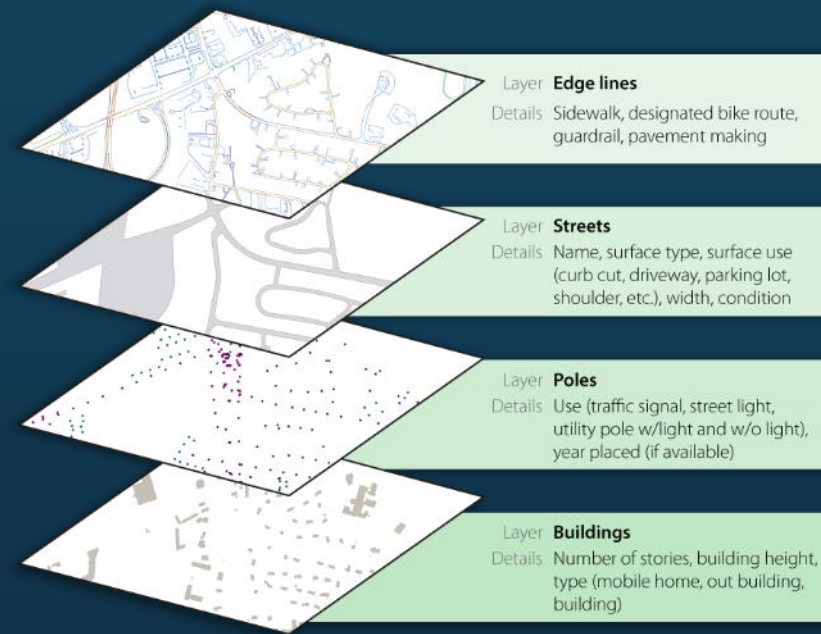


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PLANIMETRICS

Points, lines and polygons representing features on the ground derived through 3D interpretation of aerial photography





STORMWATER INFRASTRUCTURE MAPPING

Beginning a region-wide inventory of all stormwater assets to add value and assist in the planning process

IMPERVIOUS SURFACE COVER

Over **50** square miles of
Cape Cod are covered with
impervious Surface

This represents nearly
13% of total land area



Source: MassGIS



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STORMWATER + **WATER** + WASTEWATER



MS4 PERMIT AND THE 208 PLAN

GRANT FINANCING



EPA – Hyannis Stormwater BMP



EPA – Chatham BMP Retrofit



REGIONAL COLLABORATION



STORMWATER UTILITY/STORMWATER COLLABORATIVE

- Cape Cod Coastal Resource Committee subgroup looking to form Stormwater Collaborative
- Modeled after County Dredge program
- Increased purchasing power for large expenditures



FINANCING RESOURCES



AMERICORPS
Current grant funding
supports MS4
compliance for towns

Web Resource: Funding Stormwater Efforts

capecodstormwater.wordpress.com/stormwater-financing-mechanisms/

- Metropolitan Area Planning Council (MAPC): Funding Stormwater Management
- MAPC: Stormwater Financing / Starter Kit
- New England Environmental Finance Center: Stormwater Utility Fees – Considerations & Options for Interlocal Stormwater Working Group
- WaterVision, LLC: Stormwater Program Cost Evaluation for Massachusetts



View of the newly installed bioretention swale at the Cotuit Town Dock (Oyster Place) parking lot



