

Tech Panel

October 25, 2013

Approaches

Conventional



Photo credit: Waquoit Bay Reserve

WATERSHED MVP
MULTI-VARIANT PLANNER

Map Tools

Summary Legend

Map

Selection

Selection by Watershed
Watershed [All watersheds]
Allen Harbor
Barnstable Harbor
Bass River
Bassing Harbor/Ryders Cove
Clear

Base Map

Planning Scenarios

Data Summary

Summarize by Water Use
Existing Future Scenario

Chart

Show/Hide Legend

- Commercial
- Industrial
- Multi-Family Residential
- Other Development
- Other Non-Development
- Residential Condo/Apt
- Single Family Residential
- Vacant Development
- Vacant Non-Development

Results

Total Number of Properties Selected 7,171
Existing Sewered 3
Total Existing Water Use 1,015,835.58 g/day

Costs

Cape Cod Commission

Contact Us

Cape Cod Commission
3225 Main Street (Route 6A)
Barnstable, Massachusetts 02630
[\(508\) 362-3828](tel:(508)362-3828)
www.capecodcommission.org
Email Us

CAPE COD COMMISSION

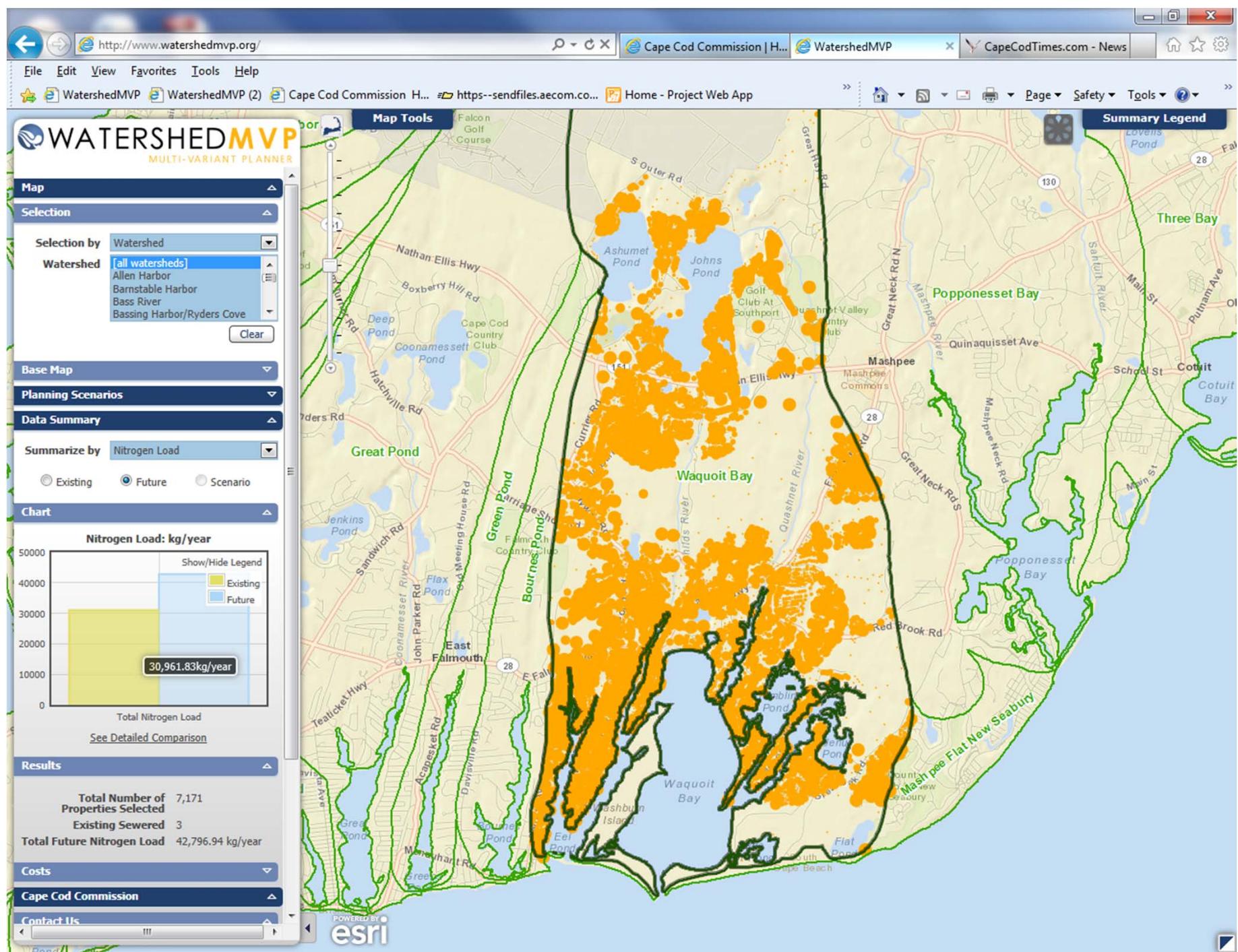
Nonamesset

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The map displays a complex network of green lines representing watershed boundaries, with numerous blue dots scattered across the land parcels, indicating selected properties. Key water bodies labeled include Barnstable Harbor, Pocasset River, Phinneys Harbor/Back River, Canal South, Sandwich Harbor, Scorton Harbor, Three Bay, Waquoit Bay, Popponesset Bay, Great Pond, Little Pond, and Bass River. Towns and roads are also clearly marked. A legend on the left provides a color key for different property types, and a pie chart summarizes the results of the selection process.

The figure is a screenshot of the Watershed MVP Multi-Variant Planner software. The interface is divided into several sections:

- Header:** Shows the URL <http://www.watershedmvp.org/>, the title "Cape Cod Commission | H...", the "WatershedMVP" logo, and other tabs like "CapeCodTimes.com - News".
- Left Sidebar:** Includes sections for "Map", "Selection", "Base Map", "Planning Scenarios", "Data Summary", "Chart", "Results", "Costs", and "Cape Cod Commission".
- Map Tools:** Located at the top of the main map area.
- Summary Legend:** Located in the top right corner of the map area.
- Map Content:** A detailed map of Cape Cod showing various water bodies (lakes and bays) and roads. Numerous green dots of varying sizes are scattered across the land areas, representing wastewater flow. Labels for specific locations include Nathan Ellis Hwy, Boxberry Hill Rd, Deep Pond, Coonamessett Club Pond, Hatchville Rd, Great Pond, Jenkins Pond, Sandwich Rd, Flax Pond, Meeting House Rd, John Parker Rd, East Falmouth, Quashnet River, Waquoit Bay, Bournes Pond, Green Pond, Ashumet Pond, Johns Pond, Golf Club At Southport, Quashnet Valley, Mashpee Commons, Mashpee Neck Rd, Main St, Putnam Ave, Cotuit Bay, and Three Bay. A large black polygon outlines a specific watershed area.
- Chart Section:** Displays a bar chart titled "Wastewater Flows: g/day" comparing "Existing" (yellow bar) and "Future" (blue bar) wastewater flows. The chart shows a total of 914,252.02g/day for the future scenario.
- Results Section:** Provides summary statistics:
 - Total Number of Properties Selected: 7,171
 - Existing Sewered: 3
 - Total Future Waste Water Flow: 1,243,297.22 g/day
- Costs Section:** Shows costs related to the selected properties.
- Cape Cod Commission Section:** Provides information about the commission.



