**State of Rhode Island and Providence Plantations**
**Water Resources Board**
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To: Public Drinking Water Protection Committee
Through: Juan Mariscal, P.E., General Manager
From: Beverly O'Keefe, Supervising Planner
Date: May 24, 2006
Subject: Drought Update: Current Water Conditions

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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:

| Data Source | Date | Report Summary |
|---|---|---|
| NOAA NWS Taunton MA Climate Report | 24 May 2006 | 7.25" received TF Green Airport<br>4.49" above normal for May |
| USGS Surface Water Runoff Report | April 2006 | RI – Below Normal |
| Scituate Reservoir | 24 May 2006 | 285.39 FEET (104.3 % of Capacity) |
| USGS Groundwater Level Summary | April 2006 | East Coastal - Normal<br>All Other Areas of RI -Below Normal |
| USGS RI Groundwater Level Detail Well Report | April 2006 | 4 Record Low Water Levels |
| NOAA NWS Drought Severity Index: Palmer | 20 May 2006 | Near Normal |
| NOAA NWS Crop Moisture Index | 20 May 2006 | Wet |
| NOAA NWS Drought Monitor Seasonal Assessment | 16 May 2006 | Normal |
| NOAA NCDA Statewide Precipitation Ranks | April 2006 | Below Normal |

Rhode Island experienced an increase in the amount of precipitation during May 2006 with month to date rainfall recorded at - 7.25 inches. The normal rainfall value through May 24 is 2.76 inches. An updated Rhode Island precipitation report will be provided at the committee meeting .

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 April 2006 were below normal (lowest 25 percent of flows for April) for Rhode Island rivers. New historical minimum monthly mean discharge values for April were recorded at two stream gage stations in Rhode Island. These stations and their starting years of record are:

Blackstone River at Woonsocket, RI 1929
Woonasquatucket River at Centerdale, RI 1941
Please refer to the April Surface-Water Conditions map for more information

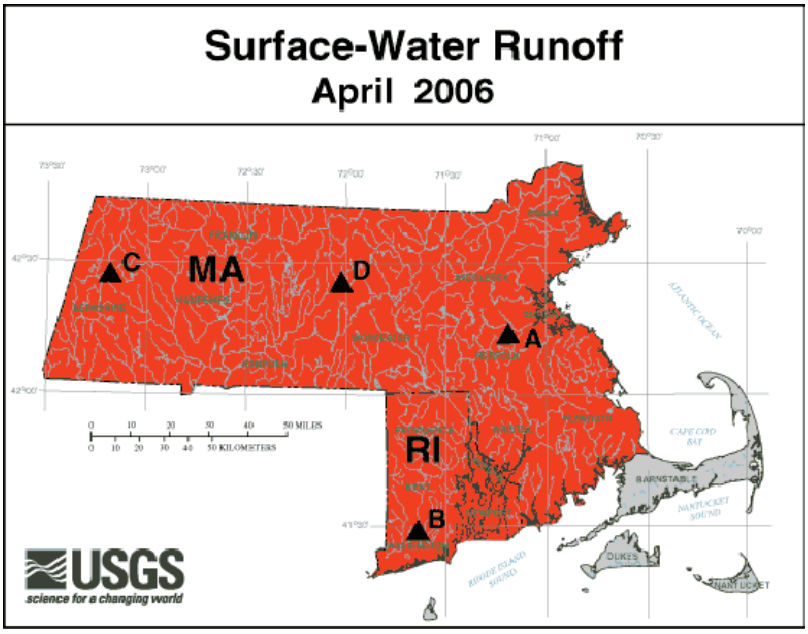


Table 1: Surface Water Runoff

**COMPARISON WITH MONTHLY NORMAL RANGE**

- ABOVE NORMAL – within the highest 25 percent of record for this month
- NORMAL RANGE
- BELOW NORMAL – within the lowest 25 percent of record for this month
- NO STREAM DATA
- ▲ INDEX STREAM GAGE AND IDENTIFIER LETTER