SCOTT HORSLEY

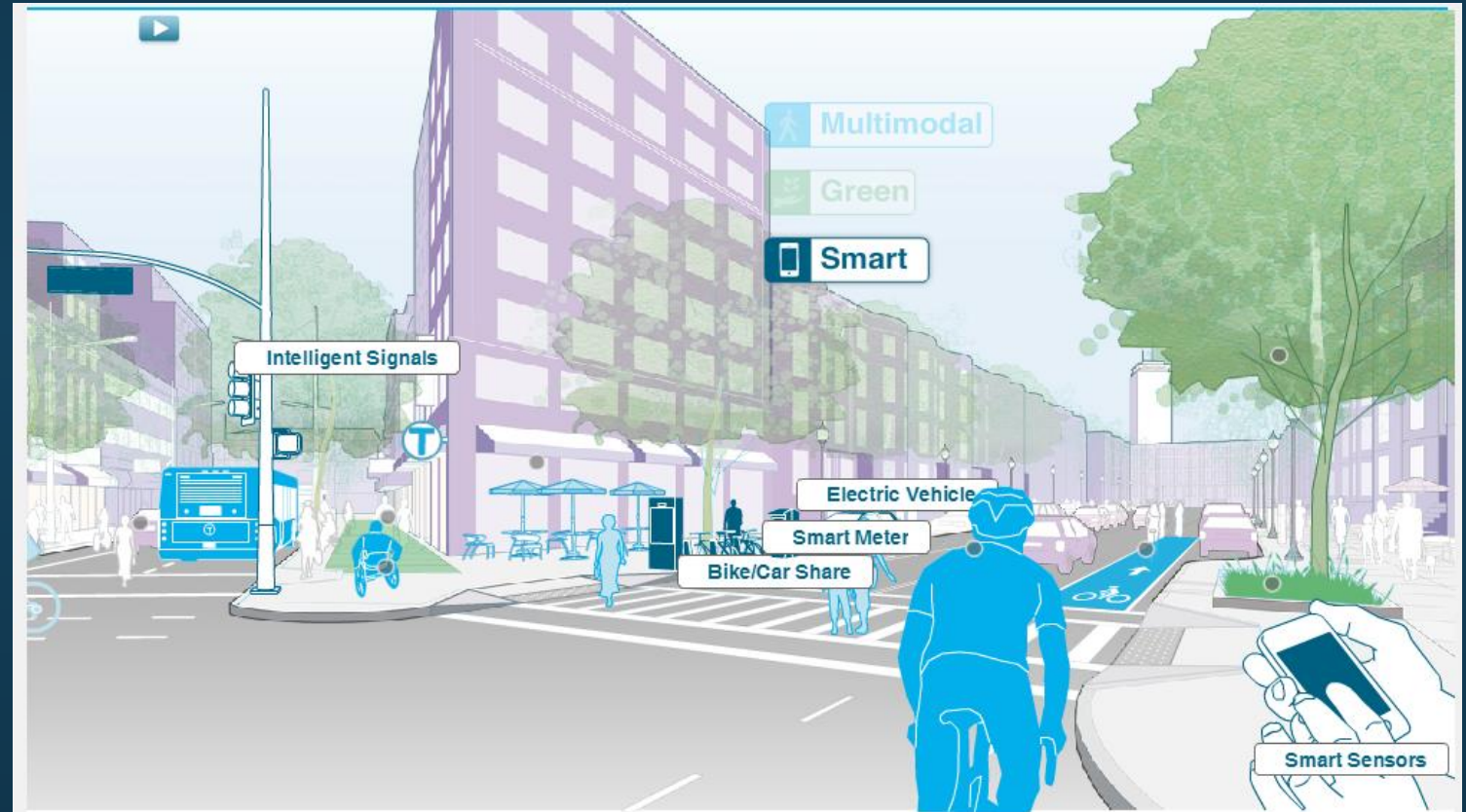
Founder, Horsley Witten Group, Inc.
Consultant to Cape Cod Commission



