



**State of Rhode Island and Providence Plantations
Water Resources Board**

Justice William E. Powers Building, Third Floor
One Capitol Hill
Providence, RI 02908
(401) 574-8400 ♦ FAX: (401) 574-8401

Date: March 14, 2008

To: Robert Griffith, Ph.D., Chair, Water Resources Protection & Use Committee
WRP&U Committee Members

Through: Juan Mariscal, P.E.
General Manager

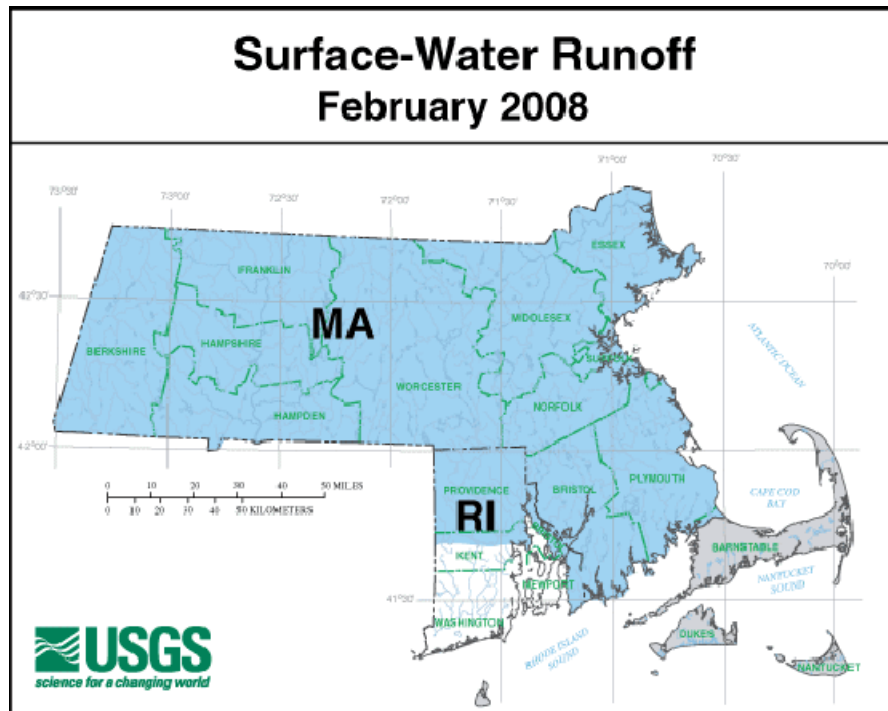
From: Beverly O’Keefe, M.A.
Supervising Planner

Re: Drought Management Plan Program – Current Conditions

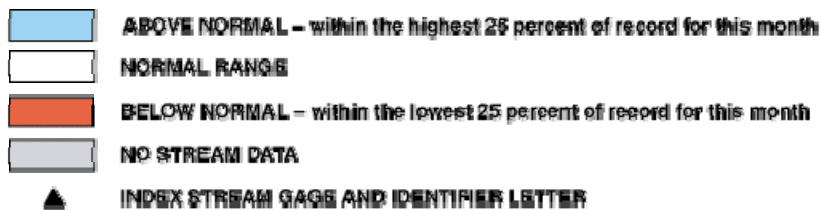
BACKGROUND: Pursuant to State Guide Plan Element 724: The Rhode Island Drought Management Plan, the Water Resources Board is required to assess water conditions monthly. Staff has assembled climate information from a variety of sources to monitor the potential for drought conditions in Rhode Island which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

Data Source	Date	Report Summary
NOAA NWS Taunton MA Climate Report	March 13, 2008	4.64” received thru March 13, 2008, T.F. Green Airport; Second wettest February on record
USGS Surface Water Report	Feb. 2008	Above normal–Northern RI; Below Normal- Southern RI
Scituate Reservoir	Feb. 27, 2008	104.6% of Capacity (285.51 feet as of March 13, 2008)
USGS Groundwater Level Summary	Feb. 2008	Central RI Normal; Remainder of state below normal
USGS RI Groundwater Level Well Report	Feb. 2008	Burrillville 396, Charlestown 586, & Coventry 466 - SET NEW LOW OR EQUALED LOWEST RECORDED WATER LEVEL FOR END OF JANUARY
NWS Drought Severity Index: Palmer	8 March. 2008	Very Moist Spell
NOAA NWS Crop Moisture Index	8 March. 2008	Excessively Wet
NOAA NWS Northeast Drought Monitor Seasonal Assessment	11 March 2008	Normal
NOAA Seasonal Drought Outlook (through April 2008)	6 March 2008	Normal
NOAA Standard Precipitation Index – Six Months	February 2008	Near Normal