NOTE: Additional sites from those shown are used to determine ranges

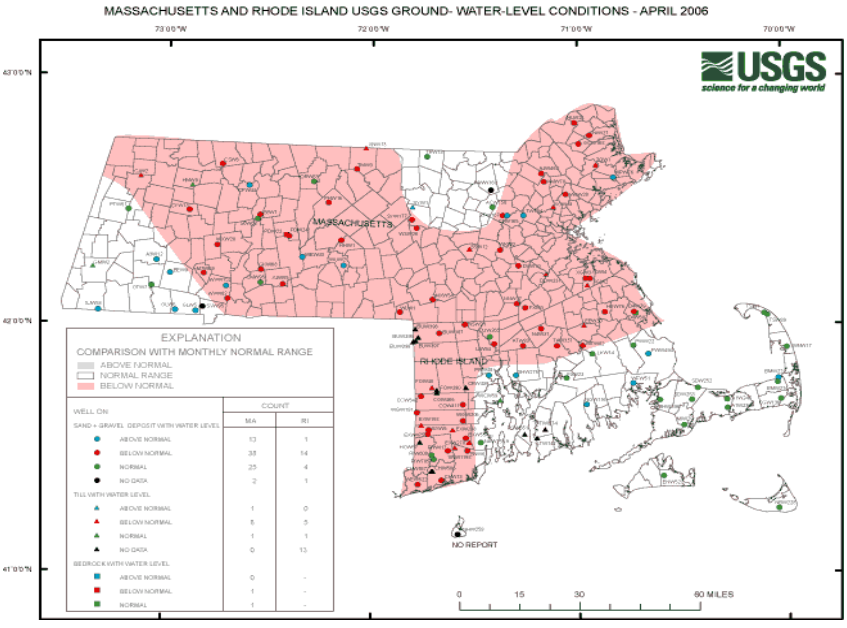


Table 2: Ground Water-Level Conditions

Ground-water levels were generally normal (between the highest and lowest 25 percent of levels for April) in east-coastal Rhode Island. Ground-water levels at the end of April 2006 were generally below normal (lowest 25 percent of levels for April) for all other areas in Rhode Island. Please refer to the April Ground-Water Conditions map for individual well conditions and other information.

Four wells in Rhode Island set new record low levels for the month of April. The most important of these were the Winchester 14 and Templeton 3 wells that have records extending back to 1940 and 1957, respectively.

Borden Brook/Cobble Mountain and Quabbin Reservoirs were 98- and 99- percent full, respectively, at the end of April. The Scituate Reservoir were 104-percent of capacity on May 24, 2006.

**TABLE 3: SUMMARY OF GROUND-WATER LEVELS April 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.)

| WELL | LOCATION TOPOGRAPHY | START YEAR OF RECORD | NET CHANGE IN MONTH (FEET) | NET CHANGE IN ONE YEAR (FEET) | DEPARTURE FROM MONTHLY MEDIAN (FEET) | WATER LEVEL BELOW LAND-SURFACE DATUM (OWc) (FEET) | DAY |
|---|---|---|---|---|---|---|---|
| **RHODE ISLAND** | | | | | | | |
| BURRILLVILLE 187 | TS | 1968 | - 0.35 | - 0.94 | - 1.25 | 15.21 | 21 |
| BURRILLVILLE 395 | UT | 1992 | ----- | ----- | ----- | ----- | |
| BURRILLVILLE 396 | VT | 1992 | ----- | ----- | ----- | ----- | |
| BURRILLVILLE 397 | HT | 1992 | ----- | ----- | ----- | ----- | |
| BURRILLVILLE 398 | HT | 1992 | ----- | ----- | ----- | ----- | |
| CHARLESTOWN 18 | FS | 1946 | - 1.23 | - 3.65 | - 2.17 | 17.77 | 25 |
| CHARLESTOWN 586 | VT | 1992 | ----- | ----- | ----- | ----- | |
| CHARLESTOWN 587 | ST | 1992 | ----- | ----- | ----- | ----- | |
| COVENTRY 342 | VS | 1991 | - 0.38 | - 1.90 | - 1.83 | 9.30 < | 21 |
| COVENTRY 411 | SS | 1961 | - 0.66 | - 2.13 | - 1.69 | 21.85 | 21 |
| COVENTRY 466 | VT | 1992 | ----- | ----- | ----- | ----- | |
| CRANSTON CITY 439 | ST | 1992 | ----- | ----- | ----- | ----- | |
| CUMBERLAND 265 | SS | 1946 | + 0.35 | - 0.50 | - 0.25 | 12.18 | 21 |
| EXETER 6 | VS | 1948 | - 0.53 | - 1.56 | - 0.99 | 5.84 | 21 |
| EXETER 158 | ST | 1991 | - 0.96 | - 3.12 | - 2.49 | 8.68 < | 21 |
| EXETER 238 | FT | 1991 | + 0.20 | - 0.34 | - 0.36 | 11.84 | 25 |
| EXETER 278 | HT | 1991 | - 1.32 | - 3.43 | - 4.21 | 12.23 | 25 |
| EXETER 475 | VS | 1981 | - 0.88 | - 1.58 | - 1.20 | 14.05 | 21 |
| EXETER 554 | SS | 1988 | - 0.25 | - 0.96 | - 1.15 | 10.06 < | 25 |
| FOSTER 40 | HT | 1991 | - 0.25 | - 1.63 | - 1.13 | 4.95 | 21 |
| FOSTER 290 | HT | 1992 | ----- | ----- | ----- | ----- | |
| HOPKINTON 67 | ST | 1991 | ----- | ----- | ----- | ----- | |
| LINCOLN 84 | VS | 1946 | - 0.05 | - 2.28 | - 0.88 | 5.31 | 21 |
| LITTLE COMPTON 142 | ST | 1992 | ----- | ----- | ----- | ----- | |
| NEW SHOREHAM 258 | UT | 1991 | ----- | ----- | ----- | ----- | |
| NORTH KINGSTOWN 255 | VS | 1954 | + 0.43 | - 0.85 | - 0.16 | 7.30 | 25 |
| NORTH SMITHFIELD 21 | TS | 1947 | + 0.01 | - 1.19 | - 1.09 | 7.64 | 21 |
| PORTSMOUTH 551 | HT | 1992 | ----- | ----- | ----- | ----- | |
| PROVIDENCE 48 | TS | 1944 | - 0.22 | - 0.52 | + 2.02 | 4.09 | 25 |
| RICHMOND 417 | VS | 1976 | - 0.09 | - 1.00 | - 0.64 | 6.68 | 25 |
| RICHMOND 600* | TS | 1977 | - 0.51 | - 1.01 | - 0.23 | 33.26 | 21 |
| RICHMOND 785 | FS | 1989 | - 1.06 | - 0.77 | + 0.84 | 22.12 | 21 |
| SOUTH KINGSTOWN 6 | VS | 1955 | - 0.96 | - 2.26 | - 1.31 | 12.13 | 25 |
| SOUTH KINGSTOWN 1198 | FS | 1988 | - 0.73 | - 2.00 | - 1.78 | 8.55 < | 25 |
| TIVERTON 274 | TT | 1990 | ----- | ----- | ----- | ----- | |
| WARWICK 59 | ST | 1991 | + 0.43 | + 0.16 | - 0.01 | 4.76 | 25 |
| WESTERLY 522 | FS | 1969 | - 0.47 | - 1.16 | - 1.13 | 12.54 | 25 |
| WEST GREENWICH 181 | US | 1969 | - 0.05 | - 0.83 | - 0.78 | 15.81 | 21 |
| WEST GREENWICH 206 | ST | 1991 | + 0.21 | - 0.75 | - 0.24 | 4.02 | 25 |