http://www.watershedmvp.org/

Cape Cod Commission | H... WatershedMVP CapeCodTimes.com - News

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WatershedMVP WatershedMVP (2) Cape Cod Commission H... https--sendfiles.aecom.co... Home - Project Web App

Map Tools

WATERSHEDMVP

MULTI-VARIANT PLANNER

Map

Selection

Selection by Watershed [all watersheds] Allen Harbor Barnstable Harbor Bass River Bassing Harbor/Ryders Cove Clear

Base Map

Planning Scenarios

Data Summary

Summarize by Land Use Category Existing Future Scenario

Chart

Show/Hide Legend

- Commercial
- Industrial
- Multi-Family Residential
- Other Development
- Other Non-Development
- Residential Condo/Apt
- Single Family Residential
- Vacant Development
- Vacant Non-Development

77.97%

Results

Total Number of Properties Selected Existing Sewered

Costs

Cape Cod Commission

Contact Us

Cape Cod Commission 3225 Main Street (Route 6A) Barnstable, Massachusetts 02630 (508) 252-2000

esri

The screenshot shows the Watershed MVP software interface. On the left, there's a sidebar with various tabs like 'Map', 'Selection', 'Base Map', 'Planning Scenarios', 'Data Summary', 'Chart', 'Results', 'Costs', 'Cape Cod Commission', and 'Contact Us'. The 'Selection' tab is active, showing a dropdown for 'Watershed' with 'all watersheds' selected. Below it, there's a pie chart showing land use categories: Commercial (yellow), Industrial (light blue), Multi-Family Residential (dark red), Other Development (green), Other Non-Development (purple), Residential Condo/Apt (tan), Single Family Residential (blue), Vacant Development (orange), and Vacant Non-Development (dark green). The main right side of the screen is a map of the Cape Cod area, specifically the Mashpee and Waquoit Bay regions. The map is color-coded to represent different land use categories. A large area of blue represents Single Family Residential land use, while other areas are colored purple, green, and tan. The map also shows various water bodies like Great Pond, Green Pond, Bourne's Pond, Ashumet Pond, Johns Pond, and Waquoit Bay. Roads and place names are also visible.

http://www.watershedmvp.org/

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Map Tools

Map

Selection

Selection by Watershed [all watersheds] Allen Harbor Barnstable Harbor Bass River Bassing Harbor/Ryders Cove Clear