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). Surface-water flows at the end of February 2008 were generally above normal (highest 25 percent of flows for February) northern Rhode Island. Flows were generally normal (between lowest and highest 25 percent of flows for February) for southern Rhode Island. This assessment is based on monthly flow statistics (30-year period from 1971 to 2000) for 46 near-real-time



COMPARISON WITH MONTHLY NORMAL RANGE



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

streamflow-gaging stations with 30 or more years of record. No record-high or record-low monthly mean discharges were recorded during the month of February.

Ground-water levels were generally normal in central Rhode Island but generally below normal (lowest 25 percent of levels for February) in southern Rhode Island. New record-low ground-water levels for the month of February were measured in three wells in Rhode Island.

Borden Brook/Cobble Mountain, Quabbin and Scituate Reservoirs were 86-, 94-, and 92-percent full, respectively, at the end of February. In comparison, Borden Brook/Cobble Mountain, Quabbin, and Scituate Reservoirs were 78-, 88- and 71-percent full, respectively, at the end of January.

Table 2: Ground Water-Level Conditions

MASSACHUSETTS AND RHODE ISLAND USGS GROUND- WATER-LEVEL CONDITIONS - FEBRUARY 2008

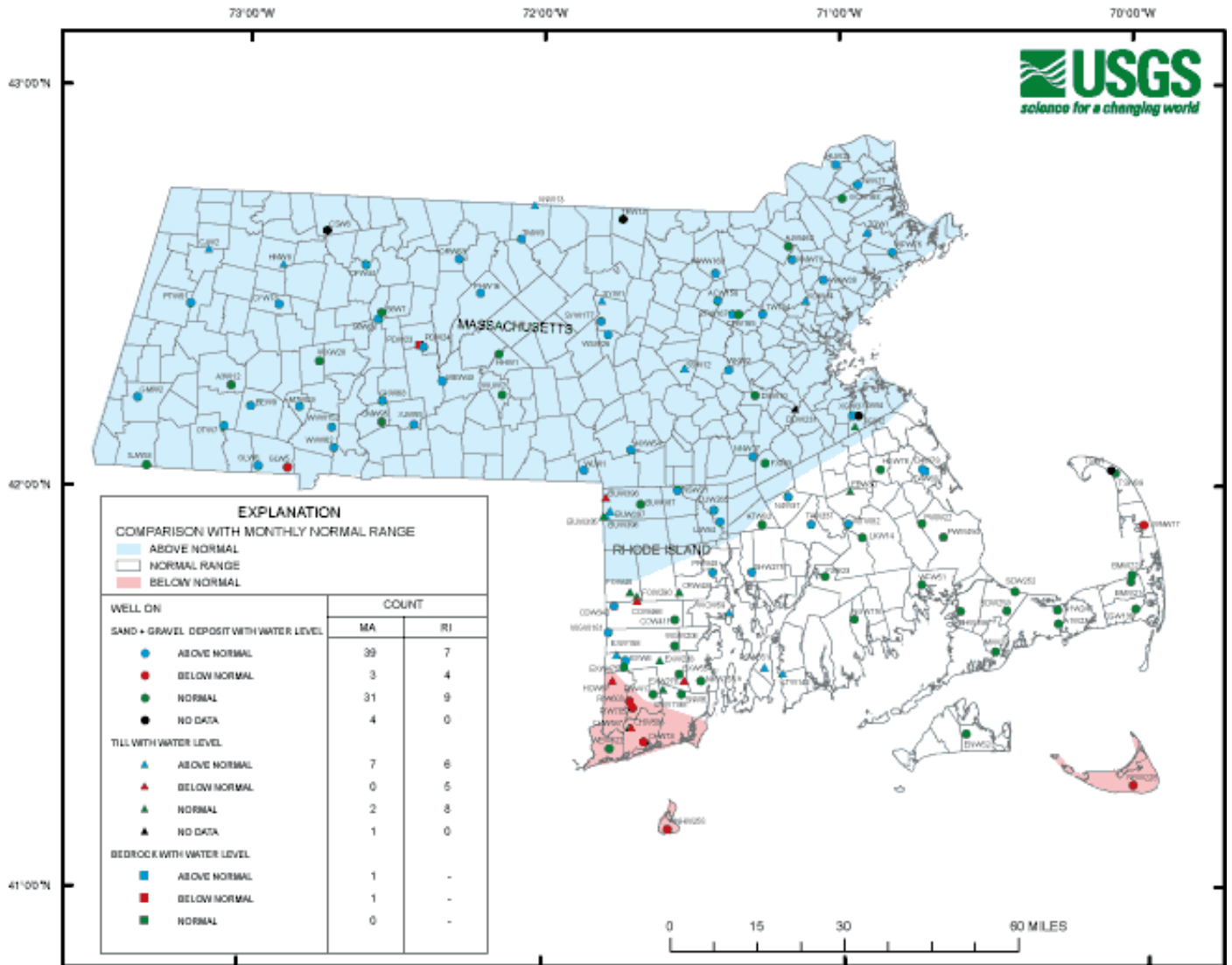


TABLE 3: SUMMARY OF GROUND-WATER LEVELS February 2008 PROVISIONAL

(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	+ 1.01	+ 0.78	- 0.04	14.86	29
BURRILLVILLE 395	UT	1992	+ 6.14	+ 0.54	- 0.44	6.87	28
BURRILLVILLE 396	VT	1992	+ 0.00	- 0.24	- 0.84	5.91	< 27
BURRILLVILLE 397	HT	1992	-----	+ 5.74	+ 2.46	11.26	28
BURRILLVILLE 398	HT	1992	+ 4.93	+ 2.70	+ 0.99	6.83	28
