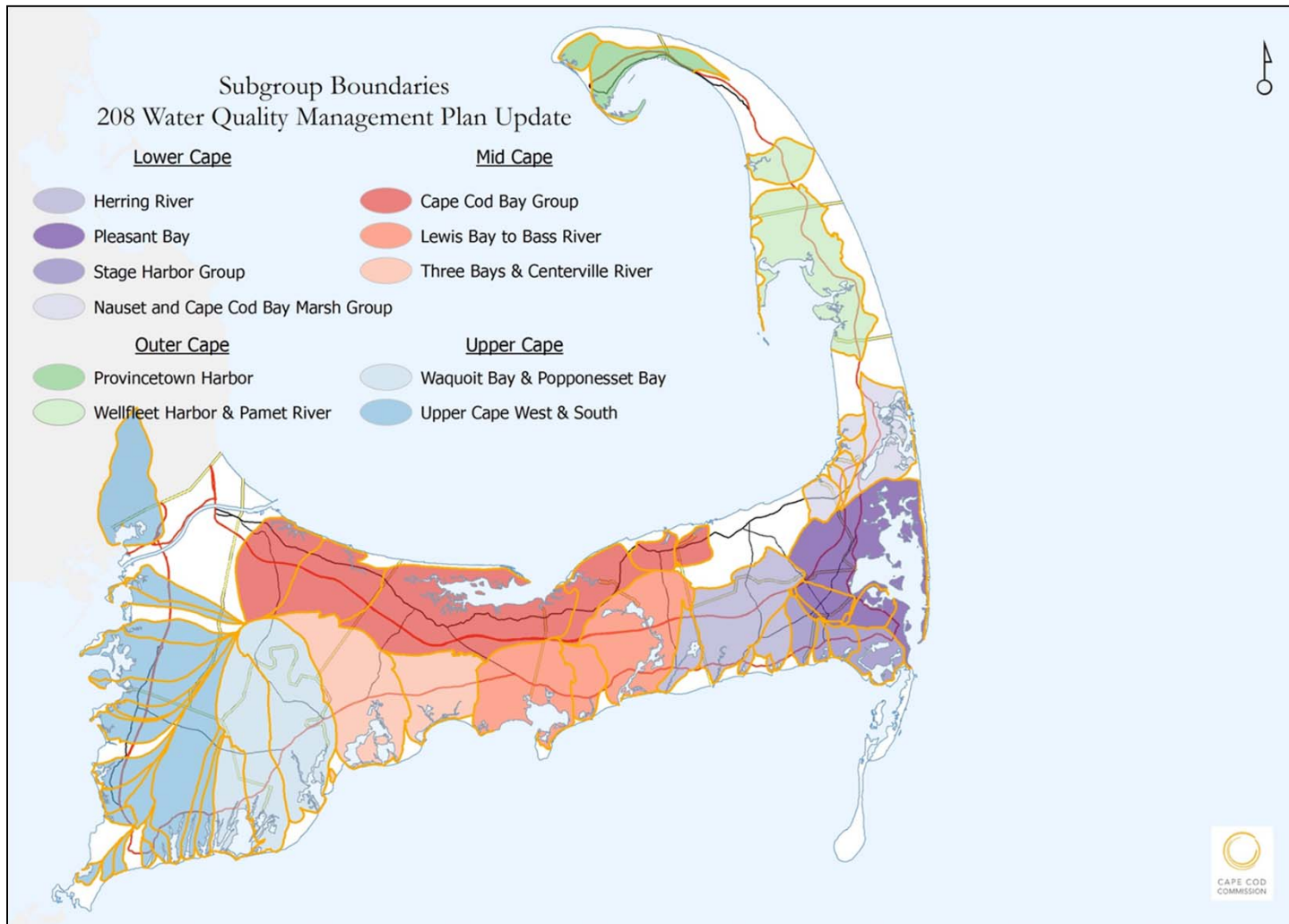
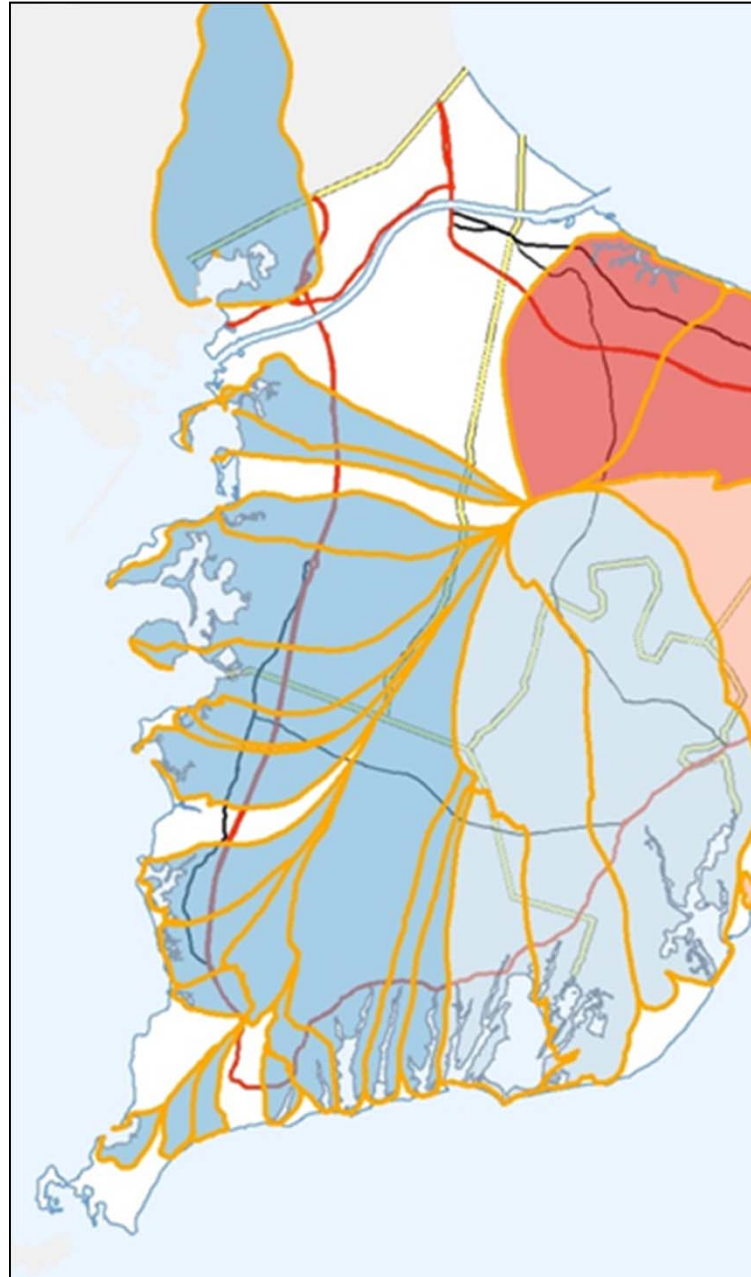


