To: Public Drinking Water Protection Committee  
Through: Juan Mariscal, P.E., General Manager  
From: Beverly O'Keefe, Supervising Planner  
Date: August 22, 2006  
Subject: Drought Update: Current Water Conditions

BACKGROUND: Pursuant to State Guide Plan Element 724: The Rhode Island Drought Management Plan, the Water Resources Board is required to assess water conditions monthly. Staff has assembled climate information from a variety of sources to monitor the potential for drought conditions in Rhode Island which is summarized below:

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Date</th>
<th>Report Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAA NWS Taunton MA Climate Report</td>
<td>21 Aug 06</td>
<td>2.08” received TF Green Airport MTD - 0.52” below normal for August</td>
</tr>
<tr>
<td>USGS Surface Water Runoff Report</td>
<td>July 2006</td>
<td>RI – Above Normal</td>
</tr>
<tr>
<td>Scituate Reservoir</td>
<td>Aug 22, 2006</td>
<td>281.88 FEET (93.7 % of Capacity)</td>
</tr>
<tr>
<td>USGS Groundwater Level Summary</td>
<td>July, 2006</td>
<td>All Areas RI - Above Normal</td>
</tr>
<tr>
<td>USGS RI Groundwater Level Detail Well Report</td>
<td>July, 2006</td>
<td>8 Record High Water Levels</td>
</tr>
<tr>
<td>NOAA NWS Drought Severity Index: Palmer</td>
<td>19 Aug 2006</td>
<td>Very Moist Spell</td>
</tr>
<tr>
<td>NOAA NWS Crop Moisture Index</td>
<td>19 Aug 2006</td>
<td>Slightly Dry/Favorably Moist</td>
</tr>
<tr>
<td>NOAA NWS Drought Monitor Seasonal Assessment</td>
<td>15 Aug 2006</td>
<td>Normal</td>
</tr>
<tr>
<td>NOAA Seasonal Drought Outlook (through November 2006)</td>
<td>17 Aug 2006</td>
<td>Normal Conditions</td>
</tr>
</tbody>
</table>

Rhode Island month to date rainfall recorded at 2.08 inches at T.F. Green Airport (normal rainfall value through August 21 is 2.60 inches). Rainfall recorded since June 1 totals +13.36 inches, a departure from normal of +4.21 inches for the two-month period, and +3.02 inches since January 1, 2006. Preliminary Precipitation Data for June and July 2006 is provided as an attachment.

The USGS Water Conditions Statement is summarized in three tables (Surface Water Runoff, Ground-water Level Conditions, and Summary of Rhode Island Ground-Water Levels) embedded in this memorandum.

Surface-water flows at the end of July 2006 were above normal (highest 25 percent of flows for July) for all of Rhode Island.
Ground-water levels were generally above normal (highest 25 percent of levels for July) all of Rhode Island.

During July, 8 wells in Rhode Island set new record-high levels for the month of July.

Borden Brook/Cobble Mountain, Quabbin, and Scituate Reservoirs were 89-, 98-, and 99- percent full, respectively, at the end of July. In comparison, Borden Brook/Cobble Mountain, Quabbin, and Scituate Reservoirs were 96-, 101-, and 106-percent full, respectively, at the end of June.
TABLE 3: SUMMARY OF GROUND-WATER LEVELS

July 2006

PROVISIONAL

(NOTE: Wells with * also available in real-time at top of Ground-Water Data page; OWc, monthly measured value used in high ground-water level estimation report, USGS Open-File Report 80-1205.)