CHARLESTOWN 18	FS	1946	+ 2.38	- 0.49	- 0.95	17.91	26
CHARLESTOWN 586	VT	1992	- 1.16	- 2.03	- 1.20	4.77	< 26
CHARLESTOWN 587	ST	1992	+ 0.31	+ 1.04	- 0.07	7.31	28
COVENTRY 342	VS	1991	+ 1.47	+ 2.68	+ 1.45	6.63	29
COVENTRY 411	SS	1961	+ 1.09	+ 0.88	+ 0.49	20.73	29
COVENTRY 466	VT	1992	- 0.62	- 0.45	- 0.67	3.38	< 26
CRANSTON CITY 439	ST	1992	+ 7.00	+ 5.41	+ 1.99	10.15	26
CUMBERLAND 265	SS	1946	- 0.13	+ 1.60	+ 1.20	10.64	29
EXETER 6	VS	1948	+ 1.40	+ 1.06	+ 0.46	4.61	29
EXETER 158	ST	1991	+ 4.64	+ 3.69	+ 1.35	4.93	29
EXETER 238	FT	1991	+ 0.63	+ 0.73	+ 0.32	11.37	26
EXETER 278	HT	1991	-----	- 1.86	- 4.03	14.28	26
EXETER 475	VS	1981	+ 1.64	- 0.11	- 0.31	14.03	29
EXETER 554	SS	1988	+ 1.35	+ 0.69	+ 0.13	9.19	26
FOSTER 40	HT	1991	+ 0.64	+ 3.40	+ 0.39	3.20	29
FOSTER 290	HT	1992	+ 2.37	+ 1.78	- 0.37	5.69	26
HOPKINTON 67	ST	1991	+ 3.21	- 0.58	- 0.85	16.07	29
LINCOLN 84	VS	1946	+ 2.26	+ 1.97	+ 1.61	3.06	29
LITTLE COMPTON 142	ST	1992	+ 1.15	+ 5.49	+ 2.34	9.72	28
NEW SHOREHAM 258	UT	1991	+ 1.11	- 0.60	- 0.87	12.24	25
NORTH KINGSTOWN 255	VS	1954	+ 0.95	- 0.80	- 0.61	8.58	26
NORTH SMITHFIELD 21	TS	1947	+ 1.03	+ 3.21	+ 0.80	5.93	29
PORTSMOUTH 551	HT	1992	+ 4.46	+ 7.83	+ 2.23	31.88	27
PROVIDENCE 48	TS	1944	+ 0.15	+ 0.03	+ 2.18	4.03	26
RICHMOND 417	VS	1976	+ 0.76	+ 0.02	- 0.31	6.66	26
RICHMOND 600*	TS	1977	+ 1.13	- 0.76	- 0.76	34.11	29
RICHMOND 785	FS	1989	+ 0.61	- 3.86	- 1.81	26.03	29
SOUTH KINGSTOWN 6	VS	1955	+ 1.25	- 0.17	- 0.29	11.68	26
SOUTH KINGSTOWN 1198	FS	1988	+ 1.54	- 0.29	- 0.38	8.36	26
WARWICK 59	ST	1991	+ 1.57	+ 0.82	+ 0.21	4.49	26
WESTERLY 522	FS	1969	+ 0.76	+ 0.46	- 0.28	11.84	26
WEST GREENWICH 181	US	1969	+ 0.66	+ 1.92	+ 1.36	13.94	29
WEST GREENWICH 206	ST	1991	+ 0.55	+ 0.31	+ 0.01	3.87	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 JANUARY

