



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: July 25, 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:

Data Source	Date	Report Summary
NOAA NWS Taunton MA Climate Report	24 Jul 06	1.88" received TF Green Airport MTD - 0.42" below normal for July
USGS Surface Water Runoff Report	June 2006	RI – Above Normal
Scituate Reservoir	July 2006	284.32 FEET (101.0 % of Capacity)
USGS Groundwater Level Summary	June, 2006	All Areas RI -Above Normal
USGS RI Groundwater Level Detail Well Report	June, 2006	13 Record High Water Levels
NOAA NWS Drought Severity Index: Palmer	22 Jul 2006	Extremely Moist Spell
NOAA NWS Crop Moisture Index	22 Jul 2006	Slightly Dry/Favorably Moist
NOAA NWS Drought Monitor Seasonal Assessment	18 Jul 2006	Normal
NOAA Seasonal Drought Outlook (through October 2006)	20 Jul 2006	Normal Conditions

Rhode Island month to date rainfall recorded at 1.88 inches at T.F. Green Airport (normal rainfall value through July 24 is 2.30 inches). Rainfall recorded since June 1 totals +11.11 inches, a departure from normal of +5.43 inches for the two-month period, and +4.24 inches since January 1, 2006.

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.

Rainfall was well above normal for most of Massachusetts and Rhode Island during June. Rainfall totals for the month ranged from about 8 to 12 inches in eastern Massachusetts and Rhode Island. The higher totals for eastern Massachusetts and Rhode Island were mainly the result of a storm on June 7, which produced a rainfall total of 2 to 5 inches.

Surface-water flows at the end of June 2006 were above normal (highest 25 percent of flows for June) for all of Massachusetts and all of Rhode Island.

New historical maximum monthly mean discharge values for June were recorded at two stations (Moshassuck River (1963) and Woonasquatucket River (1941)).