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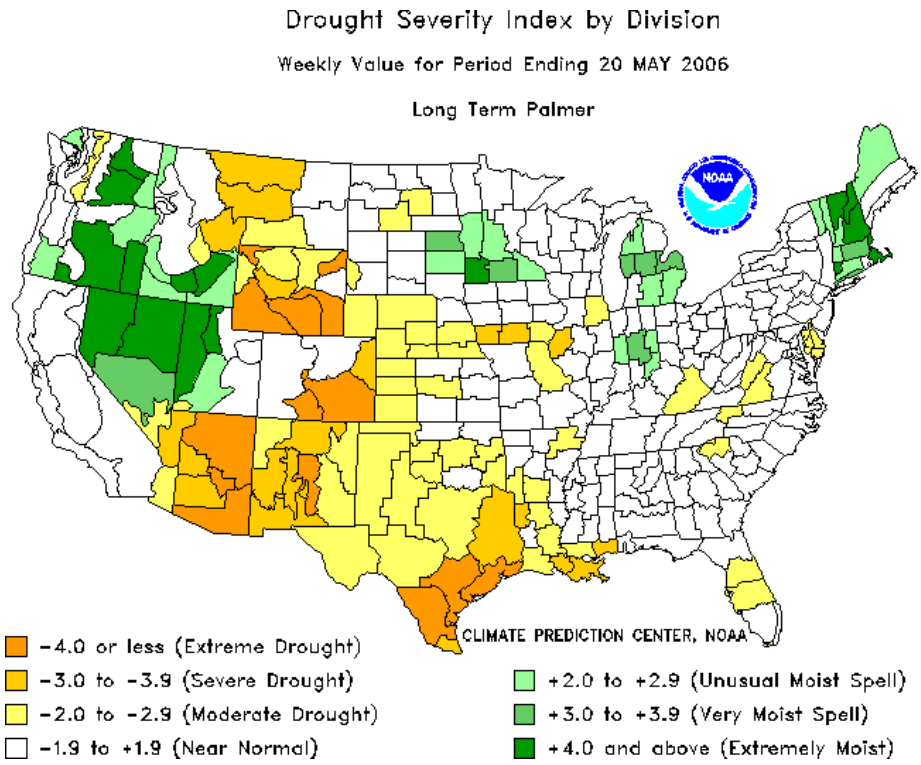
>> SET NEW HIGH OR EQUALED HIGHEST RECORDED WATER LEVEL FOR PERIOD OF RECORD
> SET NEW HIGH OR EQUALED HIGHEST RECORDED WATER LEVEL FOR END OF NOVEMBER
<< SET NEW LOW OR EQUALED LOWEST RECORDED WATER LEVEL FOR PERIOD OF RECORD
< SET NEW LOW OR EQUALED LOWEST RECORDED WATER LEVEL FOR END OF NOVEMBER
------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

