

Rehoboth Beach Effluent Disposal Project

Status Report
September 15, 2008

Total Water Management Solutions. Wastewater.



Agenda

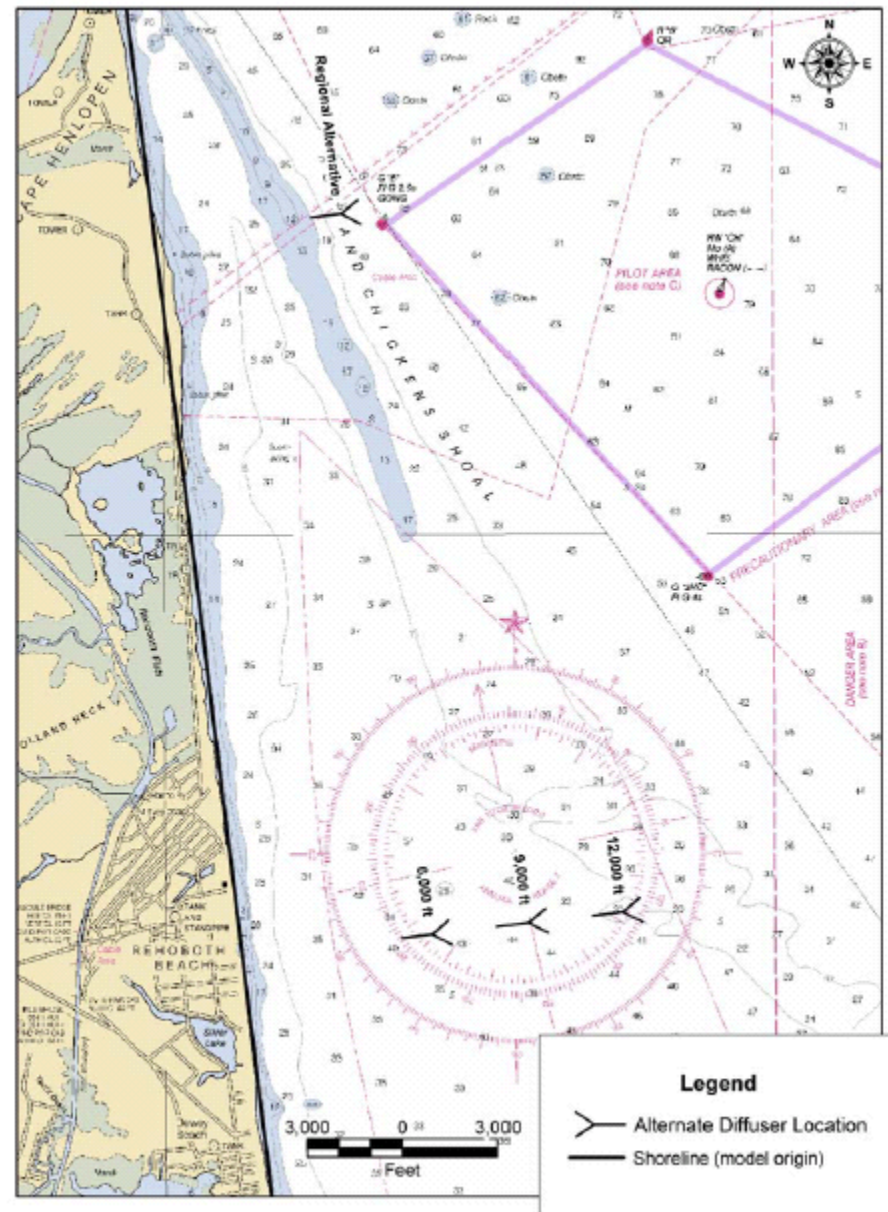
- Status of RFP
- Ocean Outfall
 - Location of outfall
 - Force main alignment
 - Permitting issues
 - WWTP upgrade
- Land Application
 - WWTP upgrade