Surface-Water Runoff June 2006

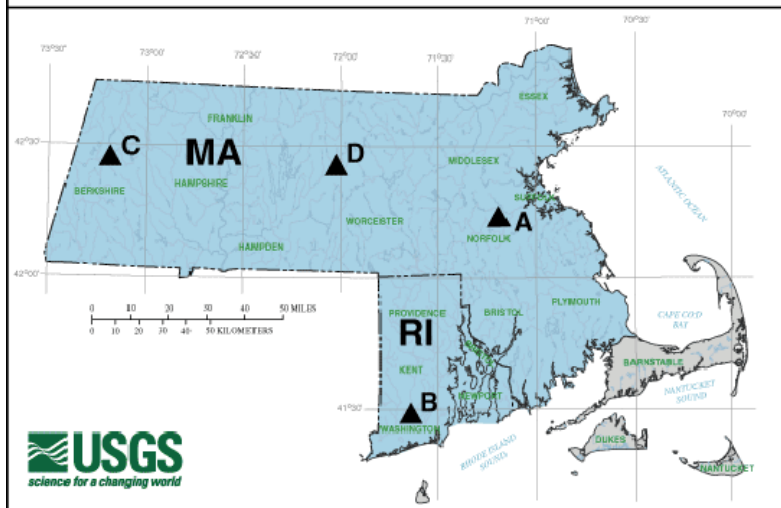


Table 1: Surface Water Runoff

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

MASSACHUSETTS AND RHODE ISLAND USGS GROUND-WATER LEVEL CONDITIONS - JUNE 2006

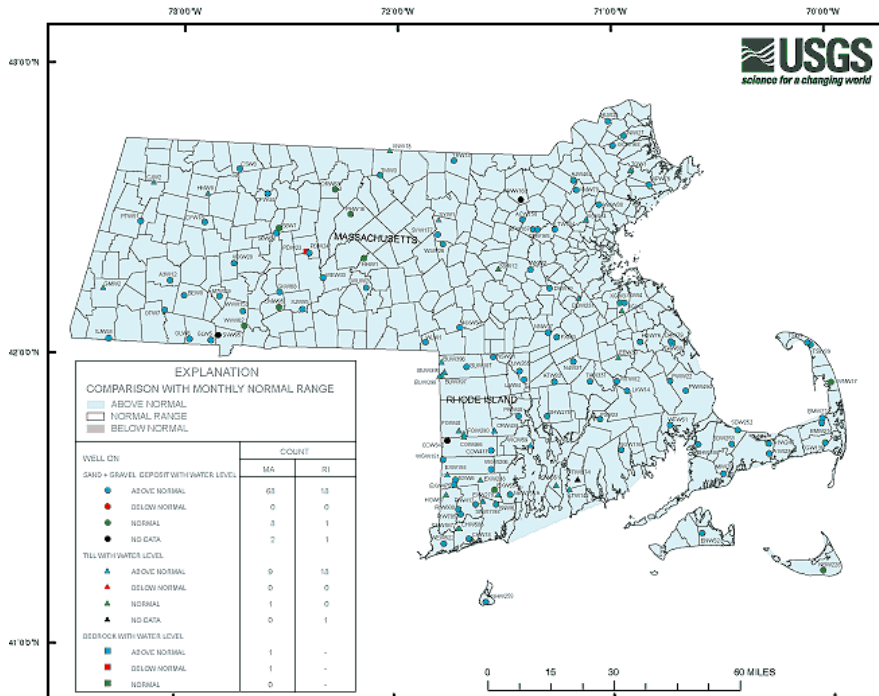


Table 2: Ground Water-Level Conditions

Because of the above normal precipitation during June, ground-water levels were above normal (highest 25 percent of levels for June) for all Rhode Island. The Richmond 600 well in Rhode Island set new record high levels for the periods of record (established in 1977). Additionally, 12 other wells set new record high levels for the month of June.