Base Map

Planning Scenarios

Data Summary

Summarize by Wastewater Treatment Type Existing Future Scenario

Chart

Show/Hide Legend Septic Sewered

Results

Total Number of Properties Selected Existing Sewered 7,171 3

Costs

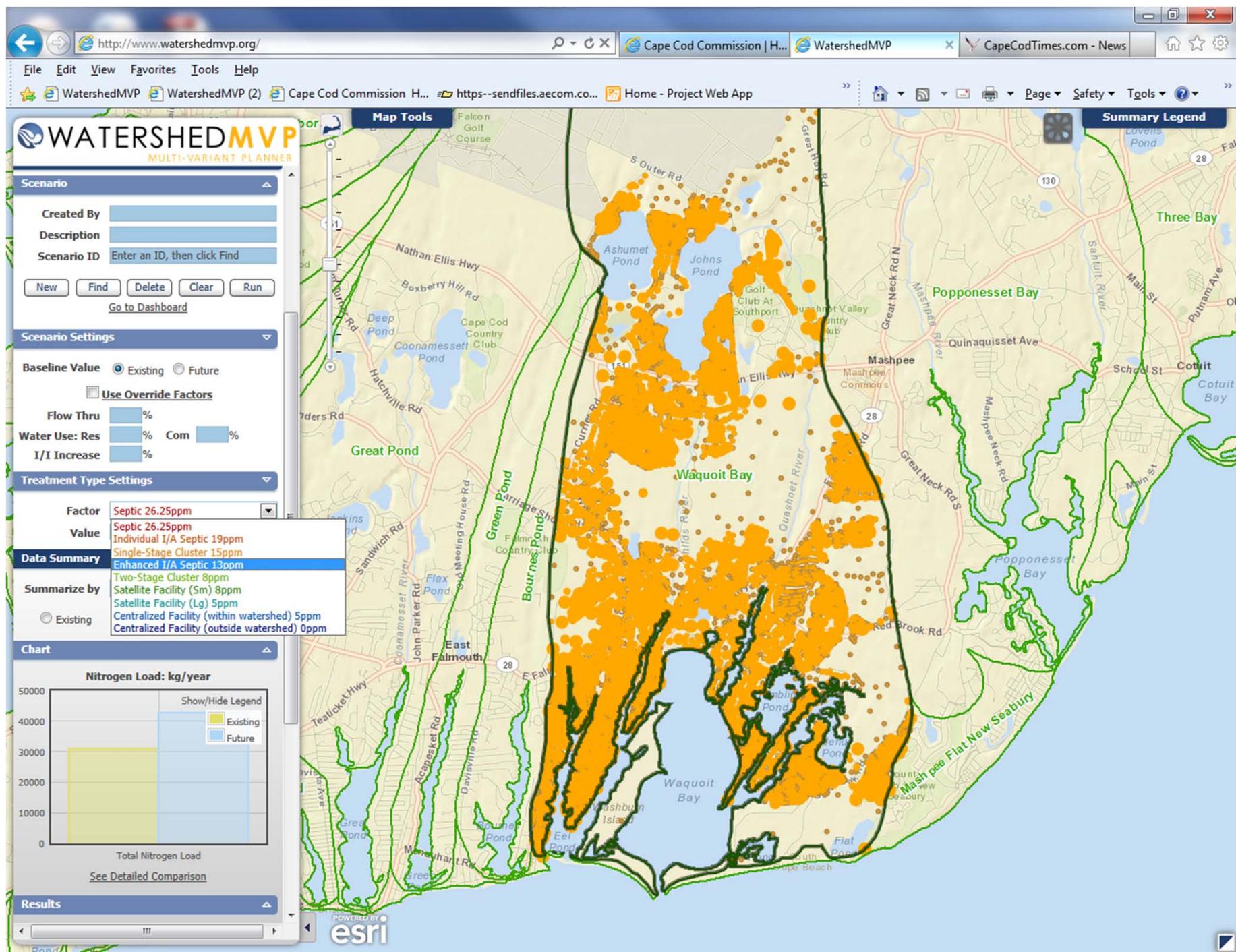
Cape Cod Commission

Contact Us

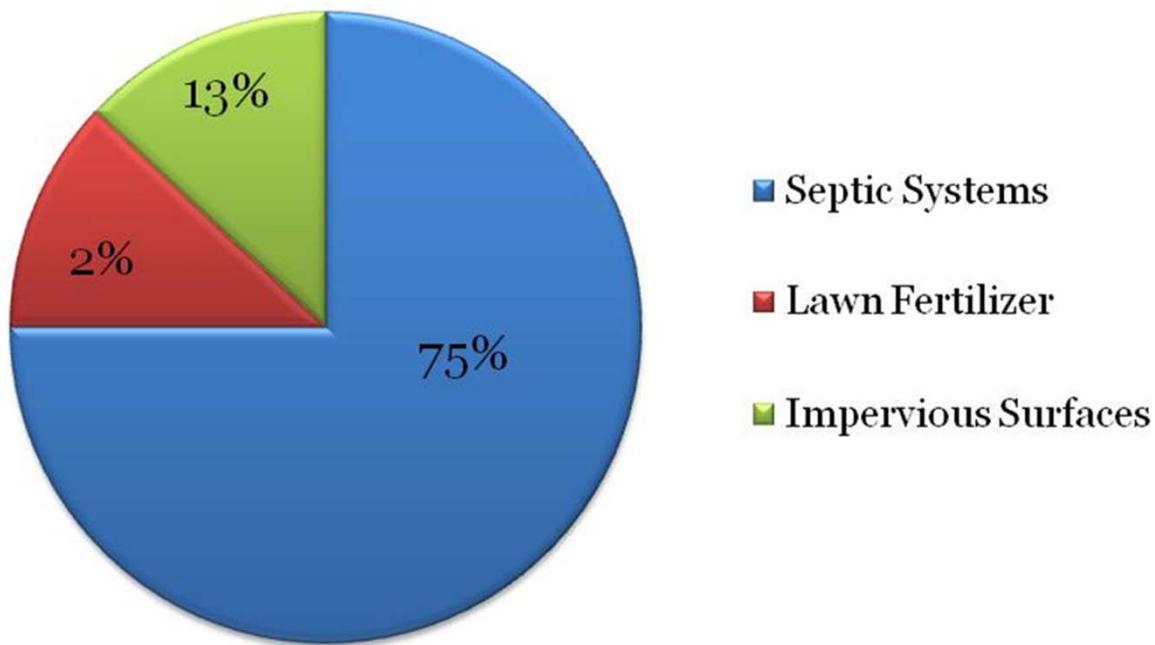
esri

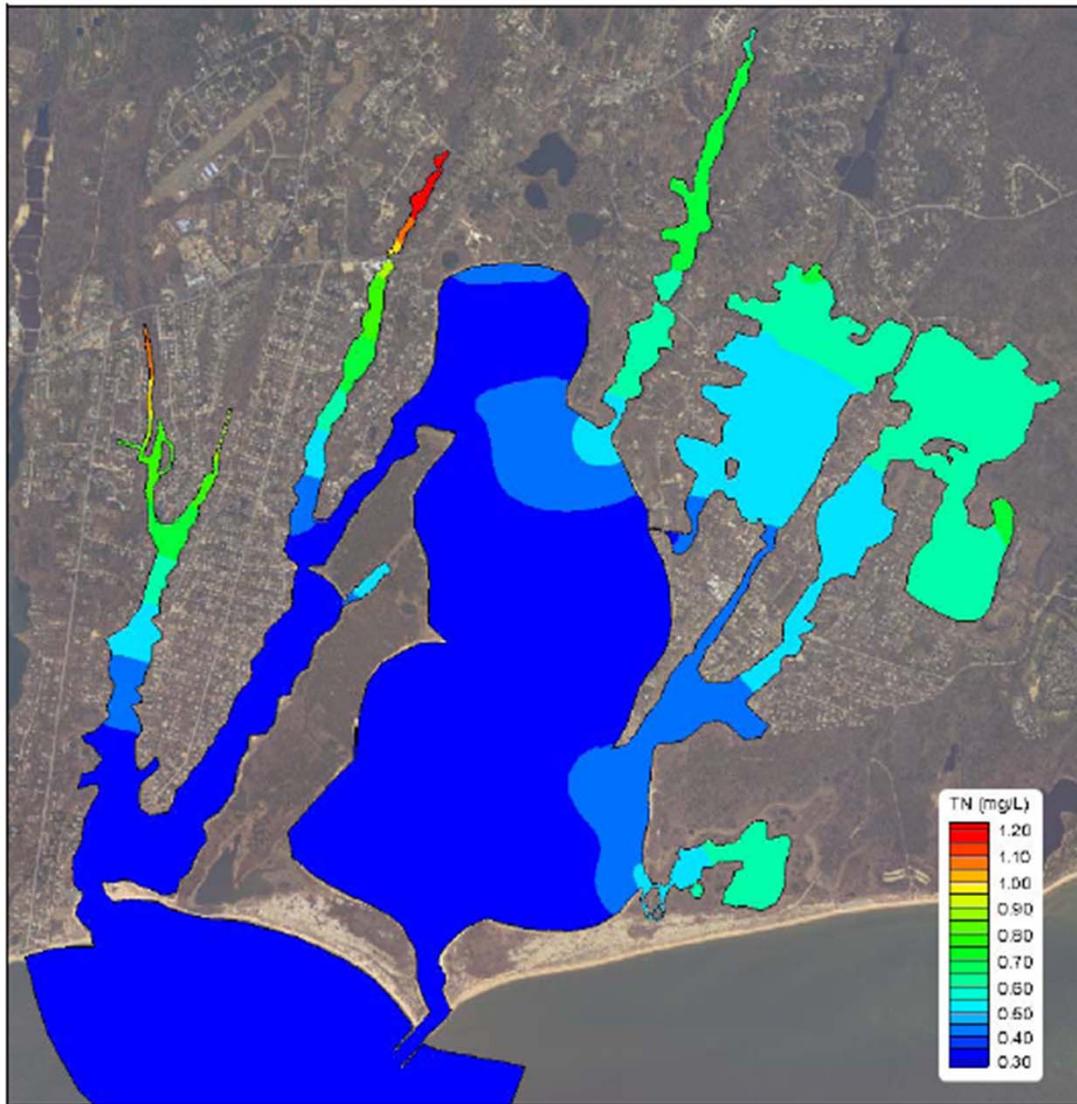
WATERSHEDMVP MULTI-VARIANT PLANNER

The map displays a detailed view of the Waquoit Bay watershed, showing numerous properties (represented by brown dots) and water bodies (lakes and ponds). Key features labeled include Ashumet Pond, Johns Pond, Golf Club At Southport, Quashnet Valley Country Club, Mashpee Commons, Mashpee Neck Rd, Great Neck Rd N, Great Neck Rd S, Main St, Cotuit Bay, Popponeaset Bay, and Three Bay. Roads such as Nathan Ellis Hwy, Boxberry Hill Rd, Hatchville Rd, Currer Rd, and Teaticket Hwy are also visible. The map is overlaid with a green boundary representing the watershed area.



Waquoit Bay Controllable Nitrogen Loads





Contour plots of **average total nitrogen concentrations** from results of the present conditions loading scenario, for the Waquoit Bay system.