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PLANNING COMPREHENSIVELY

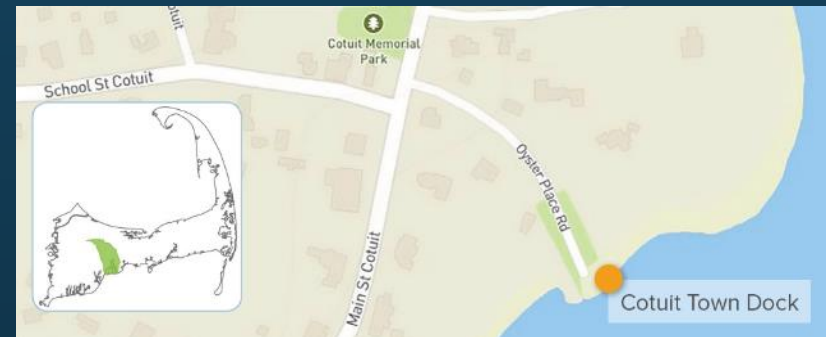
Realize cost savings by planning for stormwater improvements in concert with other projects and required maintenance



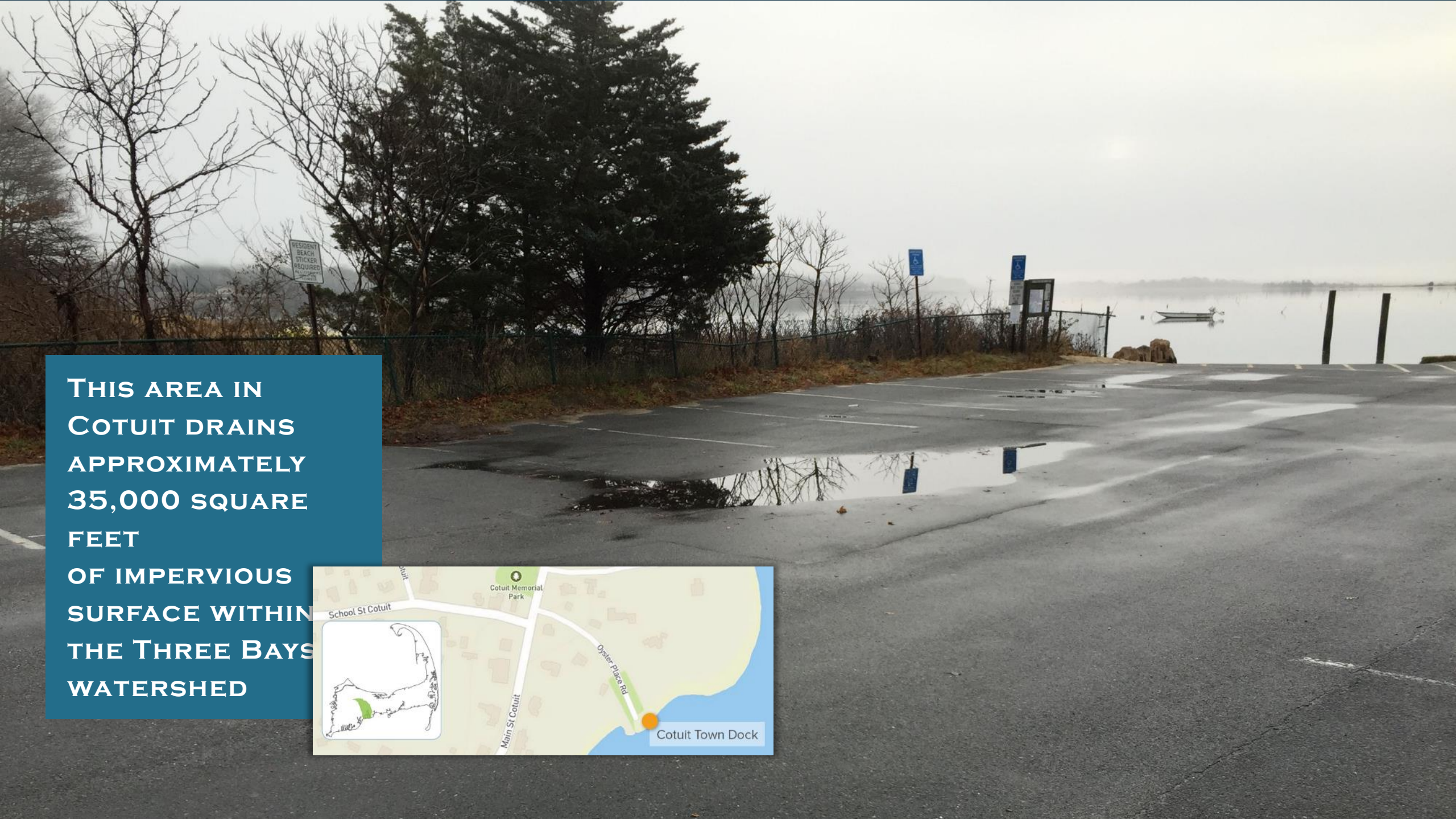
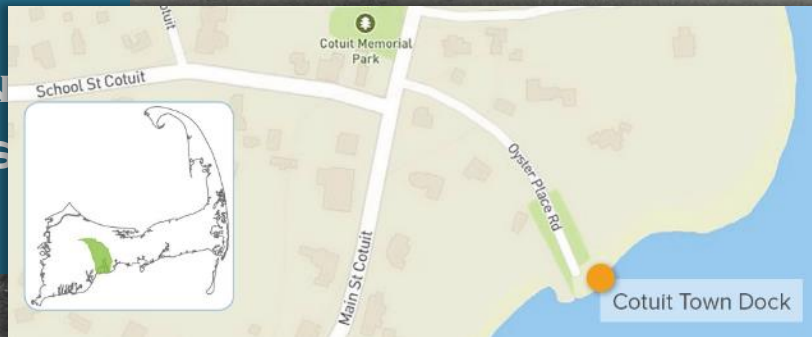