208 Plan Update Stakeholder Summit

Watershed Scenarios Summarized by Subregion

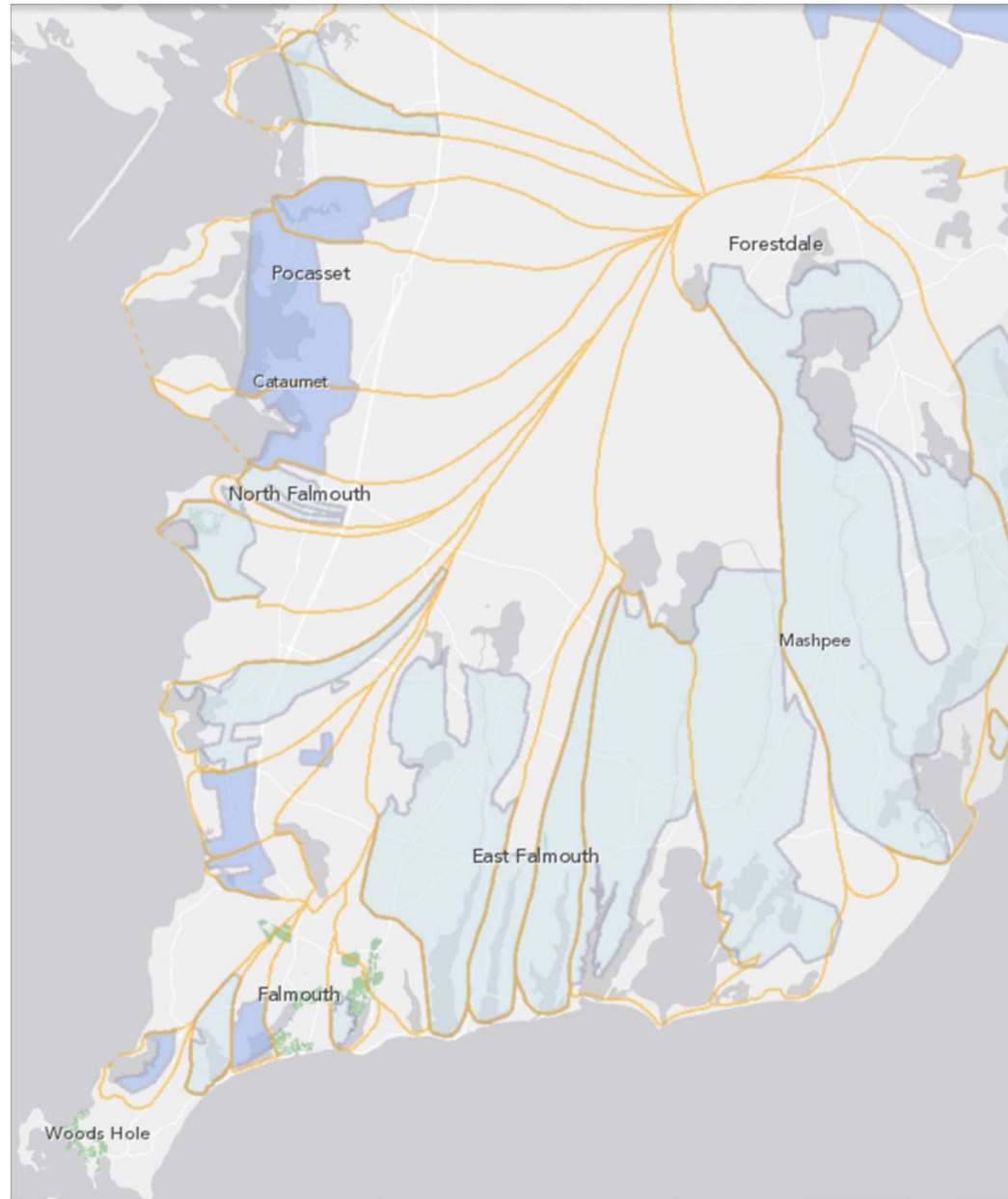


Upper Cape Watershed Groups



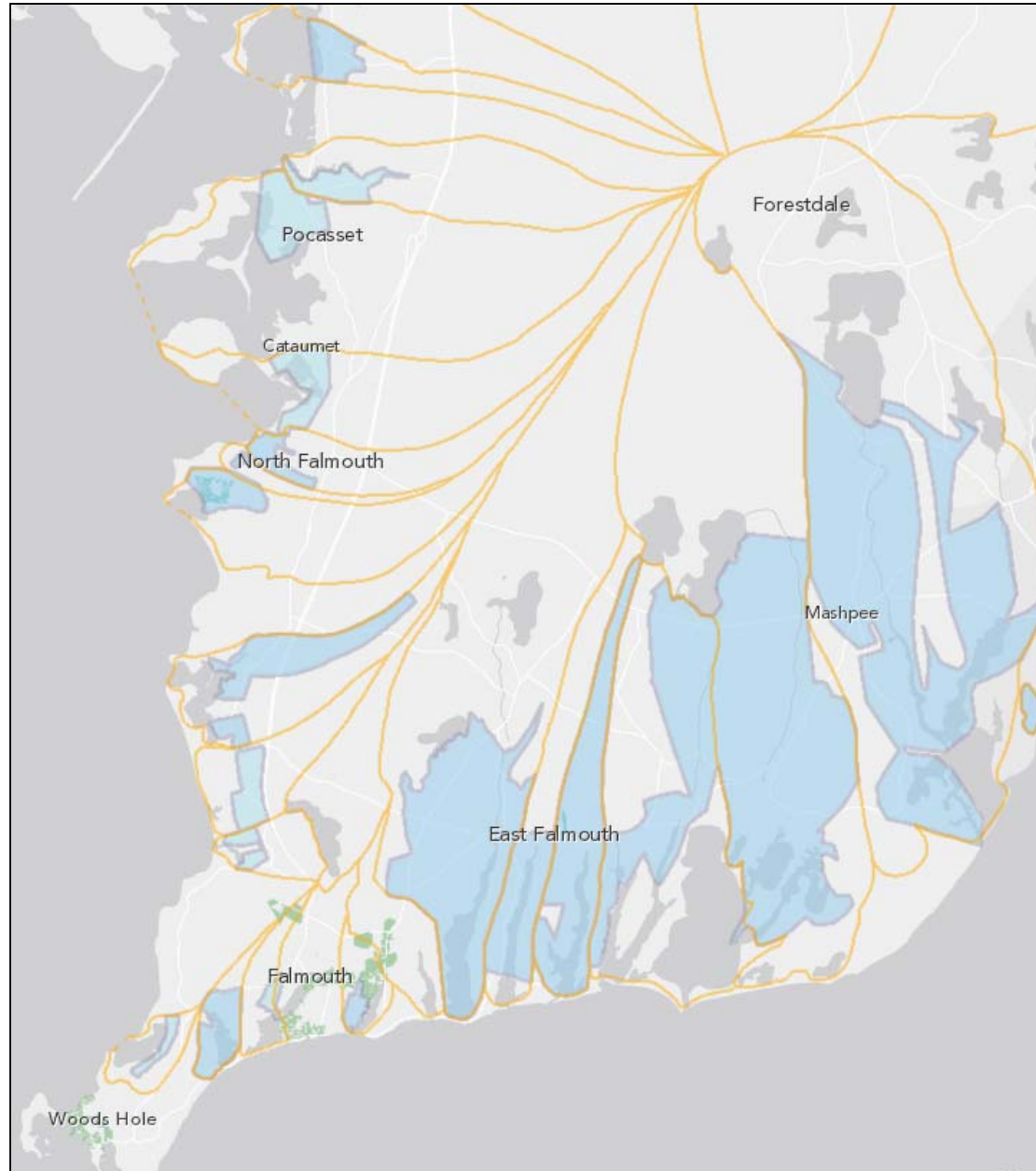