<< 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 JANUARY

----- 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 March 8, 2008 shows “very moist spell” for Rhode Island (Table 4). The Crop Moisture Index for the same time period shows “excessively wet” conditions (Table 5).

Table 4: Drought Severity Index

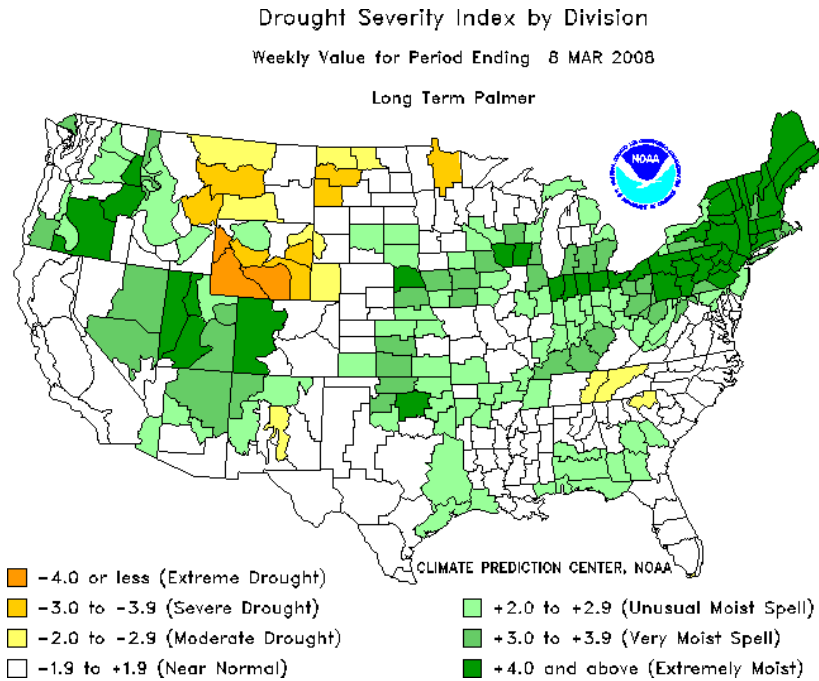


Table 5: Crop Moisture Index

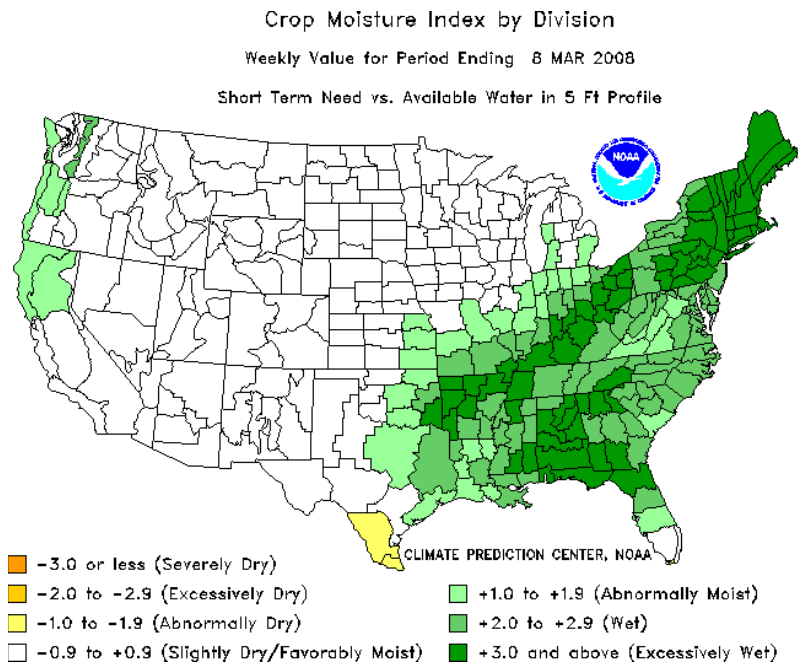
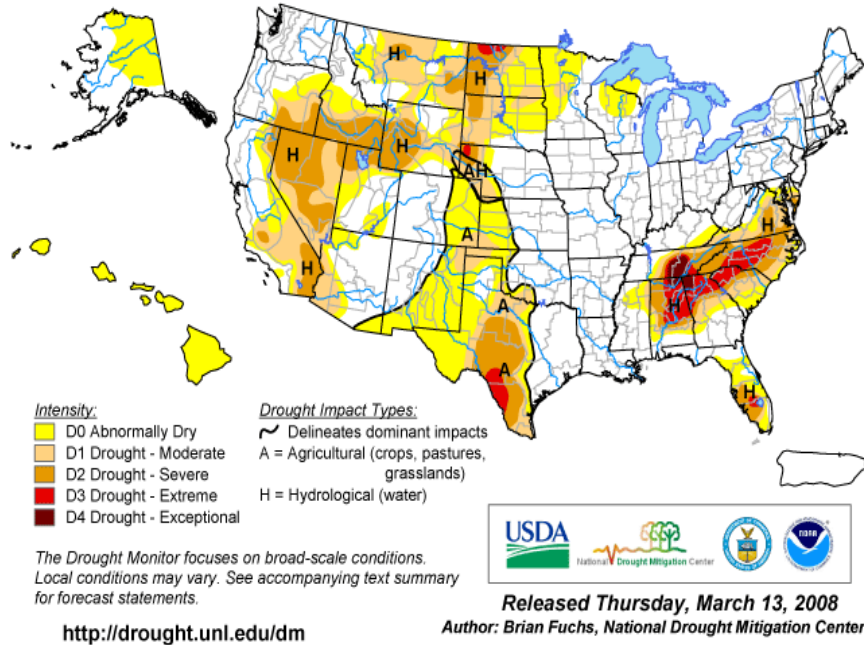


