



Winthrop Beach Nourishment

Conservation Commission
Hearing
June 13, 2012



Winthrop 101



- Project history
- Offshore borrow site at NOMES Site 1
- Permits: obtained & denied
- Redirection
- Minimization of Impacts



Winthrop Beach Program

Current Filing:

Beach Nourishment

- Groin Repairs
- "Pilot Project" – South Nourishment Area
- New Terminal Groin
- North Nourishment Area

Future Filing:

Upland Improvements:

- Reconstruct Shore Dr.
- New Sidewalks
- New Drainage
- Improved crosswalks
- Amenities (drinking fountains, shower/foot washes, benches, etc.)



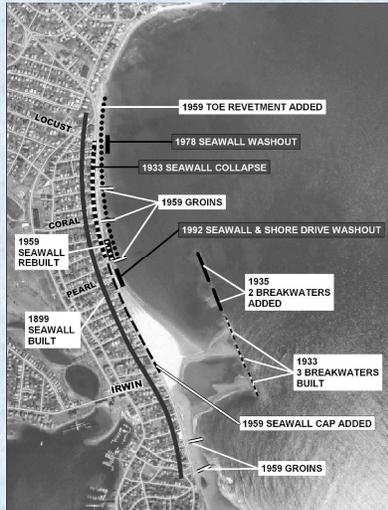
Winthrop Beach Schedule

Construction in Four Projects:

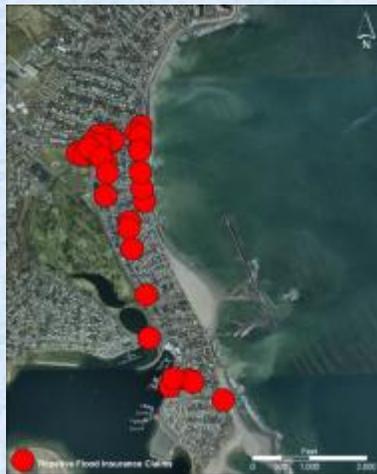
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|---|-------------|
| C1A Groin Repairs: | Summer 2012 |
| C2A "Pilot Project"/
South Nourishment Area: | Fall 2012 |
| C3A North Nourishment Area: | 2013 – 2014 |
| C4A Shore Drive Improvements: | 2014 - 2015 |



Need for Shore Protection



Need for Shore Protection



FEMA repetitive flood insurance claims for properties along and near Winthrop Beach



Brief History of Shore Protection

Over 100 years of providing shore protection:

1899: Commonwealth
constructs seawall
after Portland Gale of '98

1933: Construction of
3 Breakwaters ("Sisters")