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 June 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	L T I O T P H O O	START YEAR OF RECORD	NET CHANGE		DEPARTURE FROM MONTHLY MEDIAN	WATER LEVEL BELOW LAND- SURFACE DATUM (OWc)	DAY
			IN MONTH (FEET)	IN ONE YEAR (FEET)			
RHODE ISLAND							
BURRILLVILLE 187	TS	1968	+ 0.60	+ 1.60	+ 1.15	13.77	23
BURRILLVILLE 395	UT	1992	+ 1.87	+ 2.30	+ 3.31	5.49	> 27
BURRILLVILLE 396	VT	1992	+ 0.69	- 0.02	+ 1.21	4.51	> 26
BURRILLVILLE 397	HT	1992	+ 7.76	+ 5.75	+ 6.57	11.45	27
BURRILLVILLE 398	HT	1992	+ 3.05	+ 4.16	+ 4.27	5.15	> 27
CHARLESTOWN 18	FS	1946	+ 2.30	+ 5.36	+ 5.77	11.62	> 26
CHARLESTOWN 586	VT	1992	+ 0.22	+ 0.78	+ 0.70	3.29	> 26
CHARLESTOWN 587	ST	1992	- 2.23	+ 3.86	+ 2.93	6.36	26
COVENTRY 342	VS	1991	-----	-----	-----	-----	
COVENTRY 411	SS	1961	+ 0.80	+ 2.20	+ 2.23	19.21	23
COVENTRY 466	VT	1992	+ 0.13	+ 1.66	+ 0.87	2.49	> 26
CRANSTON CITY 439	ST	1992	- 0.34	+ 4.93	+ 4.85	10.58	26
CUMBERLAND 265	SS	1946	- 1.36	+ 1.50	+ 1.98	11.54	23
EXETER 6	VS	1948	- 0.30	+ 1.14	+ 1.12	4.91	23
EXETER 158	ST	1991	- 2.55	+ 4.85	+ 4.37	7.15	23
EXETER 238	FT	1991	- 0.15	+ 1.17	+ 1.06	11.37	26
EXETER 278	HT	1991	- 1.01	+ 5.24	+ 4.21	8.06	26
EXETER 475	VS	1981	+ 0.43	+ 1.24	+ 1.25	12.86	23
EXETER 554	SS	1988	- 0.24	+ 0.93	+ 0.92	9.20	26
FOSTER 40	HT	1991	- 2.27	+ 2.43	+ 1.56	5.34	23
FOSTER 290	HT	1992	+ 0.70	+ 4.69	+ 4.48	4.02	> 26
HOPKINTON 67	ST	1991	- 2.70	+ 3.73	+ 3.77	12.85	23
LINCOLN 84	VS	1946	- 1.39	+ 0.81	+ 1.23	4.10	23
LITTLE COMPTON 142	ST	1992	- 2.40	+ 5.86	+ 5.66	10.08	27
NEW SHOREHAM 258	UT	1991	+ 0.63	+ 1.52	+ 1.58	10.11	25
NORTH KINGSTOWN 255	VS	1954	+ 0.59	+ 3.06	+ 3.46	4.94	> 26
NORTH SMITHFIELD 21	TS	1947	- 1.20	+ 1.55	+ 1.60	6.86	23
PORTSMOUTH 551	HT	1992	- 2.19	+ 12.40	+ 10.89	28.58	27
PROVIDENCE 48	TS	1944	+ 0.54	+ 1.05	+ 3.42	3.05	> 26
RICHMOND 417	VS	1976	+ 0.05	+ 1.17	+ 1.24	5.67	> 26
RICHMOND 600*	TS	1977	+ 1.44	+ 2.91	+ 3.14	30.56	>> 23
RICHMOND 785	FS	1989	+ 0.74	+ 0.78	+ 1.61	21.65	23
SOUTH KINGSTOWN 6	VS	1955	+ 1.16	+ 1.79	+ 2.01	10.09	26
SOUTH KINGSTOWN 1198	FS	1988	+ 0.17	+ 2.15	+ 1.91	6.56	26
TIVERTON 274	TT	1990	-----	-----	-----	-----	
WARWICK 59	ST	1991	+ 0.37	+ 3.43	+ 3.25	3.99	> 26
WESTERLY 522	FS	1969	+ 0.38	+ 2.01	+ 1.64	10.91	26
WEST GREENWICH 181	US	1969	- 1.03	+ 1.47	+ 1.59	14.66	23
WEST GREENWICH 206	ST	1991	- 0.01	+ 1.24	+ 0.92	3.73	> 26

>> 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, 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