Upper Cape Watershed Groups

MEP Centralized Plus Non-MEP 50% Reduction



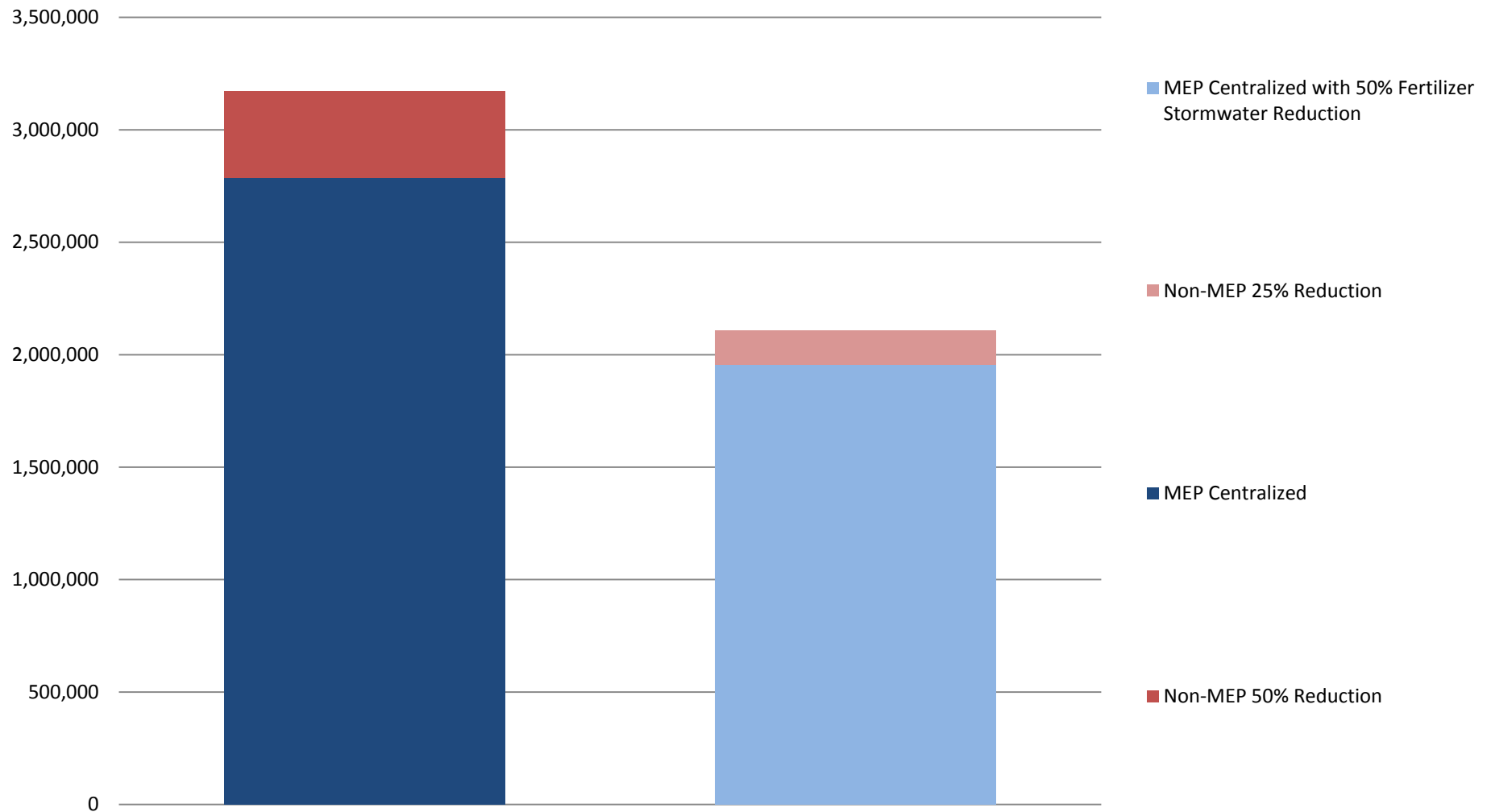
Upper Cape Watershed Groups

50% Reduction in Watershed Wide Fertilizer Stormwater Load with MEP Centralized Plus Non-MEP 25% Reduction



Upper Cape Watershed Group

Centralized Inside Treatment: Captured Wastewater Flow (gpd)