Ocean Outfall

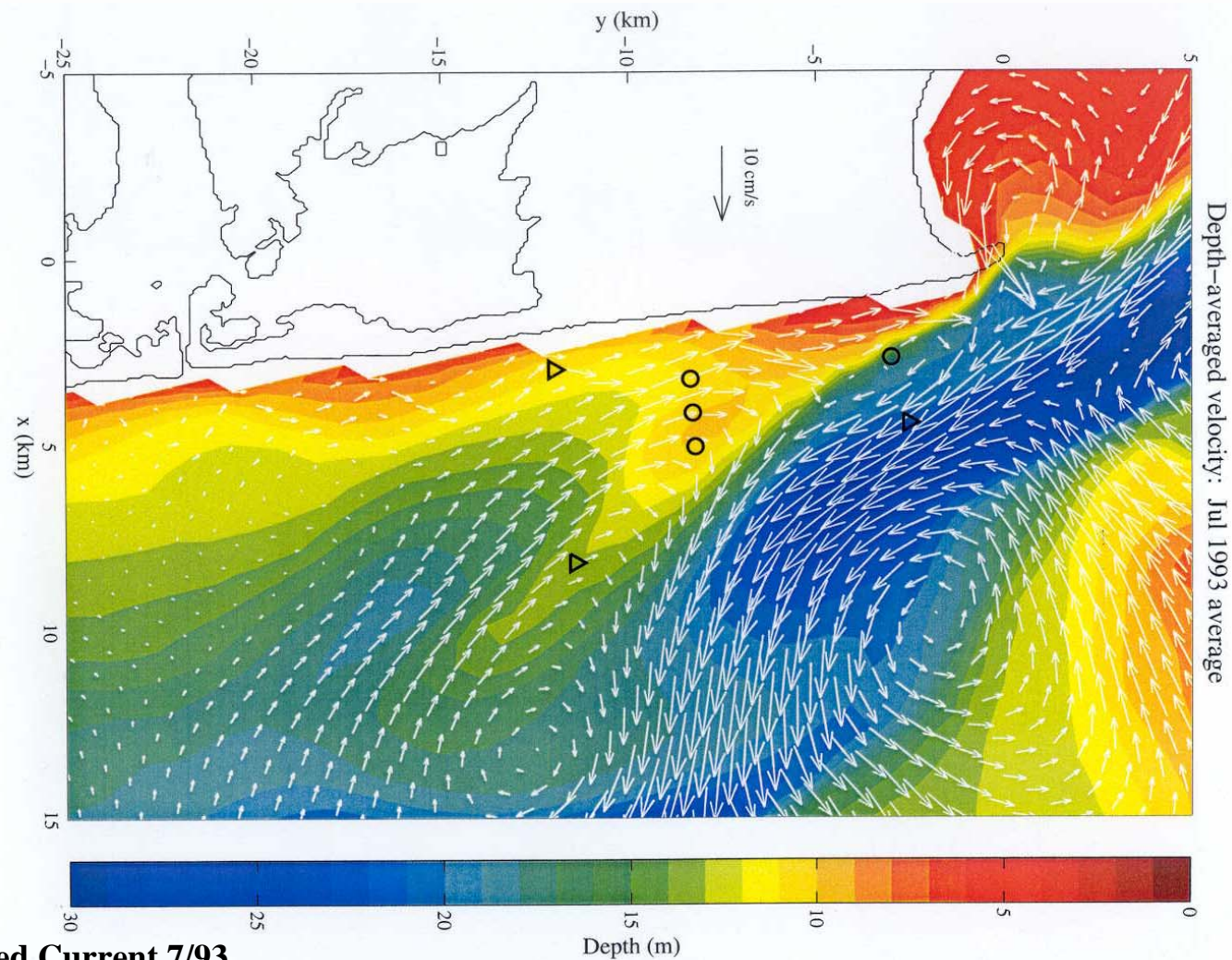
- Location
- University of Delaware current model
- Mixing Model (CORMIX)
 - Rehoboth Beach only
 - Regional alternatives
 - Optimized diffuser design

Outfall Locations

- Le Cato Study
- Cape Henlopen Alternative
- Rehoboth Beach Alternative
- Mixing Study