COTUIT TOWN DOCK

Bioretention swale installation with solar-powered irrigation system to optimize nitrogen removal



**THIS AREA IN
COTUIT DRAINS
APPROXIMATELY
35,000 SQUARE
FEET
OF IMPERVIOUS
SURFACE WITHIN
THE THREE BAYS
WATERSHED**



MULTIPLE BENEFITS

United States Environmental Protection Agency (EPA)
National Pollutant Discharge Elimination System (NPDES)

GENERAL PERMITS FOR STORMWATER DISCHARGES FROM
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS
IN MASSACHUSETTS

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

ce with the provisions of the Clean Water Act (CWA), as amended (33 U.S.C. 1362), and the Massachusetts Clean Waters Act, as amended (M.G.L. Chap.21 §§ 26-53), any separate storm sewer system whose system:

**MS4
COMPLIANCE**



**PATHOGEN
REMOVAL**



**NITROGEN
REDUCTION**



AESTHETICS



COST SHARING

PUBLIC-PRIVATE PARTNERSHIP



**Town of
Barnstable**

THREE BAYS
PRESERVATION, INC.

**Three Bays
Preservation, Inc.**



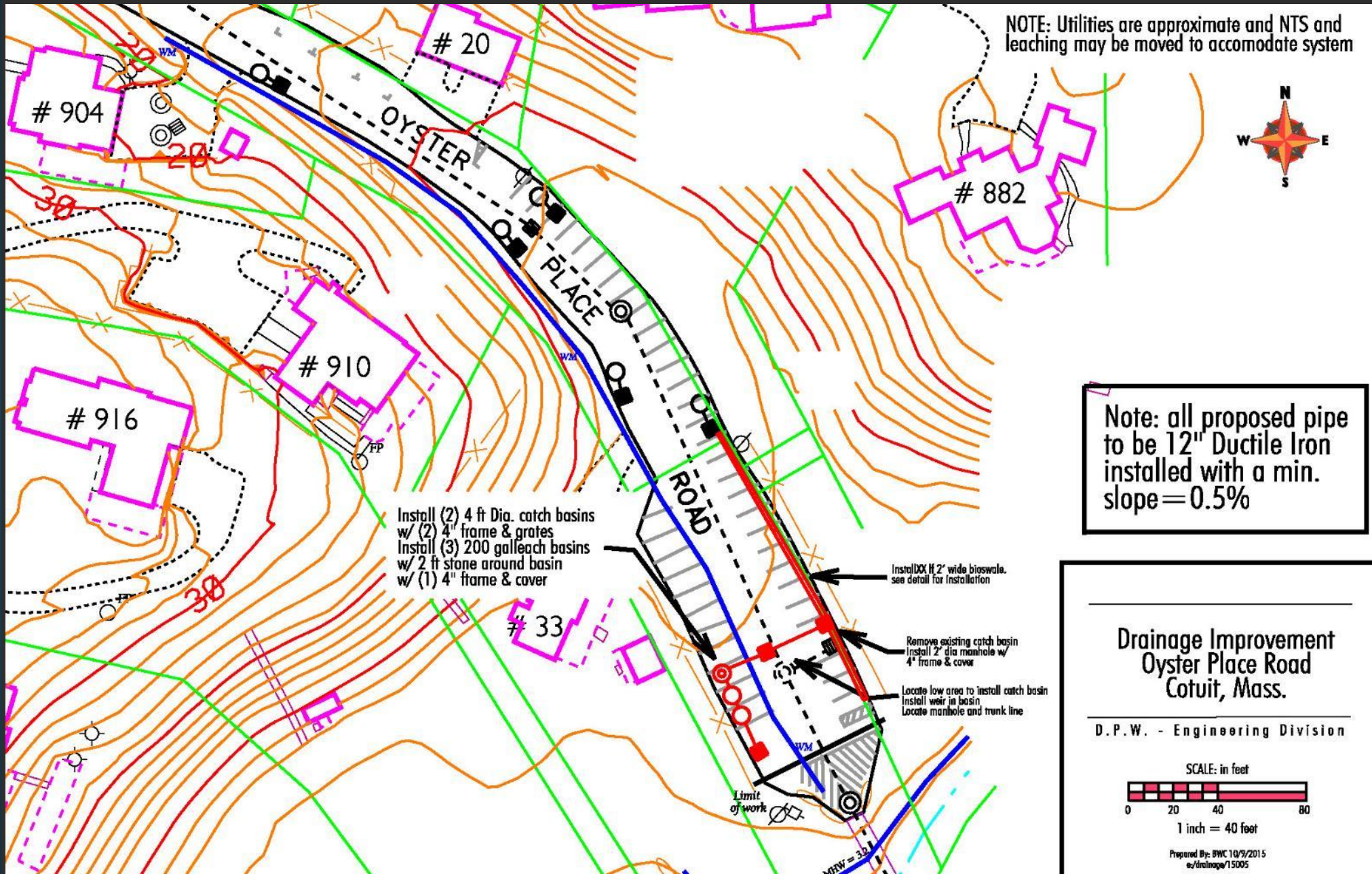
**Cotuit Garden
Club**

PROJECT INSTALLATION

ONGOING
MAINTENANCE



COTUIT TOWN DOCK PROJECT



STORMWATER TREATMENT SYSTEM

COTUIT TOWN DOCK PROJECT

① Stormwater inflow from parking lot.



② Stormwater distributed through rain garden via a subsurface perforated pipe.



③ Stormwater infiltrates downward to underlying groundwater from distribution pipe.



④ Groundwater moves towards bay at approximately 1 foot/day.



⑤ Groundwater pumped with solar-powered water pump and is distributed back to rain garden via subsurface drip irrigation for additional treatment.

DRIP IRRIGATION

WATER TABLE

SOLAR-POWERED WATER PUMP



COTUIT TOWN DOCK PROJECT



Cape Cod Academy





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TOWN
DOCK
PROJECT



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WATER AS A RESOURCE

OPPORTUNITIES AND COSTS

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