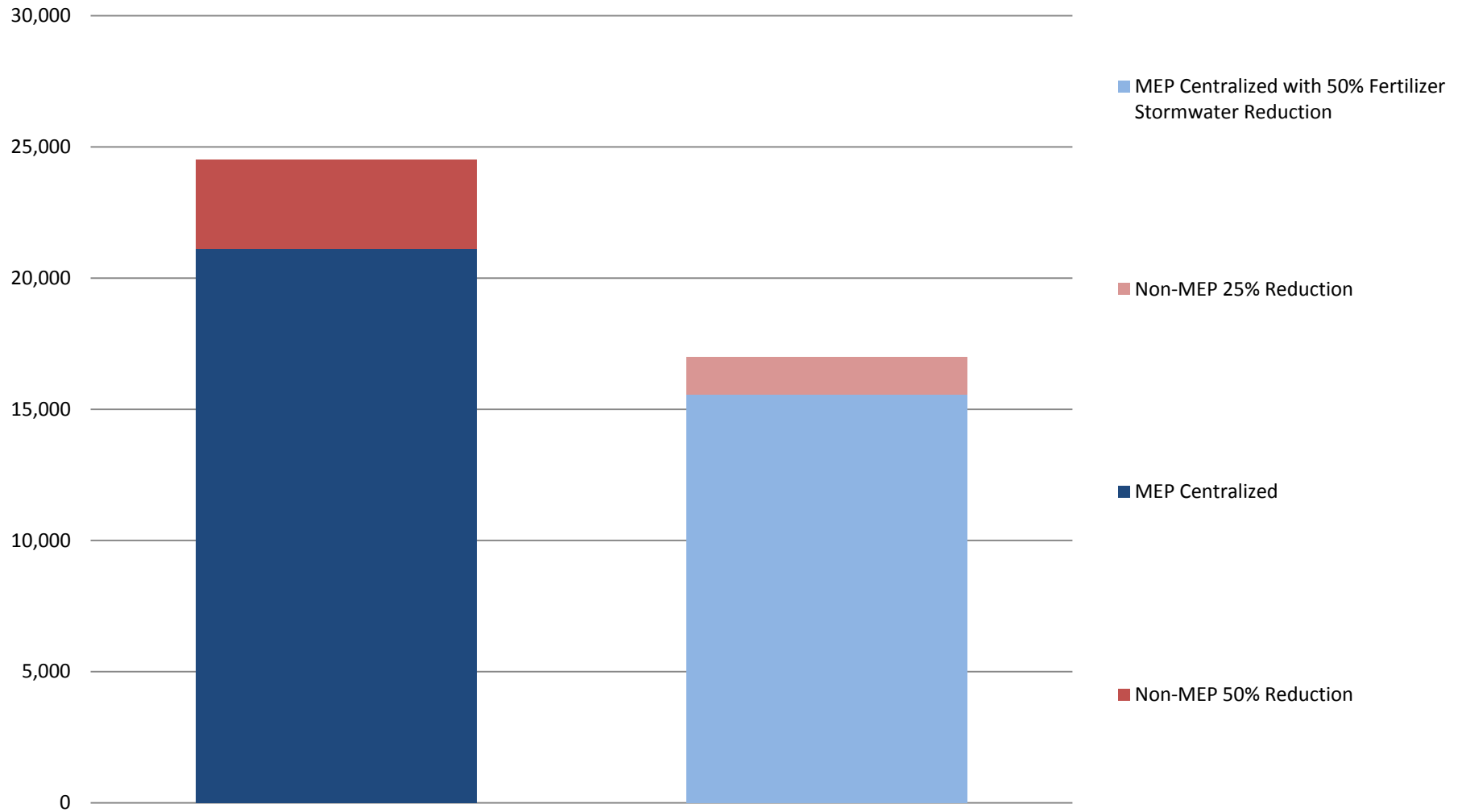


-All MEP Watersheds Sewered to TMDL Compliance

-All Non-MEP Watersheds Sewered for a Reduction in Existing Septic Load

Upper Cape Watershed Group

Centralized Inside Treatment: Sewered Parcels