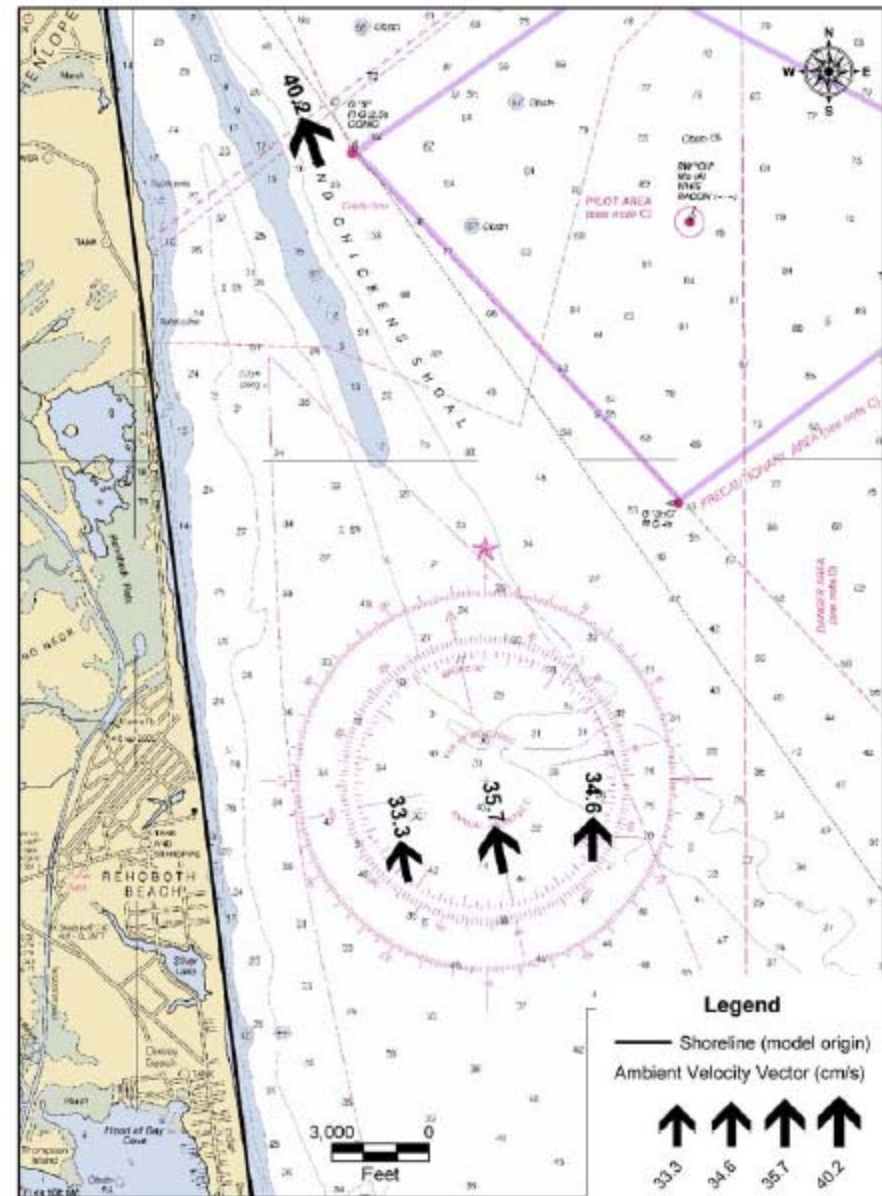


University of Delaware Current Model



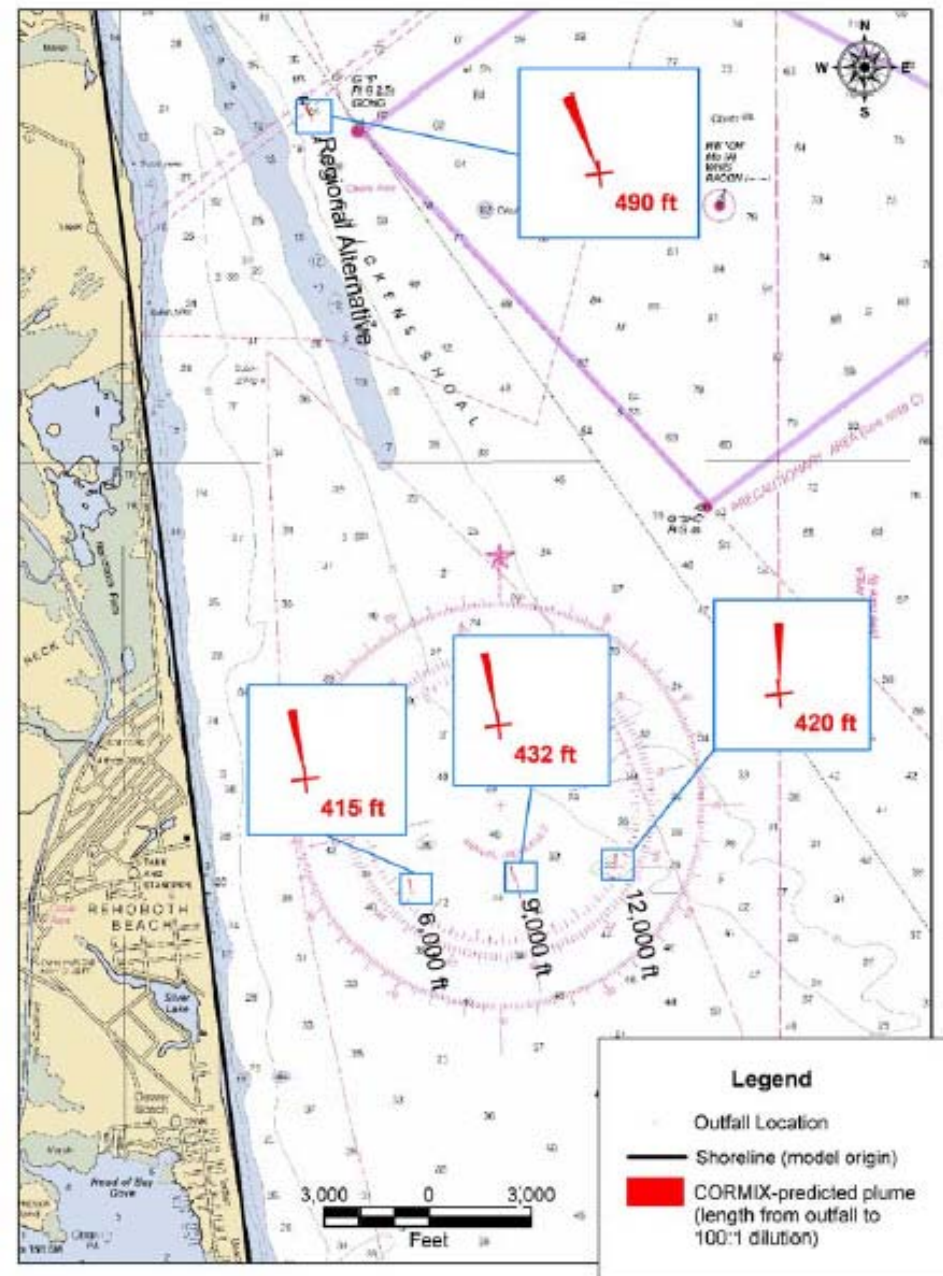
Depth Averaged Current 7/93

Current Velocity

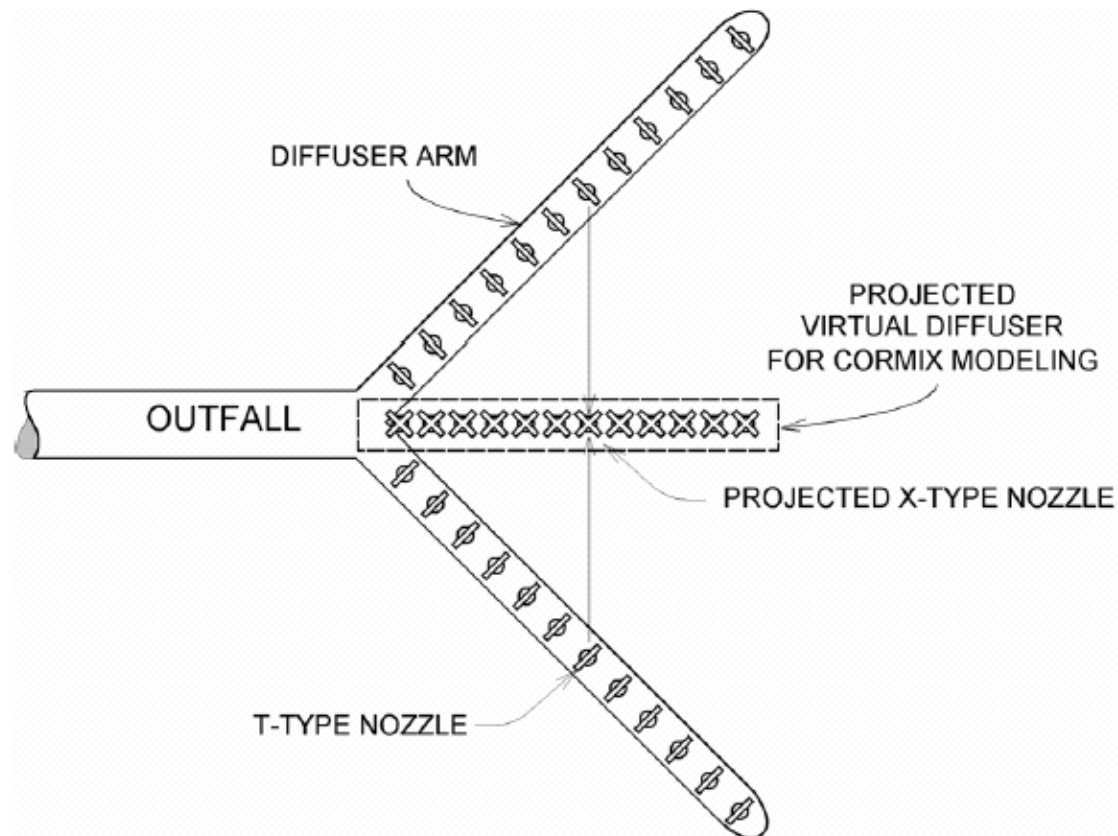


Distance to 100:1 Dilution

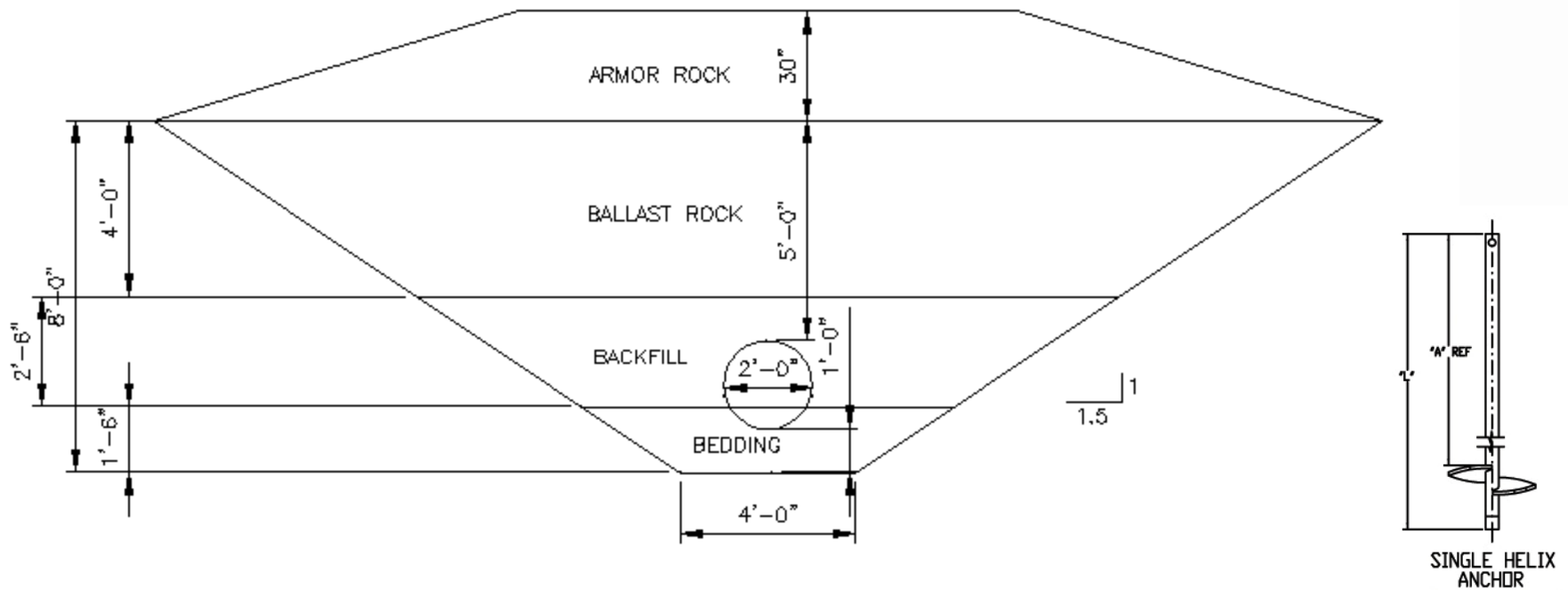