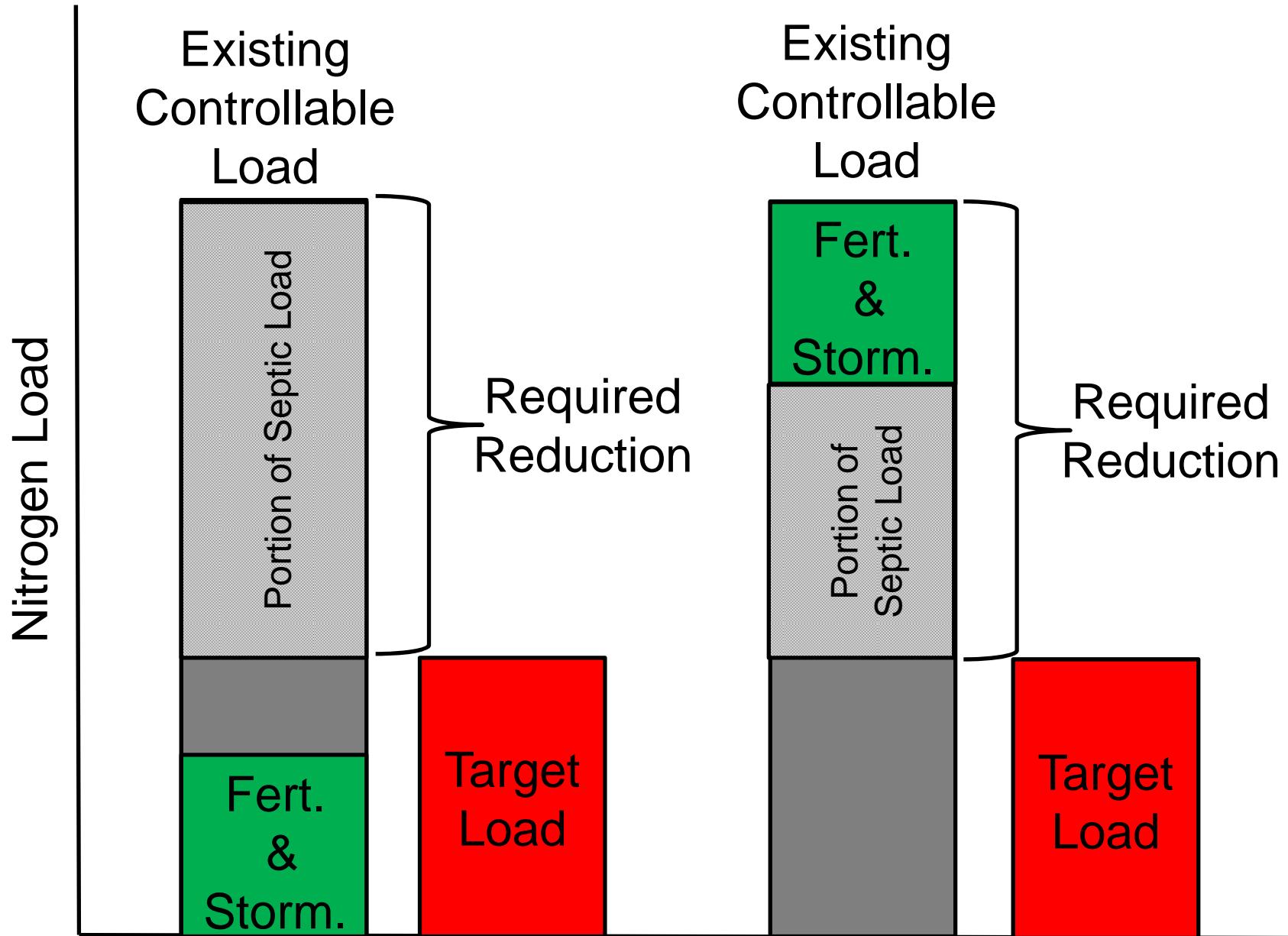
(Source: MEP 2012)