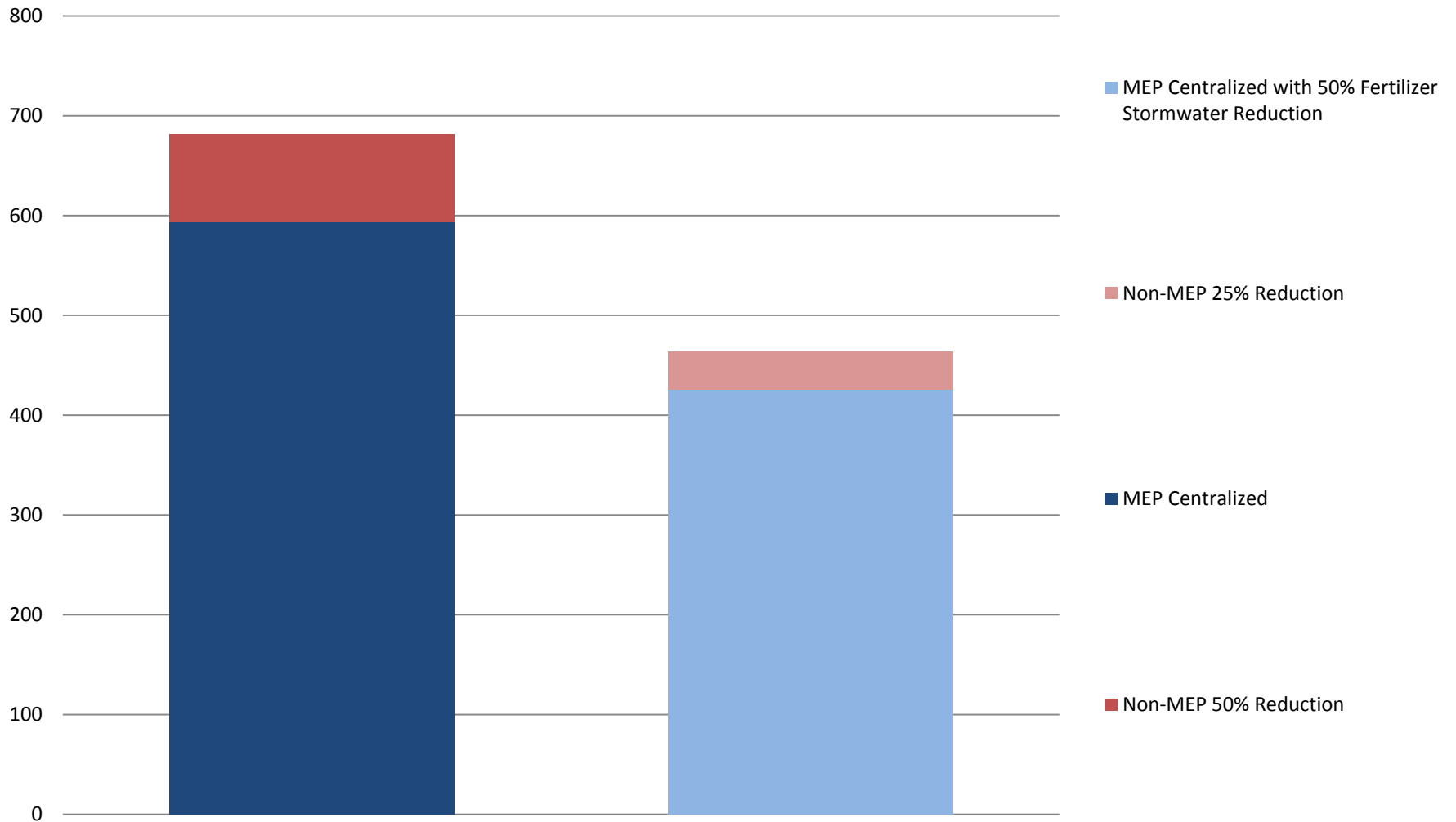


-All MEP Watersheds Sewered to TMDL Compliance

-All Non-MEP Watersheds Sewered for a Reduction in Existing Septic Load

Upper Cape Watershed Group

Centralized Inside Treatment: Miles of Sewer