**Rehoboth Beach
Only Flows**



Schematic Design of Diffuser



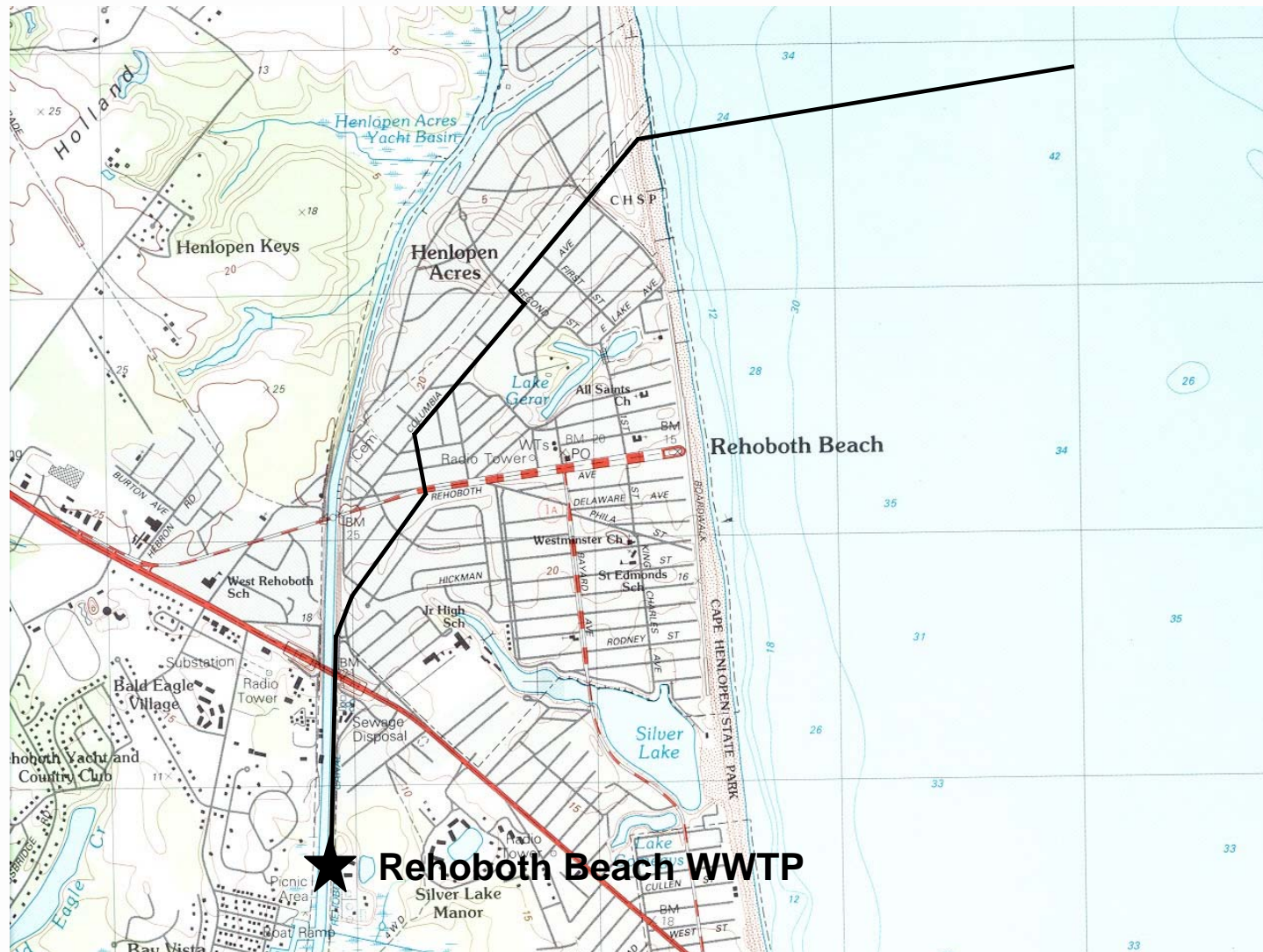
Ocean Outfall Cross Section



TYPICAL OCEAN OUTFALL
CROSS SECTION
SCALE: NTS



Ocean Outfall Force Main and Outfall





WWTP Access Road



1B Bridge



State Road



Rehoboth Ave



Henlopen Ave



Parking Lot Entrance



Parking Lot



Dune Entrance



Beach Entrance



Beach



Permitting Issues - Federal

- USCOE
 - NP-7 / IP-7
 - Section 403 / 404 (dredging / excavation)
 - Marine Protection, Research and Sanctuaries Act
 - Rivers and Harbors Act
- EPA
 - NPDES
 - Beach Protection Act
- US Fish & Wildlife
- US Marine Fisheries

Permitting Issues - State

- DNREC
 - NPDES
 - ERES Waters
- Coastal Zone Management
 - Coastal Zone Act
 - Beach Preservation Act
 - Underwater Lands Act
 - Wetlands Act
- Delaware State Historic Preservation
- Soil & Water Conservation