TOPOGRAPHIC (TOPO) SETTING: F=FLAT, G=FLOOD PLAIN, H=HILLTOP, S=HILLSIDE, T=TERRACE, U=UNDULATING, V=VALLEY, W=UPLAND DRAW

Table LITHOLOGY (LITHO): G=GRAVEL, R=ROCK, S=SAND, T=TILL

The NOAA National Weather Service (NWS) Drought Severity Index for the period ending May 2006 shows extremely moist conditions for the region (Table 4). The Crop Moisture Index for the same time period shows wet conditions (Table 5). The RI Precipitation Report will be distributed at the Committee meeting.

## Table 4: Drought Severity Index




## Table 5: Crop Moisture Index

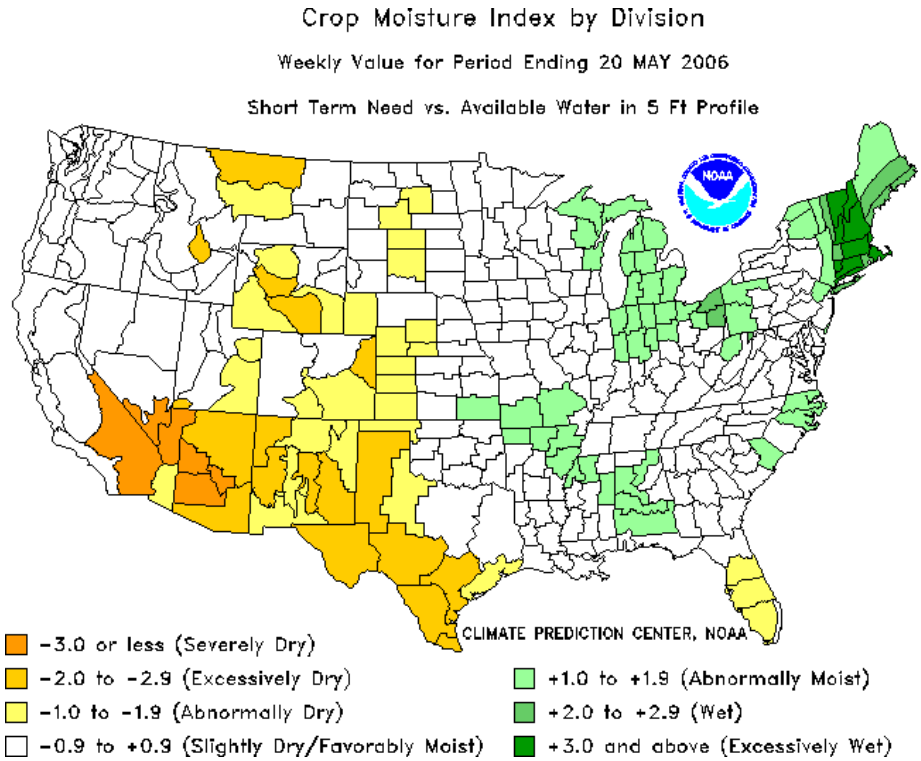
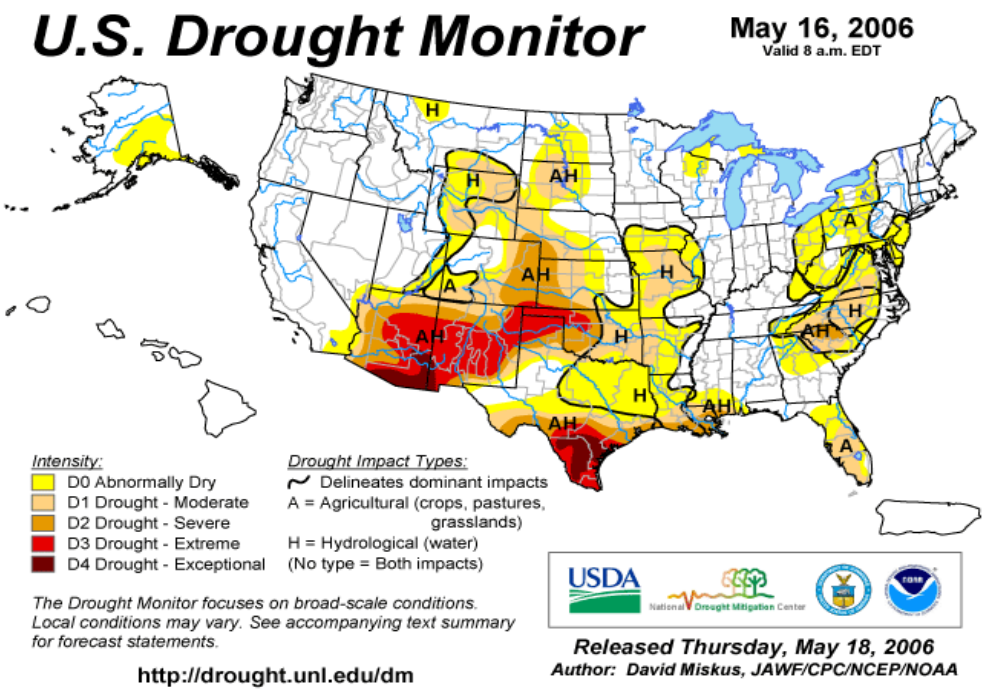
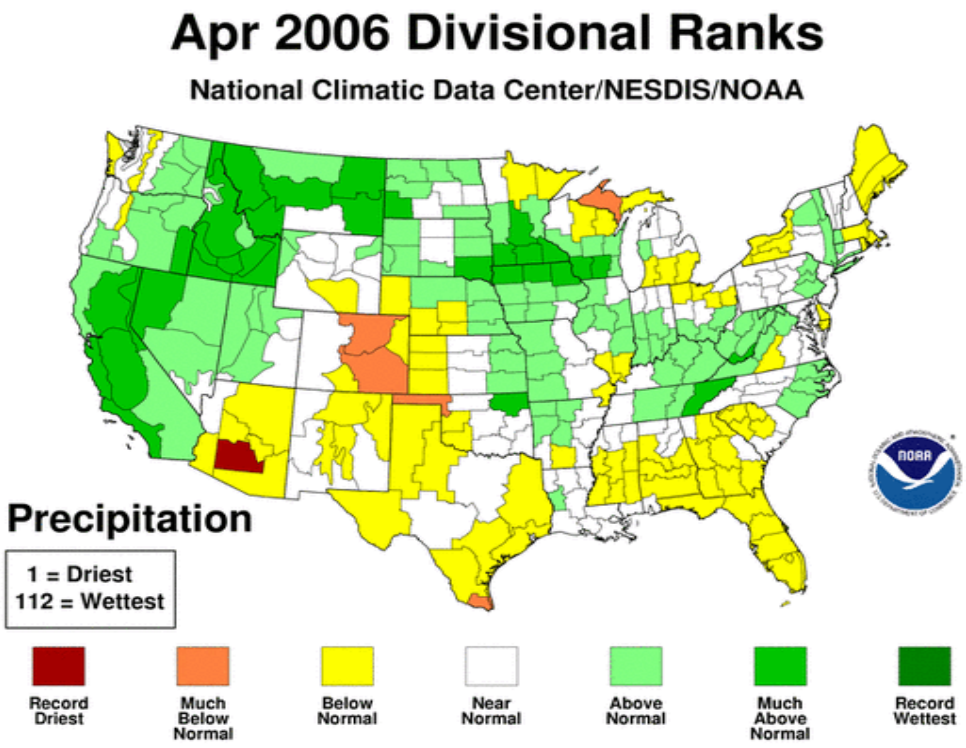


**Table 6: US Drought Monitor**




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 an abnormally dry intensity through May 16, 2006. The NOAA NCDA Statewide Precipitation Ranking reveals Rhode Island in a "much below normal" ranking which is a significant change from last month's "near normal" ranking.

**Table 7: NOAA NCDA Statewide Precipitation Ranks**



**DISCUSSION**

Water conditions for Rhode Island have improved significantly through May 2006 with a notable increase in precipitation. Water conditions will continue to be closely monitored over the next month. The Drought Steering Committee was convened on May 11, 2006 to continue a review of conditions. At that time, the National Weather Service short and long-term forecast identified improved precipitation patterns over the next 30 days. Subsequently, over 7 inches of rain fell over an 8-day period resulting in improved groundwater and streamflow conditions. At this time, a third meeting has not been scheduled. 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/