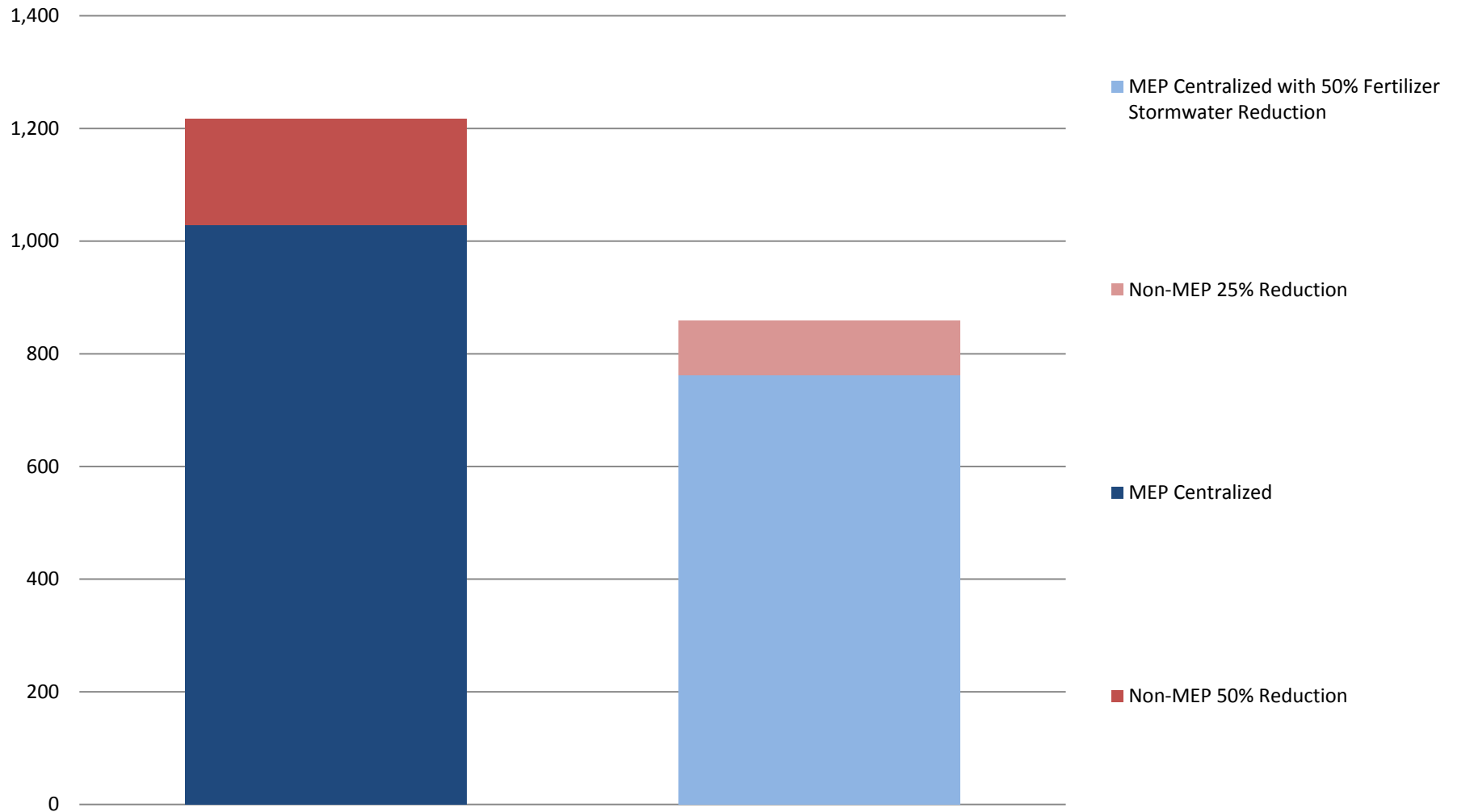


-All MEP Watersheds Sewered to TMDL Compliance

-All Non-MEP Watersheds Sewered for a Reduction in Existing Septic Load

Upper Cape Watershed Group

Centralized Inside Treatment: Capital Cost (Millions)