Permitting Issues - EIA

Environmental Impact Assessment

- Baseline Studies
 - Water quality
 - Benthic organisms
 - Fisheries
 - Physical environment
 - Wave and current studies
 - Geological conditions
 - Seabed dynamics
 - Cultural
- Water quality impacts
- Public health impacts

Permitting Issues – Dilution Modeling

Near-Field

- CORMIX
- USEPA Plumes

Far-Field

- EFDC Hydrodynamic Model (2D)

WWTP Upgrade Ocean Outfall

Permit

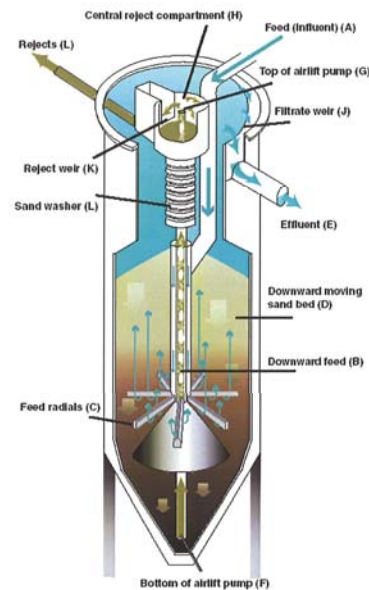
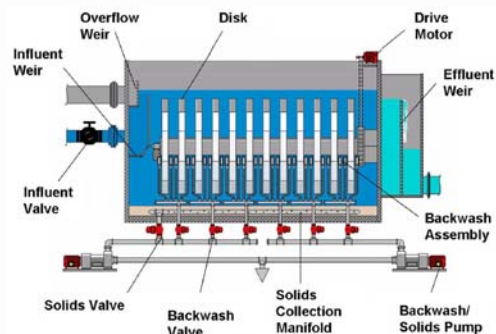
BOD 19 mg/L

TSS 15 mg/L

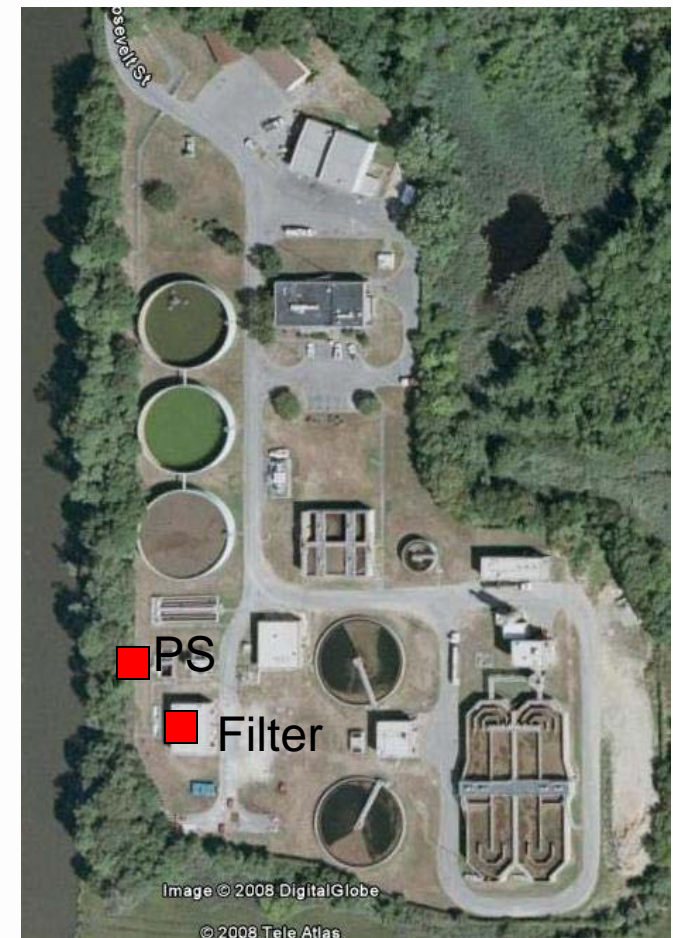
Upgrades

New effluent filters

Pump station



Rehoboth Beach WWTP



WWTP Upgrade Ocean Outfall Bacterial Water Quality Standard

Primary Contact
Recreation
Marine Waters

	Enterococcus (colonies/100mL)	
	<u>Single Value</u>	<u>Geometric Mean</u>
Public Health	104	35
Existing Permit	--	10