Present Conditions: Waquoit Bay

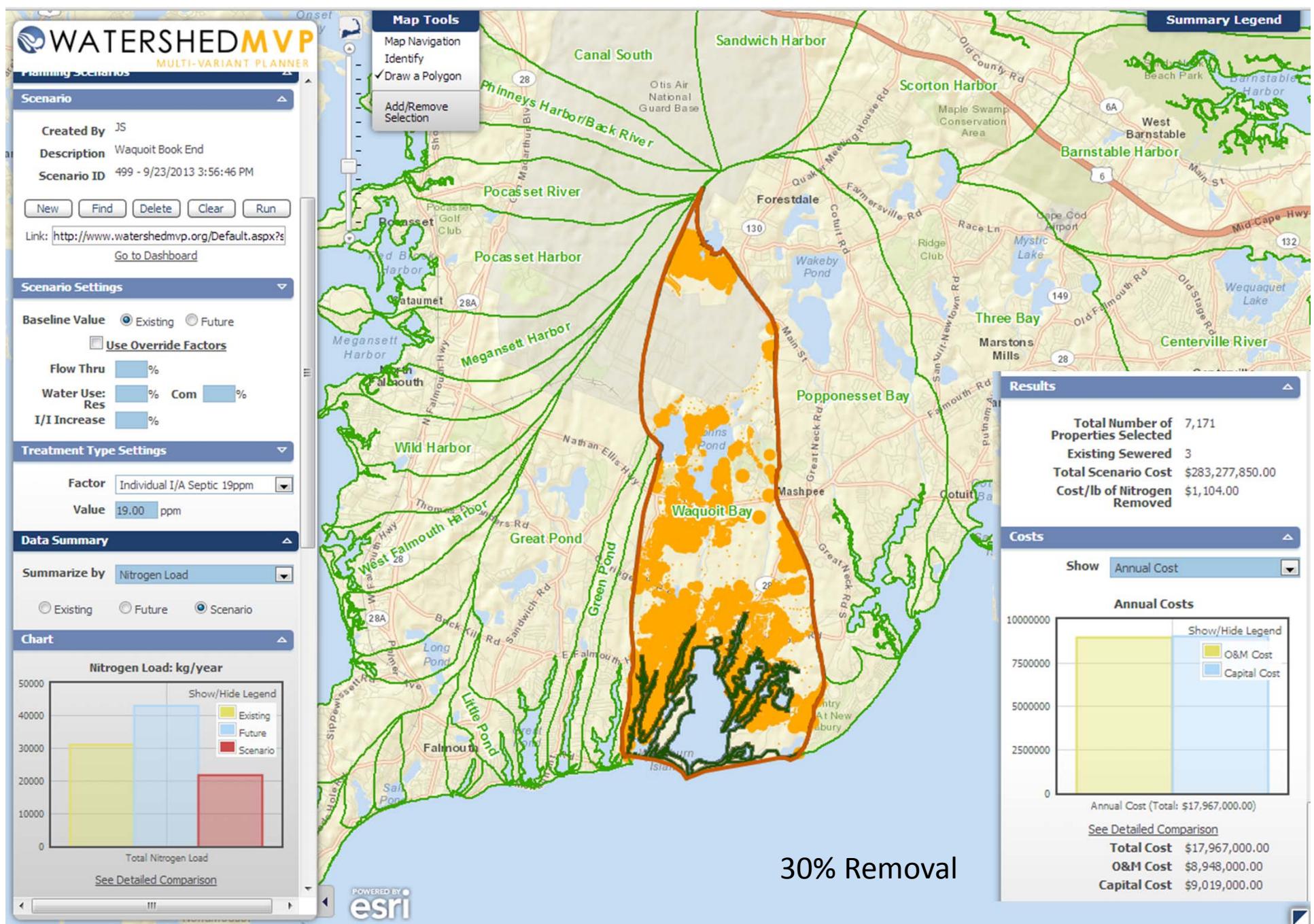
Aggregate Percent removals

Septic and Total

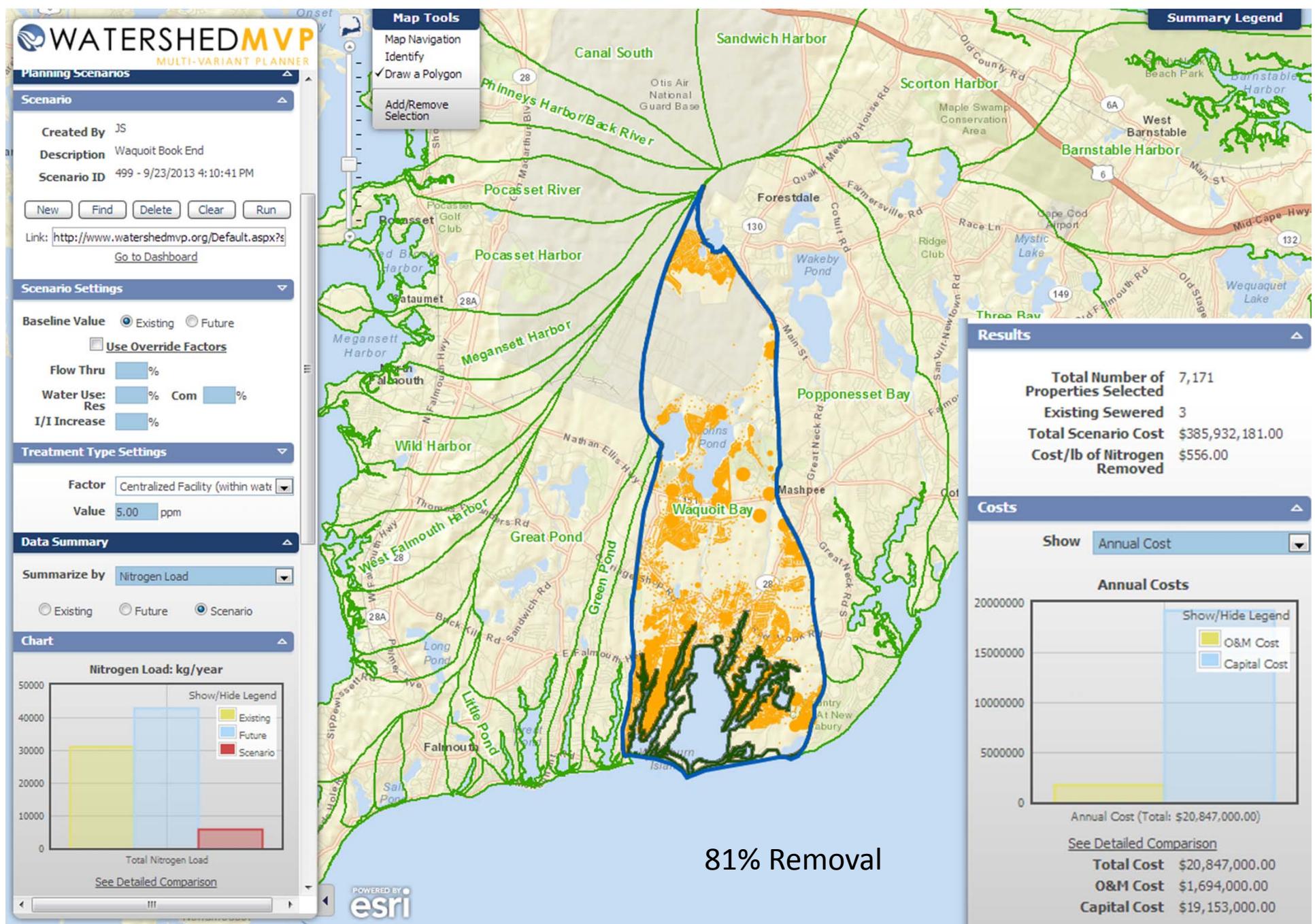
Total Nitrogen Removal Required	53.4%
Septic Nitrogen Removal Required	75%