-All MEP Watersheds Sewered to TMDL Compliance

-All Non-MEP Watersheds Sewered for a Reduction in Existing Septic Load

Prevention

Site Scale

Neighborhood

Watershed

Cape-Wide

Title 5

Standard Title 5 Systems



Conventional Treatment

IA

I/A Title 5 Systems



Cluster & Satellite Treatment Systems



Advanced Treatment

Enhanced IA

I/A Enhanced Systems



Wastewater Collection Systems



Effluent Disposal Systems



Toilets: Urine Diverting



Constructed Wetlands: Surface Flow



Toilets: Composting



Constructed Wetlands: Subsurface Flow



Toilets: Packaging



Stormwater: Bioretention / Soil Media Filters



Toilets: Incinerating



Stormwater: Wetlands



Phytoirrigation



Eco-Machines & Living Machines



Phytobuffers



Fertigation Wells



Permeable Reactive Barrier



Shellfish and Salt Marsh Habitat Restoration



Aquaculture/Shellfish Farming

Reduction

Remediation



Inlet / Culvert Widening



Pond and Estuary Dredging



Constr. Wetlands - Groundwater, Salt Water, Floating



Remediation of Existing Development



Fertilizer Management



Transfer of Development Rights



Stormwater BMPs



Compact Development

Problem Solving Approach

■ Wastewater
 ■ Existing Water Bodies
 ■ Regulatory

1

Identify Current N Removal Needs (Targets/Reduction Goals)

Present Load: X kg/day
 Target: Y kg/day
 Reduction Required: N kg/day

2

Additional N Removal Needs

- A. Title 5 Problem Areas
- B. Pond Recharge Areas
- C. Growth Management

3

Low Barrier Technologies

- A. Fertilizer Management
- B. Stormwater Mitigation



4

Watershed Alternative Technologies

- A. Permeable Reactive Barriers
- B. Inlet/Culvert Openings
- C. Constructed Wetlands
- D. Aquaculture



5

On-Site Alternative Technologies

- A. Eco-toilets (UD & Compost)
- B. I/A Technologies
- C. Enhanced I/A Technologies
- D. Shared Systems



6

Priority Collection/Sewer Areas

- A. Greater Than 1 Dwelling Unit/acre
- B. Village Centers
- C. Economic Centers
- D. Growth Incentive Zones



7

Supplemental Collection / Sewer Areas



Summary Table

MEP Targets and Goals	kg/year	kg/day	kg/day	Nitrogen (kg/yr)
Present Total Nitrogen Load			1934.9	706,222
	<u>Controllable Nitrogen Load</u>			
Wastewater	501,866	1375.0		
Fertilizer	100,494	275.3		
Stormwater	89,912	246.3		
Target Nitrogen Load			1072.7	391,545
Nitrogen Removal Required			862.1	314,677
Total Number of Properties	113,303			

Low Barrier to Implementation	Percent of Total Removed	Reduction by Technology (Kg/yr)	Remaining to Meet Target (Kg/yr)
A) Fertilizer Management	50	50,247	264,430
B) Stormwater Mitigation	50	44,956	219,474

Watershed/Embayment Options	Quantity	Reduction by Technology (Kg/yr)	Remaining to Meet Target (Kg/yr)
A) Permeable Reactive Barrier (PRB)	23,569 homes	75,185	144,289
B) Constructed Wetlands (No Collection System)	57 acres	28,250	116,039
C) Constructed Wetlands (With Collection System)	23 acres	11,250	104,789
D) Phytoirrigation	1 acres	6	104,783
E) Phytobuffers	15 acres	330	104,453
F) Fertigation Wells	1,898 acres	7,590	96,863
G) Surface Water Remediation Wetland	4 acres	112	96,751
H) Dredging/Inlet Widening	66,000 cu. yard	0	96,751
I) Phytoremediation	0 acres	0	96,751
J) Aquaculture/Oyster Beds	185 acres	46,250	50,501
K) Coastal Habitat Restoration	29 acres	3,393	47,108
L) Floating Constructed Wetlands	71,500 cu feet	28,600	18,508

Alternative On-Site Options	Quantity	Reduction by Technology (Kg/yr)	Remaining to Meet Target (Kg/yr)
A) Ecotoilets (UD & Compost)	3,343 homes	20,060	-1,552
B) UD School or Public Facility	6,700 people	9,648	-11,200
C) I & A Systems	3,485 homes	17,425	-28,625
D) Enhanced I & A Systems	2,742 homes	16,452	-45,077



Section 208 Plan Alternative Technologies Viewer

This map has been developed as a reference to identify possible locations for placement of alternative technologies through the Section 208 Plan update process.