1935: Construction of
2 more Breakwaters

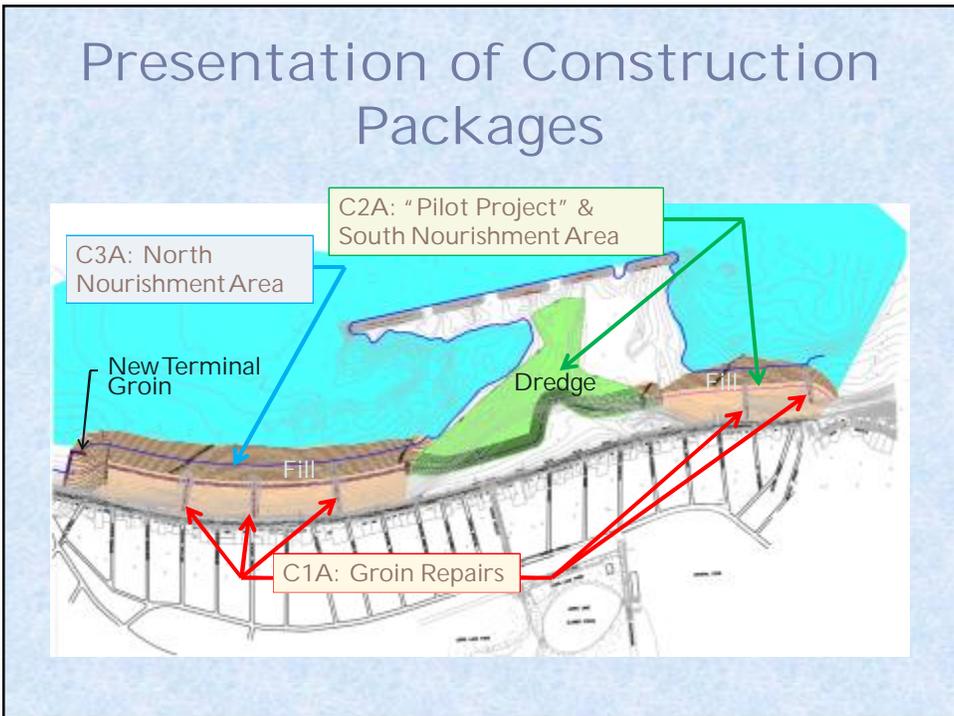
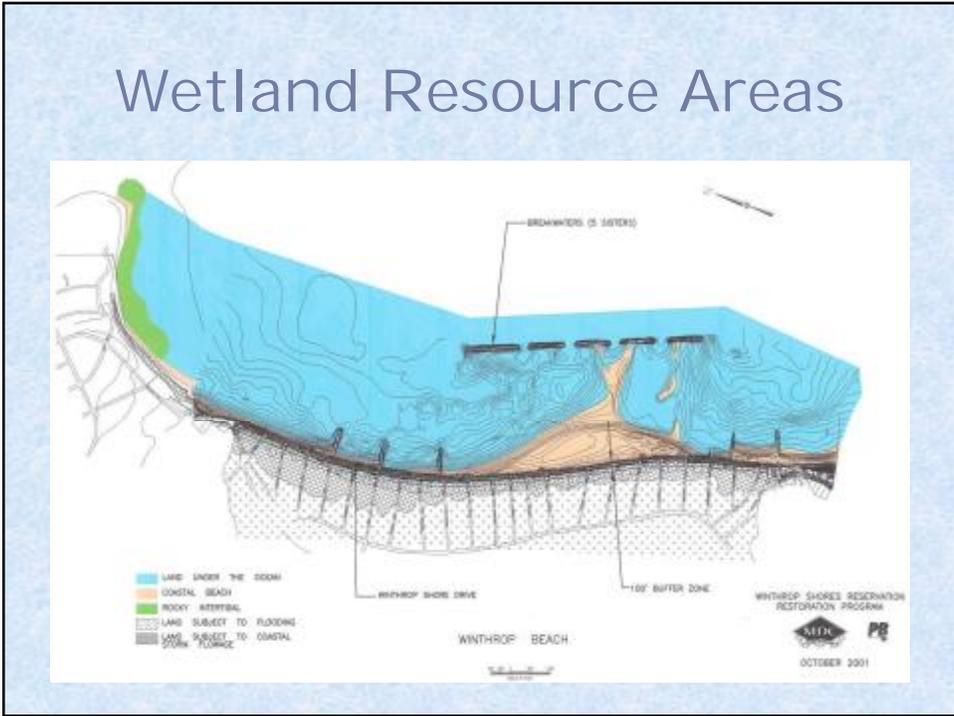
1955: Construction of 5 Groins

Today: Beach Nourishment Plan



Topics for Tonight

- Overview of Wetland Resource Areas
- Presentation of 3 Construction Packages:
 - C1A – Groin Repair
 - C2A – "Pilot Project" and South Nourishment Area
 - C3A – North Nourishment Area, including New Terminal Groin



Presentation of the 3 Construction Packages

- Scope of Work
- Resource Areas Impacted
- Overview of Construction:
 - Logistics
 - Equipment
 - Other issues
- Compliance with Performance Standards

C1A – Groin Repairs



C1A – Groin Repairs

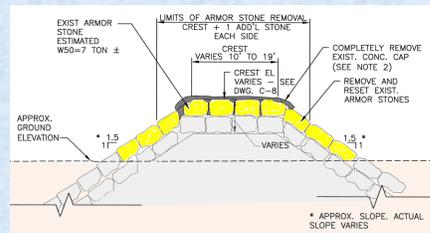
Scope of Work:

- Removal of Concrete Cap
- Removal of Upper Layer of Armor Stone
- Resetting of Armor Stone
- Chinking of Crest



Resource Areas:

- *Coastal Beach:* Seawall to MLW
- *Land Under the Ocean:* Below MLW



C1A – Groin Repairs Overview of Construction:

Equipment on beach:

- Crane on groin:
 - Walk in from Cutler St.
 - Temp. ramps up/over groins
- Bobcat or small loader



On Shore Dr.:

- Trucks to deliver stone and remove debris
- 200 ft. work area (8 – 9 parking spaces)



Schedule: 3 to 4 weeks/groin

C1A – Groin Repairs

Compliance with Performance Standards:

- Land Under the Ocean (310 CMR 10.25):
 - (5): No change in bottom topography
 - (6): Minimize adverse effects on marine habitat
- Coastal Beach (310 CMR 10.27):
 - (4): Groin construction: N/A
 - Material & debris will be removed from beach on a daily basis
 - Crane(s) may remain on groin during non-working hours

C2A – “Pilot Project” & South Nourishment Area

Legislation:

- Shore Protection Pilot Project under the Section 191 “Pilot” program (Chapter 68, Acts of 2011)
 - Allows for innovate concepts
 - Minimize impacts
 - Monitor results



C2A – “Pilot Project” & South Nourishment Area

Concept for Pilot Project:

- 1959 Army Corps Nourishment Project
 - 200,000 cy dredged from behind 5 Sisters
 - Project failed – material drifted lee of 5 Sisters
- Today:
 - Dredge 90,000 - 100,000 cy behind the 5 Sisters
 - Place south of tombolo
 - Will not compromise shore protection lee of the 5 Sisters



C2A – “Pilot Project” & South Nourishment Area

Resource Areas:

- *Coastal Beach:*
Seawall to MLW
- *Land Under the Ocean:*
Below MLW

Habitats on Coastal Beach:

- Least tern (threatened)
- Piping plover (endangered)



C2A – “Pilot Project” & South Nourishment Area



C2A – “Pilot Project” & South Nourishment Area

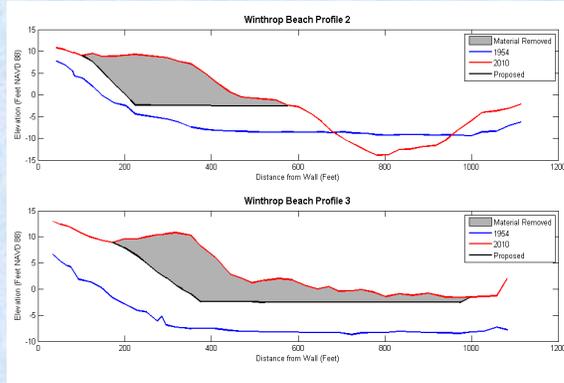
Scope of Work:

- Dredge Sediments behind 5 Sisters (90,000 – 100,000 cy)
- Place as Beach Nourishment between Underhill and Beacon Circle
- Replace Ramp at Tewksbury St.
- Interim storm drainage outlets



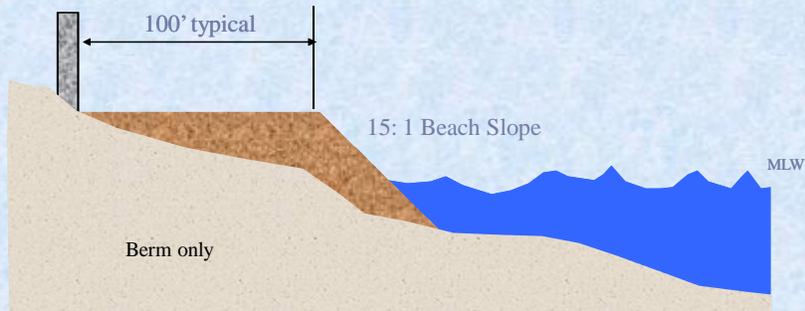
C2A – “Pilot Project” & South Nourishment Area

Dredge Profile



C2A – “Pilot Project” & South Nourishment Area

Nourishment Profile



C2A – “Pilot Project” & South Nourishment Area Overview of Construction:

Equipment on beach:

- Excavators for dredging (2-3)
- Off-Road Dump Trucks (3-5)
- Bulldozers (2-3)
- Backhoe/loader (1-2)
- Access from Cutler & Tewksbury
- Possible off-hours equipment storage on beach in a contained area

On Shore Drive:

- 400 ft. staging area (loss of 16 – 18 parking spaces)
- equipment parking during non-work hours

Schedule: 3 to 5 months

C2A – “Pilot Project” & South Nourishment Area

Compliance with Performance Standards:

- Land Under the Ocean (310 CMR 10.25):
 - (5): Project will change alter bottom topography, but will reduce storm damage and erosion.
 - (6): Minimize adverse effects on marine habitat:
 - (a) no significant alteration of water circulation
 - (b) no known eel grass or widgeon grass
 - (c) no alteration in grain size – reusing existing sediments
 - (d) no anticipated change in water quality
 - (e) will cover intertidal and subtidal habitats: anticipate repopulation of shellfish by storm currents

C2A – “Pilot Project” & South Nourishment Area

Compliance with Performance Standards:

- Coastal Beach (310 CMR 10.27):
 - (3): Project will decrease erosion
 - (4): Groin construction: N/A
 - (5): Reuse of existing sediments ensures compatibility of beach nourishment material
 - Material & debris will be removed from beach on a daily basis
 - Large equipment may remain on beach if in containment area (stone over poly and surrounded by hay bales or equivalent)

C3A – North Nourishment Area & New Terminal Groin

Scope of Work:

- New Terminal Groin
- Place as Beach Nourishment between Locust and Dolphin Av.
 - Truck in from Saugus
- Temp. Sheet Pile Groins
- Interim Drainage Outlets

Resource Areas:

- *Coastal Beach:*
Seawall to MLW
- *Land Under the Ocean:*
Below MLW
- *Land Containing Shellfish*



C3A – North Nourishment Area & New Terminal Groin Overview of Construction:

Equipment for Beach Nourishment:

- Trucks from Saugus dumping on Beach north of Cutler: 9 am – 3 pm (6 hrs./workday)
- Loaders (1 to 3)
- Off-Road Dump Trucks (3-5)
- Bulldozers (2-3)
- Pile Driver (temp. groins)
- Off-road jeep (1 to 2)

Schedule: 8 months (trucking)



Stockpiling of sand on the Figure Eight Island Beach north (updrift) of Mason Inlet, NC. The material was later graded.

C3A – North Nourishment Area & New Terminal Groin Overview of Construction:

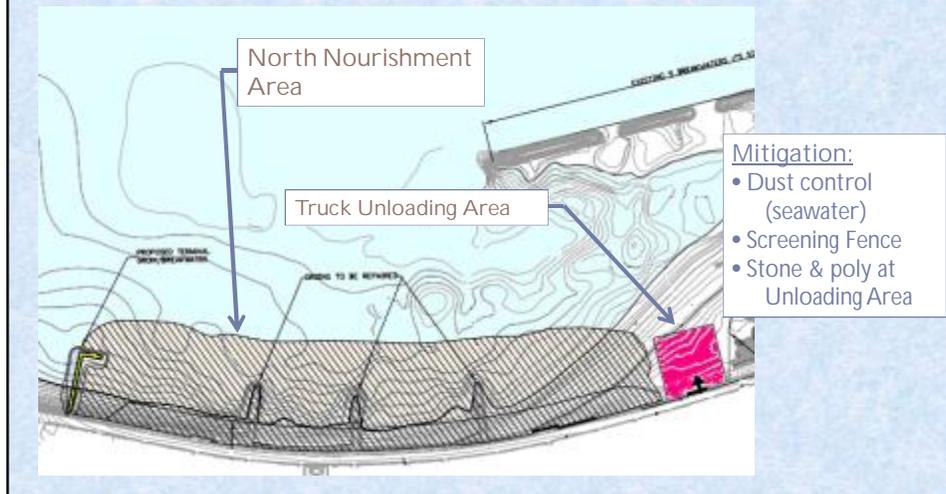
Equipment for New Terminal Groin:

- Large crane on Groin or Barge
- Loader or Bobcat on Groin
- Stone delivery by barge and/or truck

On Shore Drive:

- 400 ft. staging area (loss of 16 – 18 parking spaces)
- Equipment parking during non-work hours

C3A – North Nourishment Area & New Terminal Groin Construction Access:



C3A – North Nourishment Area & New Terminal Groin

Compliance with Performance Standards:

- Land Under the Ocean (310 CMR 10.25):
 - (5): Project will change alter bottom topography, but will reduce storm damage and erosion.
 - (6): Minimize adverse effects on marine habitat:
 - (a) no significant alteration of water circulation
 - (b) no known eel grass or widgeon grass
 - (c) no alteration in grain size – reusing existing sediments
 - (d) no anticipated change in water quality
 - (e) will cover intertidal and subtidal habitats: anticipate repopulation of shellfish by storm currents

C3A – North Nourishment Area & New Terminal Groin

Compliance with Performance Standards:

- Coastal Beach (310 CMR 10.27):
 - (3): Project will decrease erosion
 - (4): Groin construction:
 - (a) sized per ACOE
 - (b) nourishment fill will be placed after construction
 - (c) sediment transport around tip and during storms, over outer end
 - (5): Sediment sampling and grain size analyses indicates compatibility of beach nourishment material
 - Material & debris will be removed from beach on a daily basis
 - Large equipment may remain on beach if in containment area (stone over poly and surrounded by hay bales or equivalent)

C3A – North Nourishment Area & New Terminal Groin

Compliance with Performance Standards:

- Land Containing Shellfish (310 CMR 10.34):
 - (4): No adverse effects:
 - (a) water circulation: N/A
 - (b) relief elevation:
 - initial covering of intertidal and subtidal areas;
 - long-term enhancement of shellfish habitat
 - (c) compacting of sediments by vehicle traffic: N/A
 - (d) sediment size: analysis indicated compatibility
 - (e) natural drainage from adjacent land: N/A
 - (f) water quality: no long range impacts
 - (5): Temporary Impacts: Small existing habitat in the subtidal zone will be temporarily impacted.

Minimization and Mitigation

Part 1

- Reuse of tombolo sediments to reduce trucking from Saugus
- Compatible grain size of sediments from Saugus
- Low fine % (generally under 10%): minimize turbidity
- Time of year restriction: no work on tombolo during nesting times
- Tombolo dredging in pattern to preserve a portion of habitat distant (400 ft. or more) from the seawall
- Dredging and South Nourishment Area work to be coordinated with Mass. NHESP and US F&WS so as to provide habitat in post-construction beach configuration
- Burying cobble mounds in base of nourishment fill
- Mitigation for shellfish habitat impacts per recommendations of Winthrop Shellfish Warden

Minimization and Mitigation

Part 2 – Beach Habitat Protection

1. Fenced buffer between excavation activities and upper beach/dune area
2. Use of back-up alarms that are sensitive to ambient noise levels
3. Development of formal management plan for Piping Plover and Least Tern habitat:
 - Staffing for monitoring
 - Enforcement requirements
 - Maintenance/management of sand fencing and dune vegetation
 - Fencing to cordon off Least Tern habitat
 - Live trapping and removal of mammalian predators
4. Excavation Methods:
 - Maintaining existing dune/beach system in all areas not under active excavation
 - Separation of cobble and placement of this material under the sand surface of the nourishment area to improve habitat quality
 - Re-grading of existing tombolo to enhance habitat (Figure 10) to improve habitat quality
 - Ensure that the final grading of the beach slope is not steeper than 1:10 (v:h)
 - Ensure that the truck route only affects those portions of the tombolo that will be excavated
 - No excavation below -3 feet NAVD to prevent impacts to low tide foraging habitat

Minimization and Mitigation

Part 3 – Beach Nourishment

- Repaving of haul route streets:
 - Winthrop Parkway
 - Revere Street
 - Crest Avenue
 - Winthrop Shore Drive (as 4th part of project)
- Dust Control:
 - Wetting of sand
 - Barrier fence with screening
 - Dump truck on area of stone & poly fabric

Questions & Comments