<table>
<thead>
<tr>
<th>WELL</th>
<th>L T</th>
<th>START</th>
<th>NET CHANGE</th>
<th>DEPARTURE</th>
<th>WATER LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T I</td>
<td>YEAR</td>
<td>IN ONE MONTH</td>
<td>IN MONTHLY</td>
<td>FROM MON</td>
</tr>
<tr>
<td></td>
<td>O T</td>
<td>PH RECORD</td>
<td>MEDIAN</td>
<td>SURFACE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>O O</td>
<td>(FEET)</td>
<td>(FEET)</td>
<td>(FEET)</td>
<td>DAY</td>
</tr>
</tbody>
</table>

RHODE ISLAND

<table>
<thead>
<tr>
<th>WELL</th>
<th>L T</th>
<th>START</th>
<th>NET CHANGE</th>
<th>DEPARTURE</th>
<th>WATER LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T I</td>
<td>YEAR</td>
<td>IN ONE MONTH</td>
<td>IN MONTHLY</td>
<td>FROM MON</td>
</tr>
<tr>
<td></td>
<td>O T</td>
<td>PH RECORD</td>
<td>MEDIAN</td>
<td>SURFACE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>O O</td>
<td>(FEET)</td>
<td>(FEET)</td>
<td>(FEET)</td>
<td>DAY</td>
</tr>
</tbody>
</table>

BURRILLVILLE 187 TS 1968 - 1.03 + 1.11 + 1.11 14.80 24
BURRILLVILLE 395 UT 1992 - 5.39 ----- - 0.48 10.88 27
BURRILLVILLE 396 VT 1992 - 0.78 ----- + 0.57 5.29 25
BURRILLVILLE 397 HT 1992 - 7.28 ----- + 1.96 18.73 27
BURRILLVILLE 398 HT 1992 - 5.32 ----- + 0.51 10.47 27
CHARLESTOWN 18 FS 1946 - 3.97 + 2.74 + 3.06 15.59 25
CHARLESTOWN 586 VT 1992 - 0.62 ----- + 0.32 3.91 26
CHARLESTOWN 587 ST 1992 - 2.96 ----- + 1.70 9.32 26
COVENTRY 342 VS 1991 ----- + 1.49 + 1.27 9.37 24
COVENTRY 411 SS 1961 - 1.20 + 1.72 + 1.51 20.41 25
COVENTRY 466 VT 1992 - 1.06 ----- + 0.96 3.55 25
CRANSTON CITY 439 ST 1992 - 4.80 ----- + 2.14 15.38 25
CHARLESTOWN 18 FS 1946 - 3.97 + 2.74 + 3.06 15.59 25
CHARLESTOWN 586 VT 1992 - 0.62 ----- + 0.32 3.91 26
CHARLESTOWN 587 ST 1992 - 2.96 ----- + 1.70 9.32 26
COVENTRY 342 VS 1991 ----- + 1.49 + 1.27 9.37 24
COVENTRY 411 SS 1961 - 1.20 + 1.72 + 1.51 20.41 25
COVENTRY 466 VT 1992 - 1.06 ----- + 0.96 3.55 25
CRANSTON CITY 439 ST 1992 - 4.80 ----- + 2.14 15.38 25
CUMBERLAND 265 SS 1946 - 1.27 + 1.00 + 1.91 12.81 25
EXETER 6 VS 1948 - 0.55 + 1.09 + 1.09 5.46 24
EXETER 158 ST 1991 - 2.57 + 5.65 + 5.03 9.72 24
EXETER 238 FT 1991 - 0.88 + 0.64 + 0.56 12.25 25
EXETER 278 HT 1991 - 3.40 + 4.87 + 4.51 11.46 25
EXETER 475 VS 1981 - 0.82 + 1.40 + 1.54 13.68 24
FODER 500 HT 1991 - 1.19 + 2.54 + 2.17 6.53 24
FODER 290 HT 1991 - 3.54 ----- + 4.24 7.56 25
HOPKINTON 67 ST 1991 - 2.97 + 2.71 + 2.98 15.82 25
LINCOLN 84 VS 1946 - 0.34 + 0.77 + 1.23 4.44 24
LITTLE COMPTON 142 ST 1992 - 2.24 ----- + 4.60 12.32 25
NEW SHOREHAM 258 UT 1991 ----- ----- ---- ----- 
NORTH KINGSTOWN 255 VS 1954 - 2.41 + 1.55 + 1.82 7.35 25
NORTH SMITHFIELD 21 TS 1947 - 1.12 + 0.84 + 1.31 7.98 24
PORTSMOUTH 551 HT 1992 - 2.09 ----- + 13.04 30.67 27
PROVIDENCE 48 TS 1944 - 0.63 + 0.70 + 3.07 3.68 24
RICHMOND 417 VS 1976 - 0.81 + 0.84 + 0.83 6.48 25
RICHMOND 600* TS 1977 - 1.00 + 2.67 + 2.58 31.56 25
RICHMOND 785 PS 1989 - 0.28 + 1.31 + 1.55 21.93 25
SOUTH KINGSTOWN 6 VS 1955 - 0.77 + 1.74 + 1.90 10.86 25
SOUTH KINGSTOWN 119BFS 1988 - 1.54 + 1.68 + 1.29 8.10 25
TIVERON 274 TT 1990 ----- ----- ---- ----- 
WARWICK 59 ST 1991 - 1.87 + 5.51 + 4.67 5.86 24
WEST SMITHFIELD 522 FS 1969 - 1.05 + 1.43 + 1.23 11.96 25
WEST GREENWICH 181 US 1969 - 0.86 + 0.86 + 1.04 15.52 24
WEST GREENWICH 206 ST 1991 - 0.74 + 1.32 + 0.52 4.47 25

