Impacts of March Storms: The Sequel

Presented by Carolyn Fiore

Wednesday, May 19, 2010
Recent Rains Brought Record Totals

- Most rain since October 1955, when the area was hit with 2 hurricanes

<table>
<thead>
<tr>
<th>Storm Period</th>
<th>Rainfall Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 24 - 26</td>
<td>3.49 inches</td>
</tr>
<tr>
<td>March 1</td>
<td>0.32 inches</td>
</tr>
<tr>
<td>March 13 - 16</td>
<td>9.16 inches</td>
</tr>
<tr>
<td>March 22 - 24</td>
<td>2.49 inches</td>
</tr>
<tr>
<td>March 26</td>
<td>0.22 inches</td>
</tr>
<tr>
<td>March 29 - March 31</td>
<td>5.45 inches</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21.13 inches</strong></td>
</tr>
</tbody>
</table>
Magnitude of March 13-16 Storm Event

- Twenty-four hour rain totals place this storm between a 50 and 100 year event
Record River Flooding

- Record flooding of almost all rivers in Central and Eastern Massachusetts
Record River Flooding
Local Flooding Everywhere
Deer Island measured new record levels of average daily and maximum hourly flow rates.
Deer Island Treatment Plant – Record Flow Levels

- Deer Island has set new records for the number of hours that flow levels exceed certain thresholds.

Deer Island Flow Data
March 2010 vs. May 2006 Event

<table>
<thead>
<tr>
<th>Event</th>
<th>May 2006</th>
<th>March 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;1,200 MGD</td>
<td>17.6</td>
<td>72.9</td>
</tr>
<tr>
<td>&gt;1,100 MGD</td>
<td>52.6</td>
<td>124.4</td>
</tr>
<tr>
<td>&gt;1,000 MGD</td>
<td>78.8</td>
<td>166.9</td>
</tr>
</tbody>
</table>

Treatment Plant Flow

- May 2006
- March 2010
Burnt-Out Pump Motor

- North Main Pump Station
Nut Island Headworks/ South System

- Flow to Nut Island exceeded system capacity resulting in two short duration releases on March 15th
  - 12:30 pm to 1:09 pm – 39 minutes
  - 3:50 pm to 4:08 pm – 18 minutes
  - Total estimated volume discharged was 5 to 10 million gallons
  - Nut Island and Deer Island operated at full capacity

- MWRA’s NPDES Permit does not prohibit an emergency bypass of treatment facilities when the “Bypass was unavoidable to prevent the loss of life, personal injury or severe property damage.”
  - Due to record flows the bypass discharges were required to prevent long term damage to the headworks facility and protect public health.

- NPDES Permit the requires notifications to local health authorities, EPA, and Massachusetts DEP
South System Pump Station set new record flow levels
7,000 Feet Of Squantum Force Main
Field Operations

- All facilities were staffed 24-hours a day
- Additional maintenance and field staff were available 24-hours a day to ensure any problems would be addressed quickly
- 16 large portable pumps were deployed to seven different locations
Field Operations

- Combined Sewer Overflow Treatment Facilities Discharging

<table>
<thead>
<tr>
<th>Hours of Discharge</th>
<th>Hours of Discharge</th>
<th>Treated CSO Volume</th>
<th>2009 Annual Total Treated CSO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somerville Marginal</td>
<td>94</td>
<td>149 MG</td>
<td>73 MG</td>
</tr>
<tr>
<td>Prison Point</td>
<td>93</td>
<td>574 MG</td>
<td>254 MG</td>
</tr>
<tr>
<td>Cottage Farm</td>
<td>124</td>
<td>305 MG</td>
<td>43 MG</td>
</tr>
<tr>
<td>Union Park</td>
<td>80</td>
<td>126 MG</td>
<td>28 MG</td>
</tr>
</tbody>
</table>

- 3 times the volume of the entire previous year
Cleaning-Up
Cleaning-Up
Clinton Wastewater Treatment Plant

- Nashua River overflowing its banks into the facility
Clinton Wastewater Treatment Plant
Wachusett Reservoir

• Wachusett Spillway discharging over 1 billion gallons per day
Wachusett Reservoir
Southborough
Community Advisories

- Updates were emailed to communities and posted on MWRA’s homepage
Deer Island Diesel Fuel Usage

Deer Island Total Diesel Fuel Usage
FY10 March YTD

Total Budget in gallons: 602,359
Total Actual / Projection in gallons: 1,828,561

<table>
<thead>
<tr>
<th>Usage in Gallons</th>
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<tbody>
<tr>
<td>Jul</td>
</tr>
<tr>
<td>0</td>
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</table>
Agency-Wide Overtime

Authority Wide Overtime
FY10 March YTD

Total FY10 Budget: $3,408,792
Total Actual / Projection: $3,718,899
Budget Impacts

• Estimated total costs: $3.5 million

• Net cost of running CTGs: $1.7 million

• Applying for any available FEMA funding