Table 6: US Drought Monitor

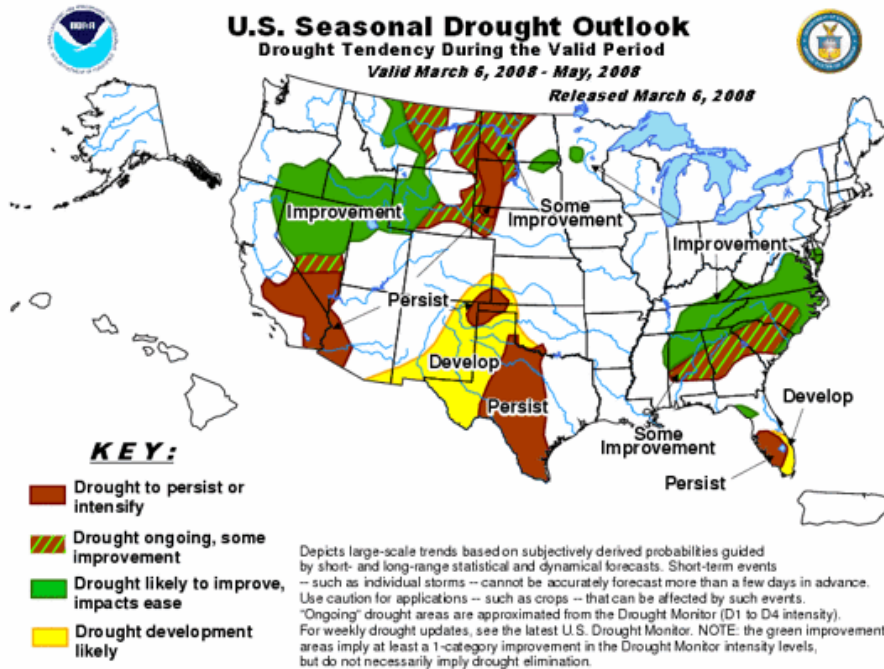
U.S. Drought Monitor

March 11, 2008
Valid 8 a.m. EDT



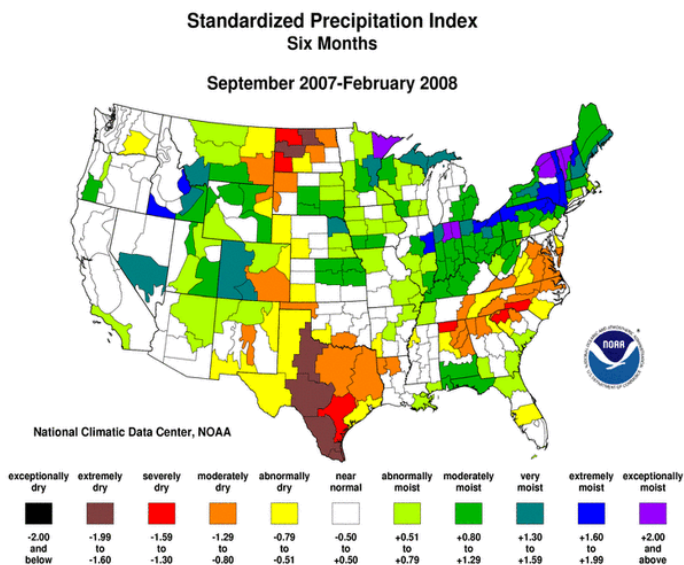
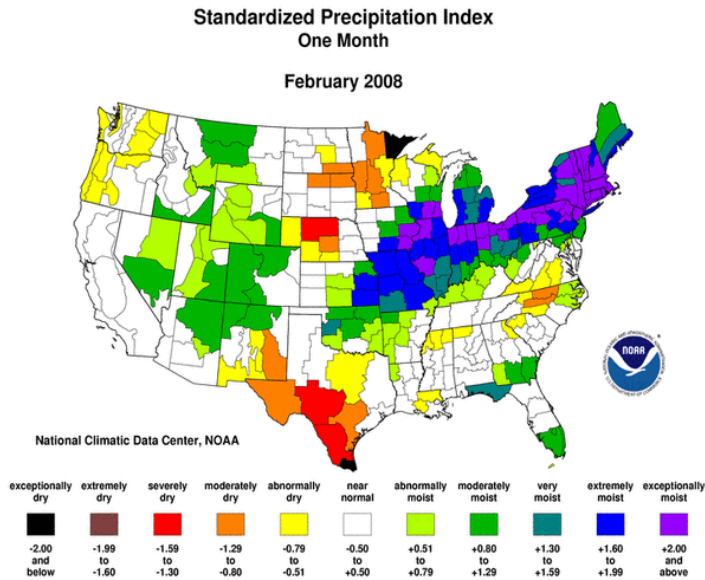
Tables 6 and 7 present national seasonal assessment and state rankings based on precipitation. The Northeast Drought Monitor (Table 6) portrays Rhode Island experiencing normal conditions through March 11, 2008. The NOAA Seasonal Drought Outlook through April, 2008 projects “normal” conditions for Rhode Island.

Table 7: NOAA Seasonal Drought Outlook



Current Standardized Precipitation Index

The Standardized Precipitation Index (SPI) is a way of [measuring drought](#) that is different from the Palmer drought index (PDI). Like the PDI, this index is negative for drought, and positive for wet conditions. But the SPI is a probability index that considers only precipitation, while Palmer's indices are water balance indices that consider water supply (precipitation), demand (evapo-transpiration) and loss (runoff). The SPI One-Month is “exceptionally moist” while the six month condition is “near normal” for Rhode Island.



DISCUSSION

Water conditions have continued to improve throughout the winter and the will continue to be closely monitored over the next month by the Water Resources Board staff. Rhode Island continues in a “drought watch” based on the long-term drought indicators. Surface and ground water levels have both improved during February and early March. The Drought Steering Committee will meet on April 3, 2008 to review hydrologic conditions.

The National Weather Service and the Water Resources Board have created a partnership to sponsor “Community Collaborative Rain, Hail & Snow Network” (CoCoRaHS) training during April. Volunteers will be trained to take daily measurements of rain, hail and snow in their backyards. CoCoRaHS is a non-profit, community-based, high-density network of individual and family volunteers of all ages and backgrounds. Volunteers post their daily observations on the CoCoRaHS website which are immediately available in map and table form for scientists and the public to view. This is important for Rhode Island as the state only has 6 precipitation data points. Annually, Rhode Island receives between 39 and 54 inches of precipitation and the National Weather Service would like to supplement the current information provided by the six data points. The Rhode Island program will officially start April 1, and recruitment efforts are underway for a mid-April training.

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/>