



## State of Rhode Island and Providence Plantations

### Water Resources Board

100 North Main Street, 5<sup>th</sup> Floor

Providence, RI 02903

(401) 222-2217 ♦ FAX: (401) 222-4707

To: Public Drinking Water Protection Committee  
Through: Juan Mariscal, P.E., General Manager  
From: Beverly O'Keefe, Supervising Planner  
Date: February 1, 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.

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) imbedded in this memorandum.

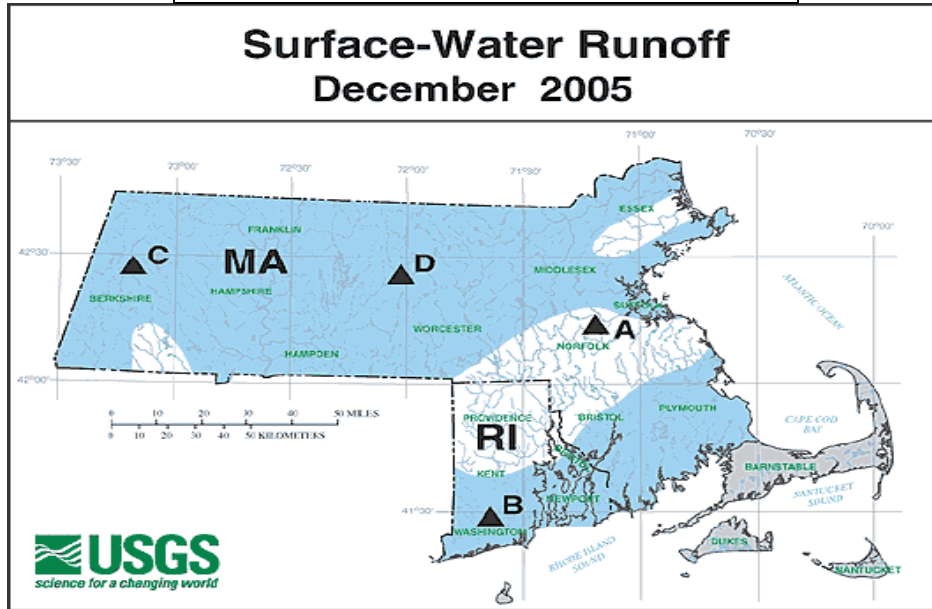
Surface-water flows at the end of December 2005 were above normal (highest 25 percent of flows for December) for all Rhode Island river basins (Table 1). Flows were considered normal in southeastern Massachusetts and central and northern Rhode Island. No new maximum or minimum monthly mean discharge values for December were recorded at any stream-gaging stations in Massachusetts and Rhode Island. This assessment is based on monthly flow statistics (30-year period from 1971 to 2000) from 22 near-real-time stations with 30 or more years of record.

Ground-water levels at the end of December 2005 were above normal in eastern and southern Rhode Island (Table 2). A new high ground-water-level record for the month of December was measured in 6 of 125 wells that have records of 10 or more years in Massachusetts and Rhode Island. In Rhode Island, measured ground-water levels in 5 wells set new record highs for the month of December. One well in Rhode Island (Burrillville 395) set a new record low ground-water level for December (Table 3). This assessment is based on the evaluation of 125 wells with 10 or more years of record.

Reservoir conditions improved slightly during December 2005. Borden Brook/Cobble Mountain, Quabbin, and Scituate (Rhode Island) Reservoirs were 92-, 100-, and 104-percent full, respectively, at the end of December. In comparison, these reservoirs were 87-, 99-, and 97-percent full, respectively, at the end of November.

The NOAA National Weather Service (NWS) Drought Severity Index for the period ending 28 January 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 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