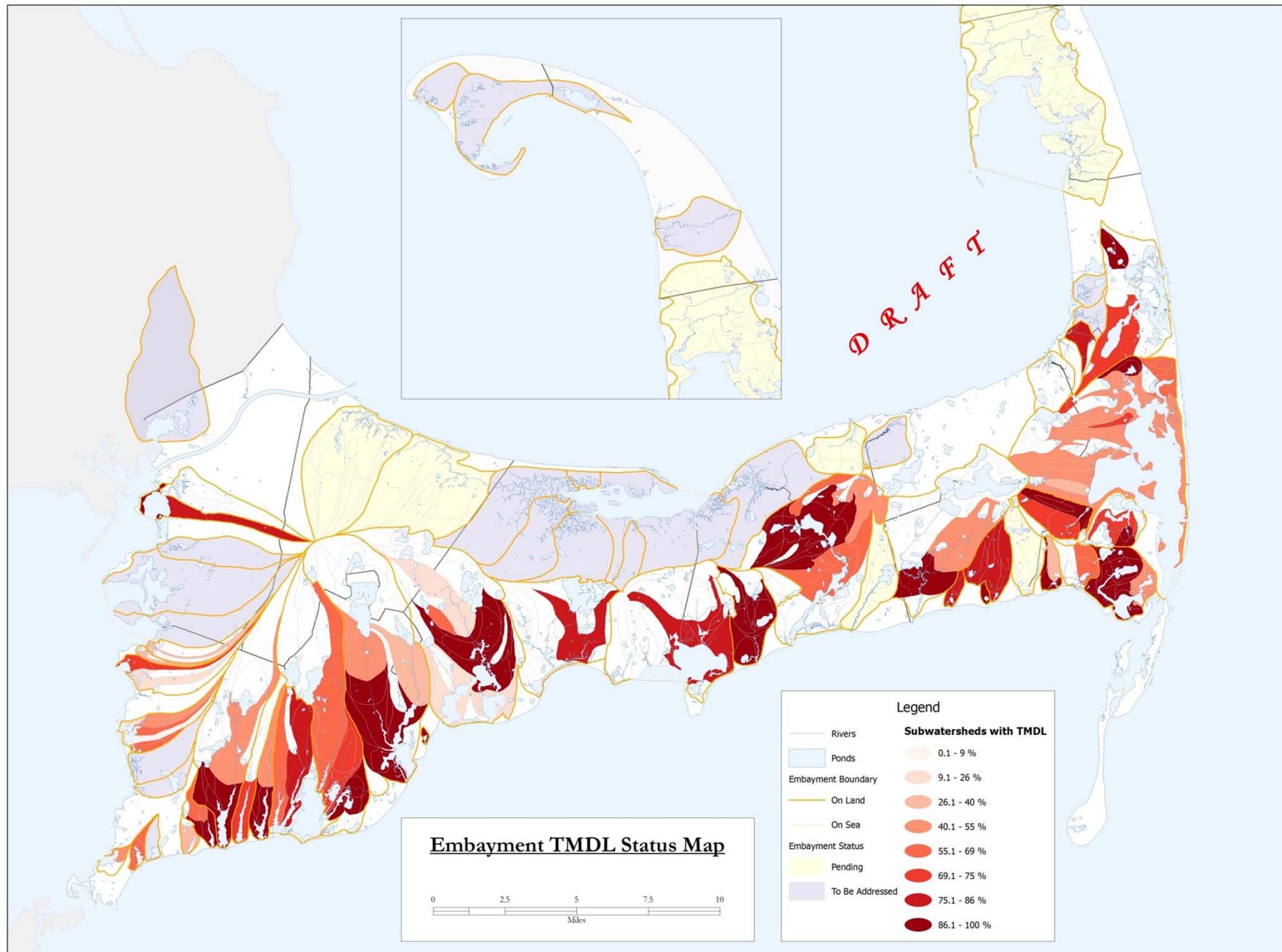


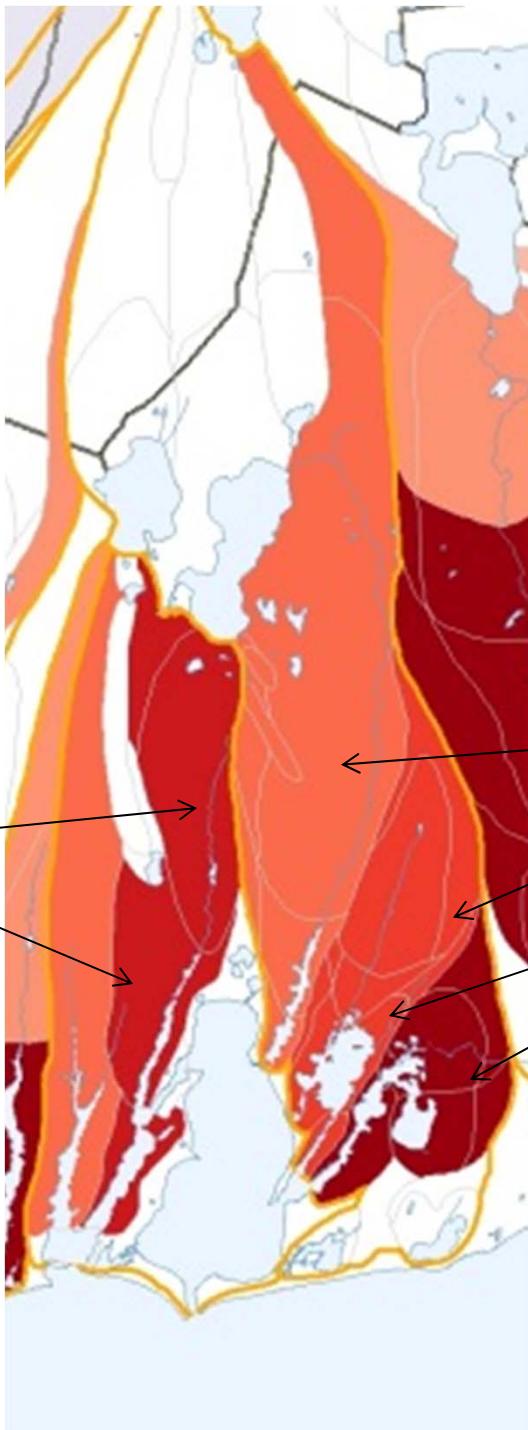
IA Entire Watershed



Centralized Treatment Inside Watershed

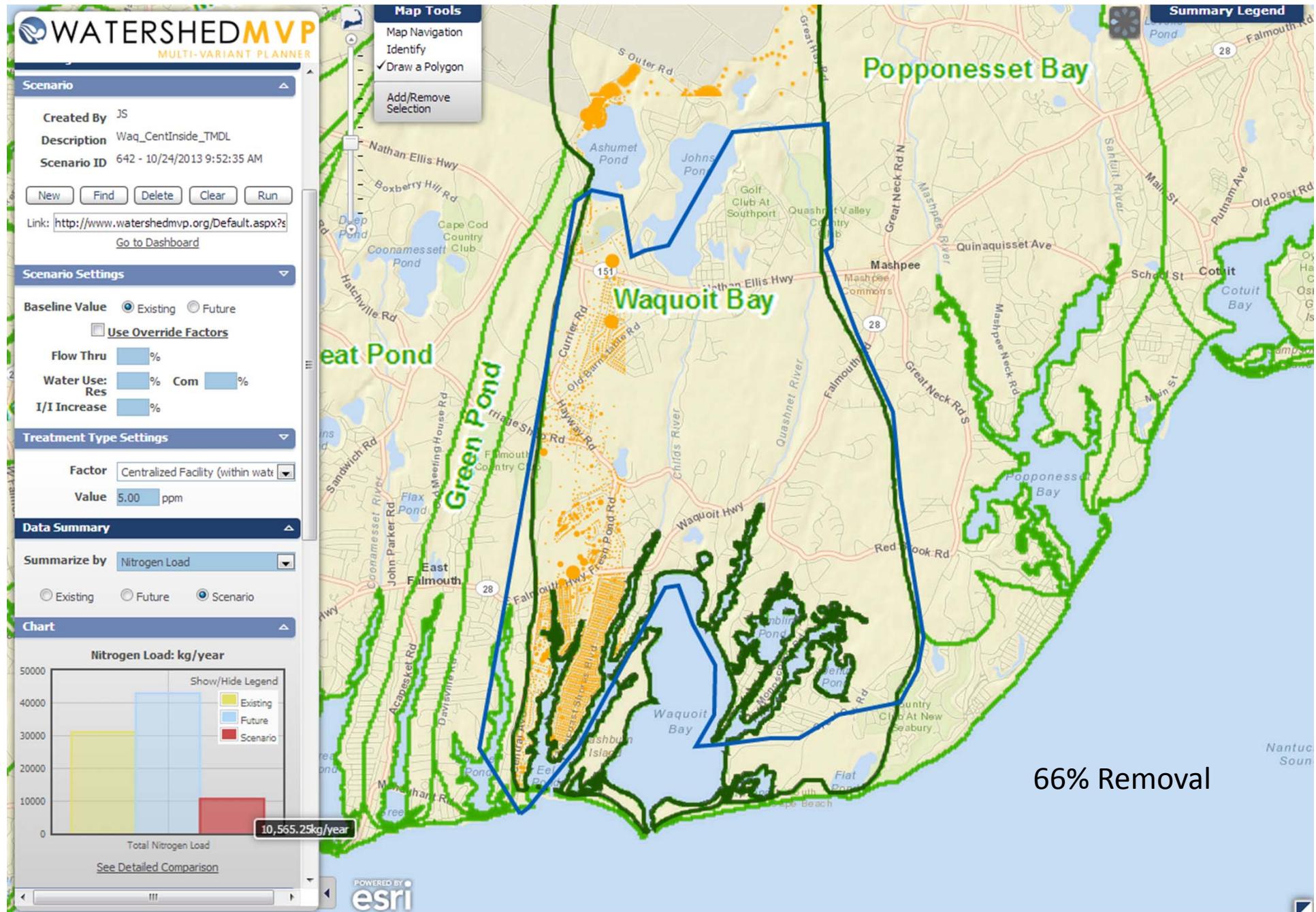




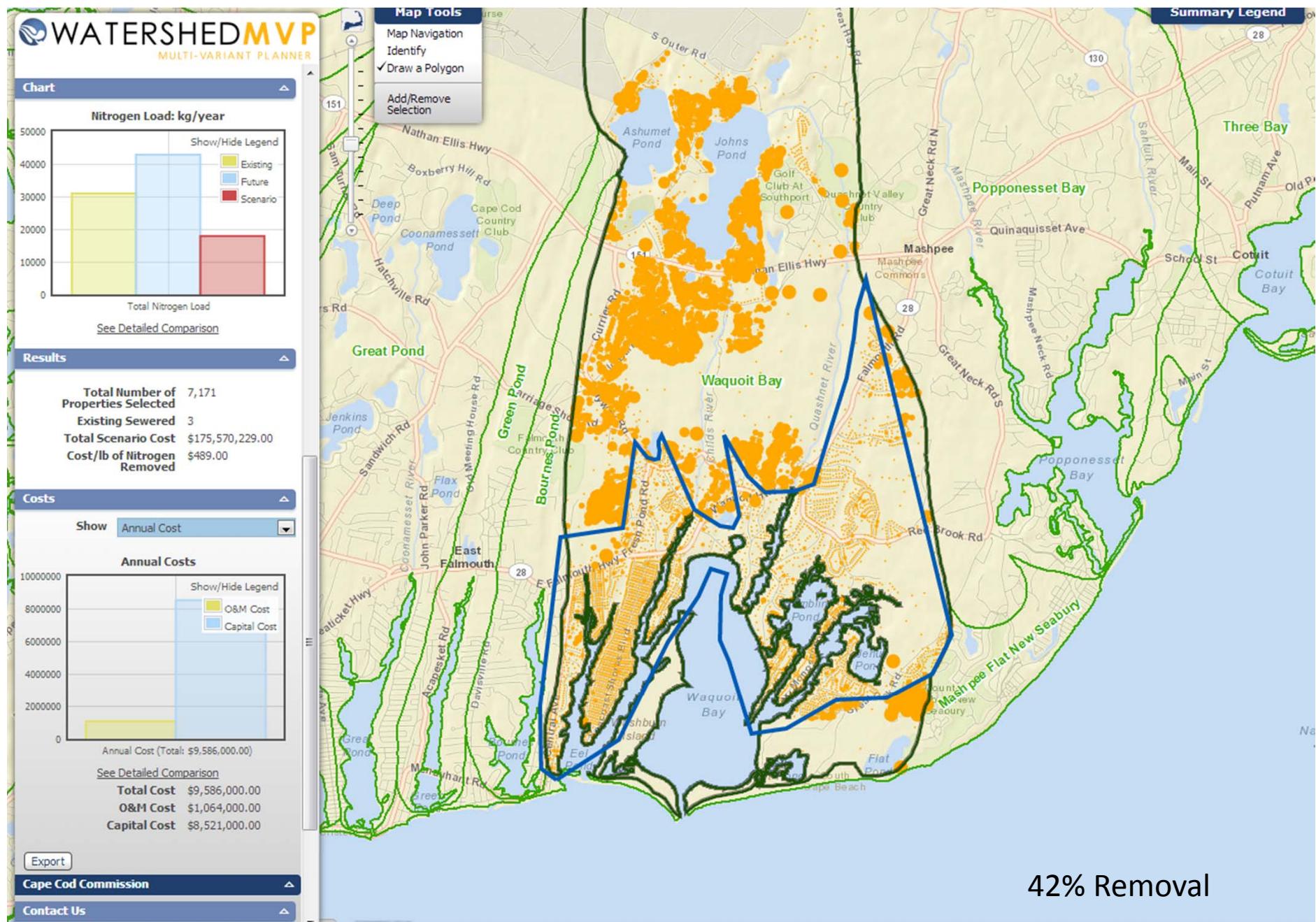


Targeted Septic Removal

Waquoit Scenario #1 – Centralized Inside Watershed for TMDL Compliance



Waquoit Scenario #1 – Fert/Storm 50 % Reduction Centralized Inside Watershed for TMDL Compliance (Upper Sheds Removed)



Waquoit Scenario #1 – Centralized Outside Watershed for TMDL Compliance (Upper Sheds Removed)

WATERSHED MVP
MULTI-VARIANT PLANNER
[Go to Dashboard](#)

Scenario Settings

Baseline Value: Existing Future
 Use Override Factors

Flow Thru: %
Water Use: Res: % Com: %
I/I Increase: %

Treatment Type Settings

Factor: Centralized Facility (outside wa)
Value: 0 ppm

Data Summary

Summarize by: Nitrogen Load
Existing Future Scenario

Chart

Nitrogen Load: kg/year

50000
40000
30000
20000
10000
0

Total Nitrogen Load

Show/Hide Legend: Existing (yellow), Future (blue), Scenario (red)