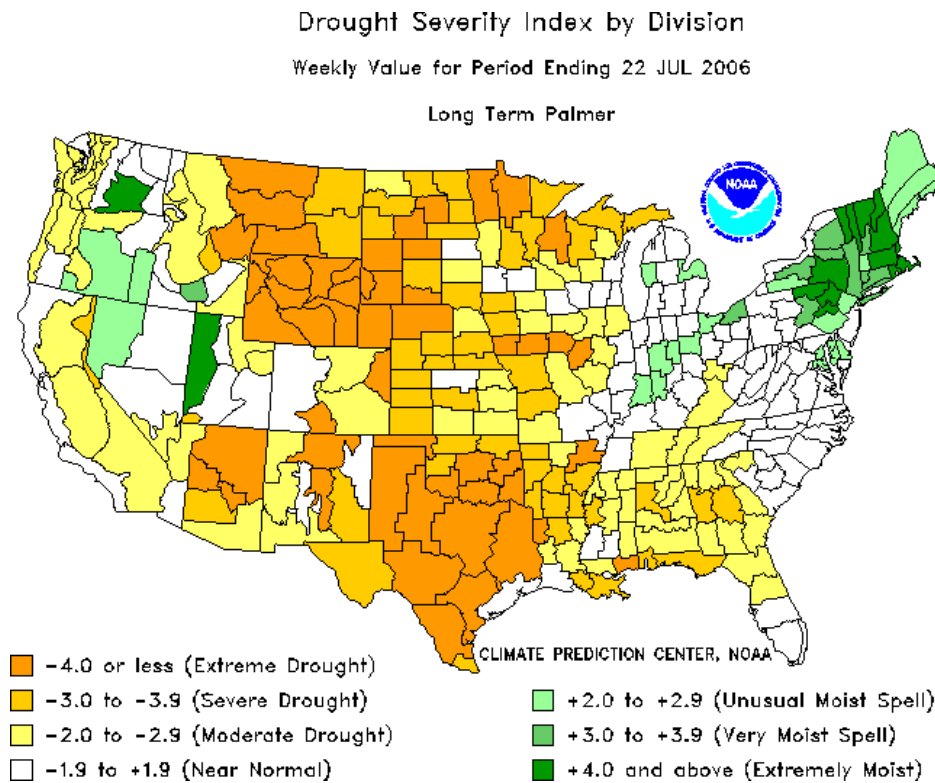


Table 5: Crop Moisture Index

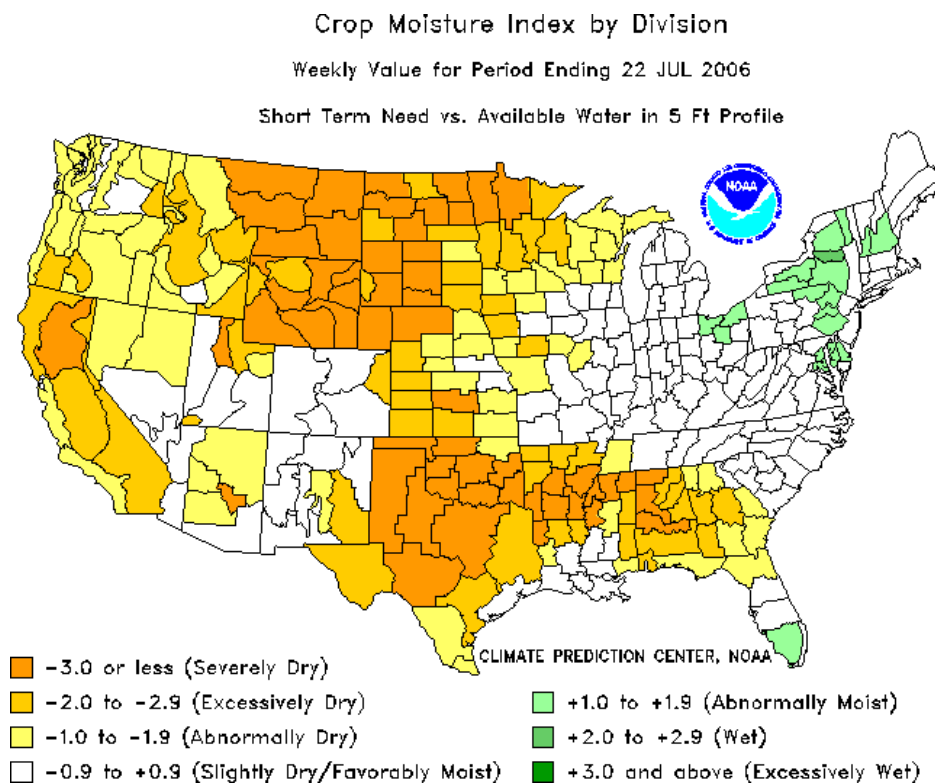
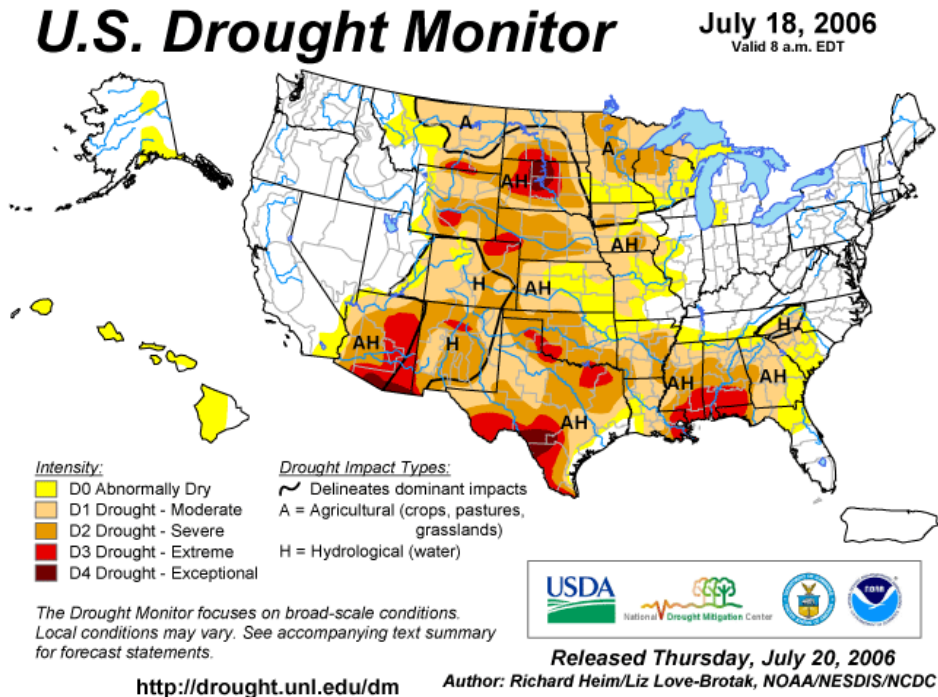
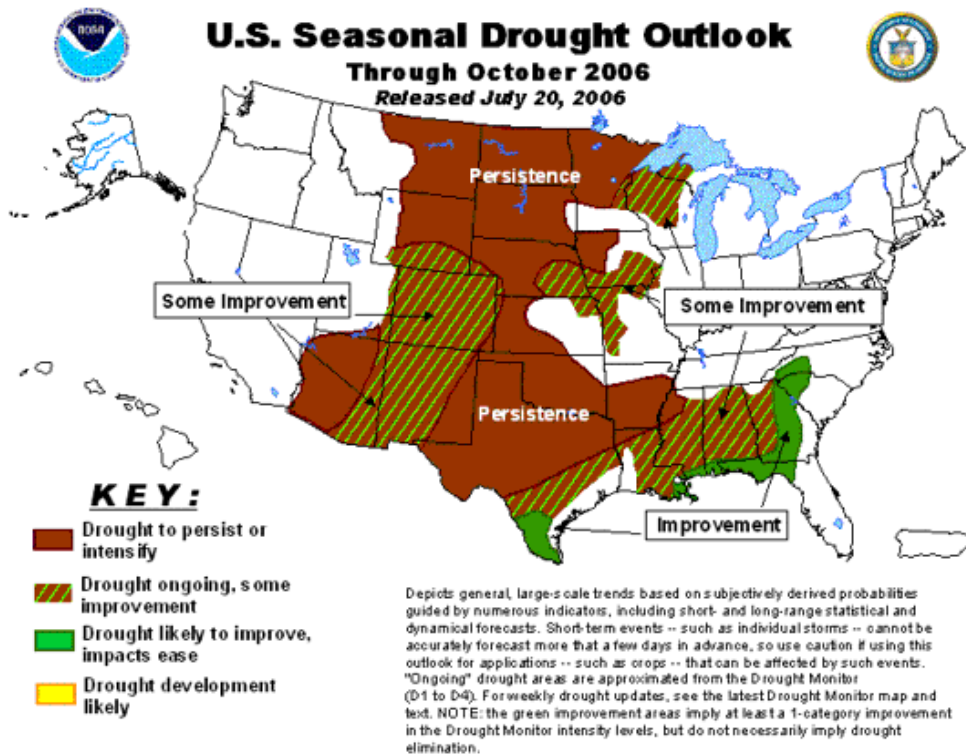


Table 6: US Drought Monitor



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 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



DISCUSSION

Precipitation patterns for Rhode Island have remained within normal limits through July 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/>