> SET NEW HIGH OR EQUALED HIGHEST RECORDED WATER LEVEL FOR END OF NOVEMBER
< SET NEW LOW OR EQUALED LOWEST RECORDED WATER LEVEL FOR END OF NOVEMBER
------ - DATA NOT AVAILABLE

TOPOGRAPHIC (TOPO) SETTING: F=FLAT, G=FLOOD PLAIN, H=HILLTOP, S=HILLSIDE, T=TERRACE, U=UNDULATING, V=VALLEY, W=UPLAND DRAW, LITHOLOGY (LITHO): G=GRAVEL, R=ROCK, S=SAND, T=TILL
The NOAA National Weather Service (NWS) Drought Severity Index for the period ending July 22, 2006 shows extremely moist conditions for the region (Table 4). The Crop Moisture Index for the same time period shows Slightly dry/favorably moist conditions (Table 5).

Table 4: Drought Severity Index

<table>
<thead>
<tr>
<th>Drought Severity Index by Division</th>
<th>Weekly Value for Period Ending 19 AUG 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Palmer</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Crop Moisture Index

<table>
<thead>
<tr>
<th>Crop Moisture Index by Division</th>
<th>Weekly Value for Period Ending 19 AUG 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Term Need vs. Available Water in 5 Ft Profile</td>
<td></td>
</tr>
</tbody>
</table>
Tables 6 and 7 present national seasonal assessment and state rankings based on precipitation. The Drought Monitor (Table 6) focuses on broad scale conditions, and portrays Rhode Island experiencing a normal intensity through July 18, 2006. The NOAA Seasonal Drought Outlook through October 2006 projects “normal” conditions for Rhode Island.

Table 7: NOAA Seasonal Drought Outlook
Precipitation patterns for Rhode Island have remained within normal limits through August 2006. Water conditions will continue to be closely monitored over the next month. The Committee and the Water Resources Board will continue to closely monitor conditions.

RECOMMENDATIONS: Information only.

Additional Information on Water Conditions:
NOAA NWS Climate Report
http://www.erh.noaa.gov/box/fcsts/BOSESFBOX.html
NOAA Drought Severity Index by Division
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif
Crop Moisture Index by Division http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/cmi.gif
NOAA Drought Information Center
http://www.drought.noaa.gov/
U. S. Geological Survey – MA & RI
http://ma.water.usgs.gov/