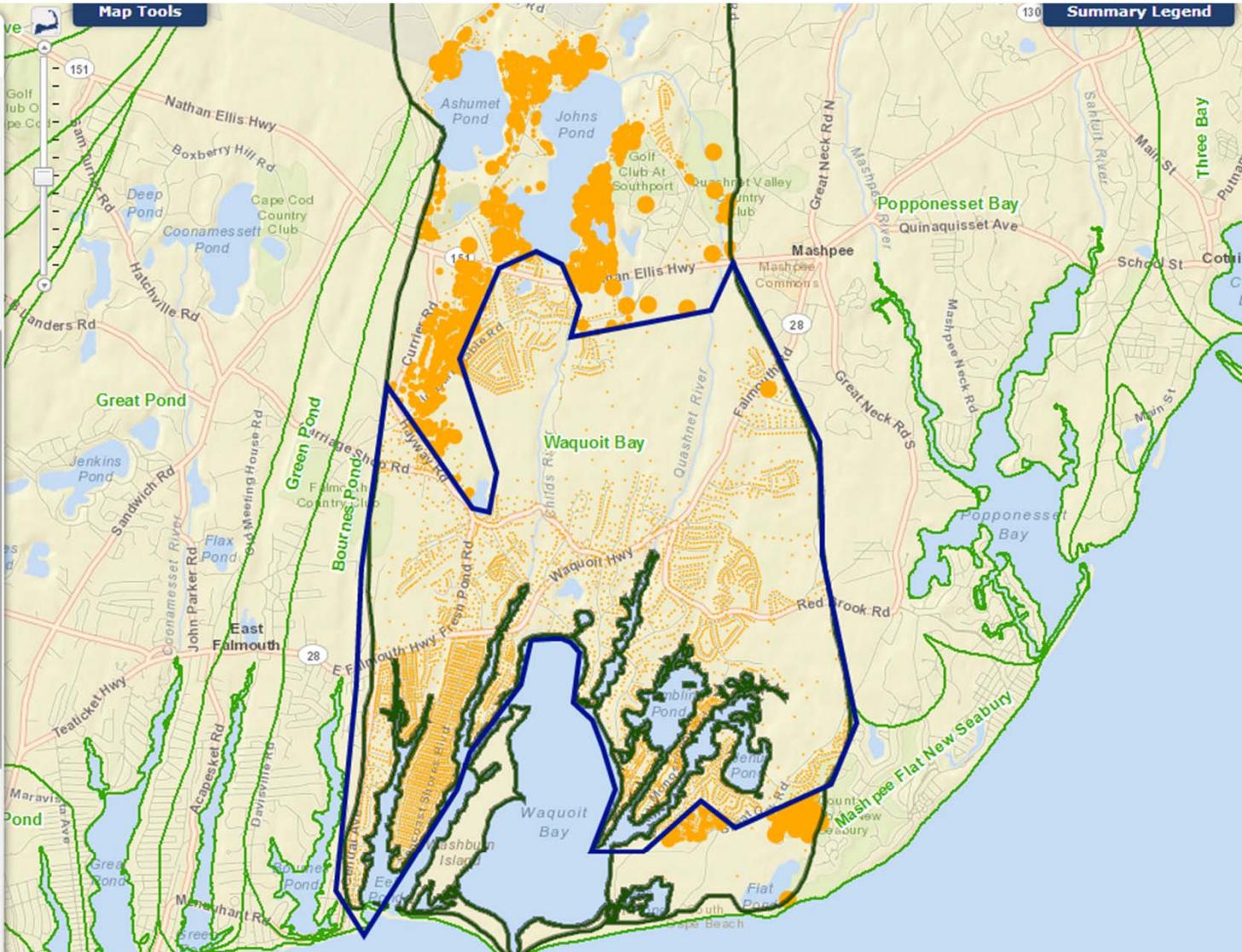
See Detailed Comparison

Results

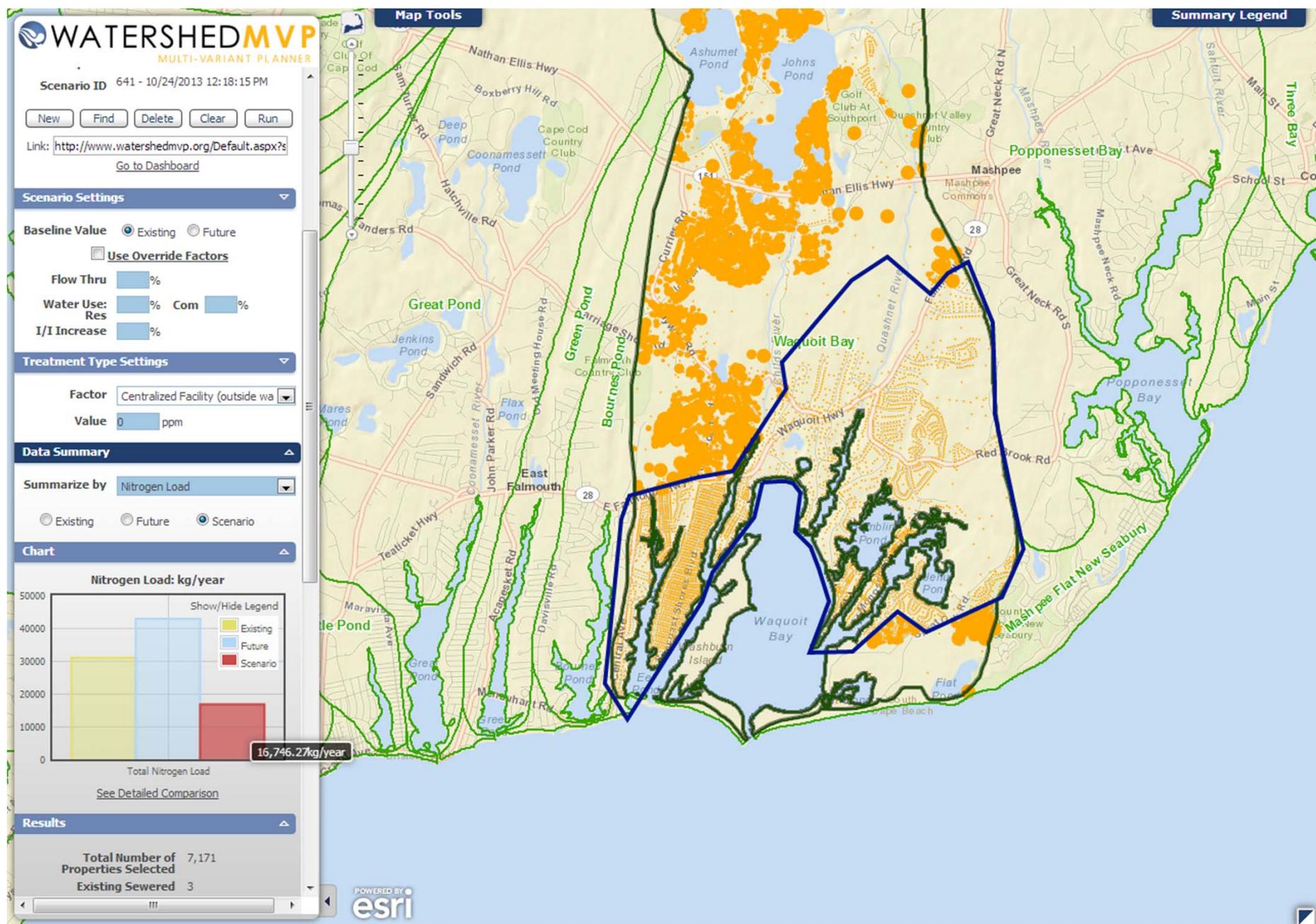
Total Number of Properties Selected: 7,171
Existing Sewered: 3
Total Scenario Cost: \$227,600,772.00
Cost/lb of Nitrogen Removed: \$404.00

Costs

POWERED BY esri



Waquoit Scenario #1 – Fert/Storm 50 % Reduction Centralized Outside Watershed for TMDL Compliance (Upper Sheds Removed)



Waquoit Scenarios Achieving TMDL Compliance

Scenario Description	Total Cost Millions	Percent Septic Removal	Sewered Wastewater Flow (1000 g/day)
Total Watershed IA @ 19 ppm	\$385	31	914
Total Watershed Centralized inside	\$391	81	914
Centralized Inside Treatment (5 ppm)	\$291	T-66	667
Fert/Storm Centralized Inside Treatment (5 ppm)	\$176	T-42	417