WWTP Upgrade Spray Irrigation

Permit:

<u>Access</u>	<u>BOD</u>	<u>TSS</u>	<u>FC</u>	<u>Turb.</u>
Restricted	50	50	200	--
Limited	30	30	200	--
Unlimited	10	10	20	5
	mg/L	mg/L	#/100mL	TU

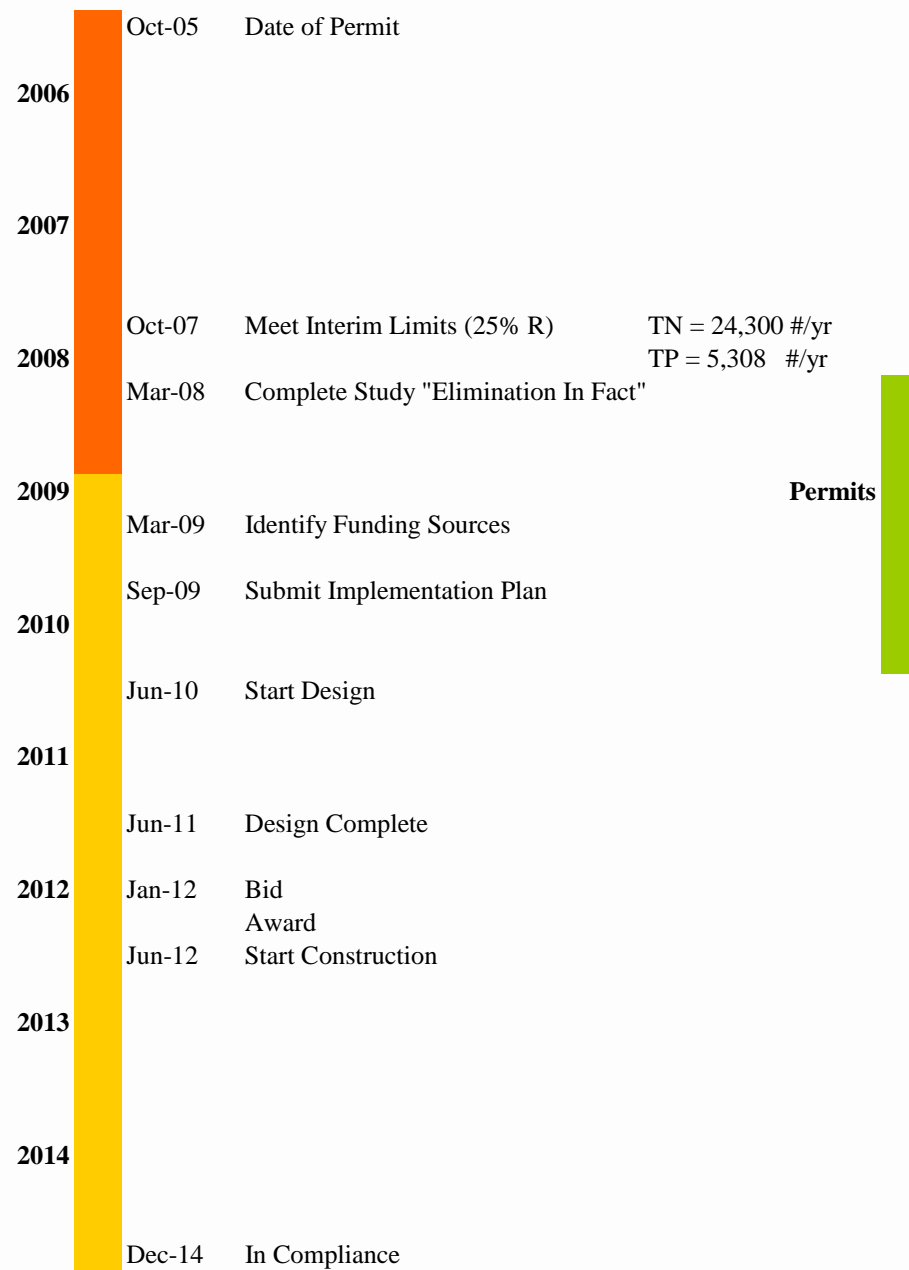
Upgrades

■ Pump station

Rehoboth Beach WWTP



Schedule



Questions ?



New Jersey

127 miles of coast

14 major wastewater outfalls

