Massachusetts Water Resources Authority

NORTH DORCHESTER BAY CSO PROJECT UPDATE

Presentation to the Wastewater Advisory Committee
November 4, 2010
Make beach closings a rare event.

**CSO Control**
Eliminate CSO discharges to the beaches up to the 25-year storm. **Current:** 16 discharges per year on average.

**Stormwater Control**
Prevent separate stormwater discharges to the beaches up to the 5-year storm. **Current:** 100 discharges per year on average (every time it rains).
Project Location

- Dewatering Pump Station
- Odor Control Facility
- Dewatering Force Main
- Drop Shaft
- 17-Ft. Diameter Storage Tunnel
North Dorchester Bay CSO Plan:  $272 M

- **Pleasure Bay Storm Drain** ($3.2 M)  
  Completed March 2006

- **CSO Storage Tunnel** ($147 M)  
  Completed November 2009

- **Pump Station/Force Main** ($26.9 M)  
  NTP May 2009  
  Completion May 2011

- **Below-Ground Vent Building** ($5.2 M)  
  NTP November 2009  
  Completion May 2011

- **Morrissey Blvd Drain** ($36.2 M)  
  Completed July 2009

- **Engineering/Land/Permits** ($53.5 M)
North Dorchester Bay CSO Storage Tunnel and CSO/Stormwater Connections

Map showing locations such as Columbus Park Headworks, Odor Control Facility, Morrissey Blvd. Storm Drain, and Dewatering Pump Station.
Example of Diversion Structure

- Influent Combined Sewer
- Diversion Weir
- To Tunnel Drop Shaft
- Hydraulically Operated Gate
- Tide Gate
- To Existing Outfall
North Dorchester Bay CSO Storage Tunnel

17-ft. finish diam.
2.1 miles long
19 MGal storage

Mined and lined 10,832 feet of tunnel in 9 mos., incl. 1-month suspension.

Contract cost: $146.8M
North Dorchester Bay 15 MGD Pump Station
At Massport Conley Terminal

Construction Contract
Commenced: May 2009
Contract Cost $25.9M

Slurry wall

August 2009

Installation of 43 mini-piles

November 2009

Slurry wall, foundation piles and excavation are complete. Construction of pumping station structure is underway.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Control Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1-Year, 24-Hour Storm</td>
<td>Capture all CSO and Storm water in Tunnel</td>
</tr>
<tr>
<td>1 to 5-Year, 24-Hour Storm</td>
<td>Capture all CSO and Storm water from BOS081 to BOS086; after taking first flush divert BOS087 SW to Morrissey Boulevard Drain</td>
</tr>
<tr>
<td>5 to 25-Year, 24-Hour Storm</td>
<td>Capture all CSO in Tunnel</td>
</tr>
</tbody>
</table>
• Predicted CSO and storm water volumes developed by model for range of rainfall conditions
• Depth sensor provides volume available in tunnel
• Control system compares volume needed vs volume available
• Control logic makes gate decisions accordingly
Yearly O&M Costs from LCCA

- Electricity $174,878
- Water $5,393
- Gas $32,818
- Carbon $59,573*
- Maintenance $10,000
- Labor $73,217

-----------

- Total O&M $355,879

* Annualized cost, carbon replacement will be required every 4 years at Dewatering Pumping Station and every 7 years at Odor Control Facility
• Staff will be trained in all aspects of the operation & maintenance of the pumping station, storage tunnel, diversion chambers and odor control facility.

• Standard Operating Procedures (SOPs) are currently being developed by consultant, reviewed by MWRA and will be used to train Authority staff.

• SOPs include; SCADA control and monitoring, wet weather operation, tunnel dewatering and carbon monitoring/replacement.
A maintenance/inspection program for all NDB Facilities will be in place when the facility is turned over to the Authority.

Staff will be trained on preventive and corrective maintenance activities.

Current Status – MWRA has received the preventive maintenance program (1080s) for the diversion structures.

Awaiting preventive maintenance programs for the Dewatering Pumping Station, Odor Control Facility and Storage Tunnel.

All maintenance activities will be tracked and documented in Maximo.
• Routine maintenance will be performed on a regular basis, some examples are:

• Daily - inspections of Dewatering Pumping Station and Odor Control Facility

• Monthly – inspection of pumps, diversion structures and hydraulic systems

• Quarterly – inspection of motors and HVAC systems

• Semi-Annually – inspection of tide gates
The following service contracts will be required to operate and maintain the NDB facilities:

- Grit & Screenings Removal
- Fire Alarm and Fire Sprinkler Systems
- Crane Maintenance
- Boiler and Water Heater
- Hydraulic Equipment
- Weather Service for SCADA Programming