MASSACHUSETTS AND RHODE ISLAND USGS GROUND- WATER-LEVEL CONDITIONS - DECEMBER 2005

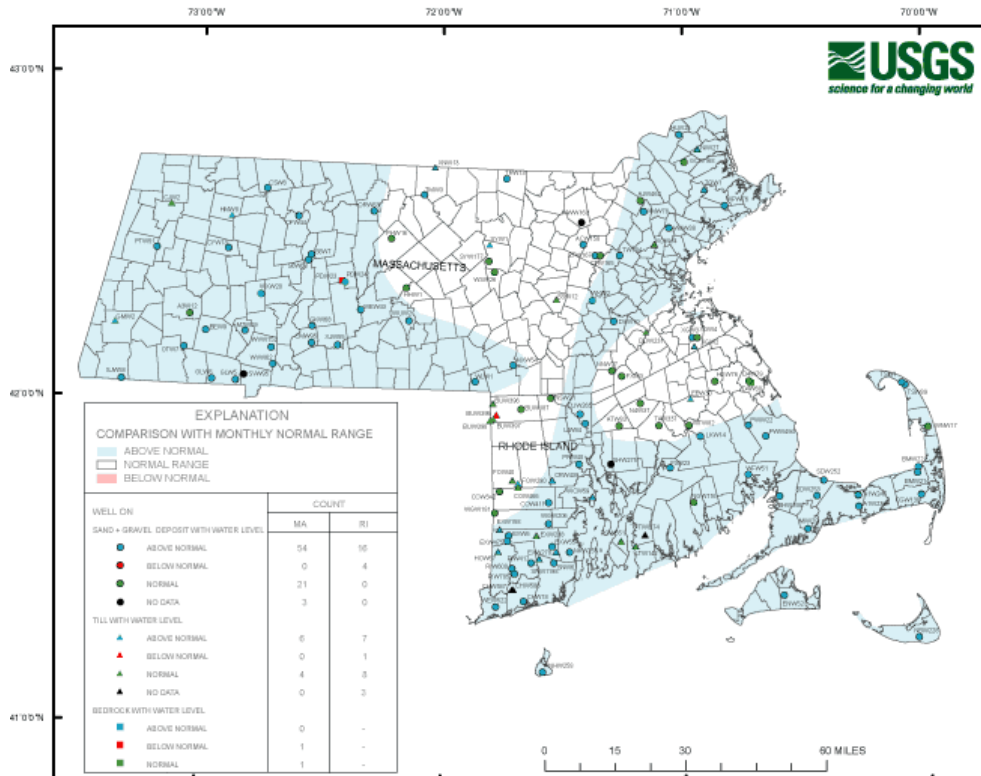


TABLE 3: SUMMARY OF GROUND-WATER LEVELS December 2005 PROVISIONAL  
 (NOTE: Wells with \* also available in real-time at top of Ground-Water Data page;  
 OWc, monthly measured value used in high ground-water level stimation report, USGS  
 Open-File Report 80-1205.)

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) (FEET)	DAY
			IN MONTH (FEET)	IN ONE YEAR (FEET)			
RHODE ISLAND							
BURRILLVILLE 187	TS	1968	- 0.15	+ 0.45	+ 0.49	14.65	19
BURRILLVILLE 395	UT	1992	- 1.12	- 4.87	- 5.12	11.02	< 28
BURRILLVILLE 396	VT	1992	- 0.63	- 0.22	- 0.17	5.08	29
BURRILLVILLE 397	HT	1992	- 5.43	- 2.08	- 1.23	16.41	29
BURRILLVILLE 398	HT	1992	- 1.70	+ 1.04	- 0.03	7.21	29
CHARLESTOWN 18	FS	1946	+ 0.61	+ 0.72	+ 3.80	14.63	21
CHARLESTOWN 586	VT	1992	-----	-----	-----	-----	
CHARLESTOWN 587	ST	1992	-----	-----	-----	-----	
COVENTRY 342	VS	1991	+ 0.17	+ 0.14	+ 0.25	7.81	19
COVENTRY 411	SS	1961	- 0.25	+ 0.52	+ 1.39	20.34	19
COVENTRY 466	VT	1992	+ 0.06	+ 0.24	+ 0.05	2.58	28
CRANSTON CITY 439	ST	1992	- 0.72	+ 1.37	+ 4.22	10.25	28
CUMBERLAND 265	SS	1946	+ 1.20	+ 1.56	+ 2.31	9.31	19
EXETER 6	VS	1948	+ 0.26	+ 0.68	+ 1.07	4.68	19
EXETER 158	ST	1991	+ 0.60	+ 1.20	+ 1.58	5.08	19
EXETER 238	FT	1991	- 0.02	+ 0.33	+ 0.21	11.40	21
EXETER 278	HT	1991	+ 1.17	+ 3.58	+ 6.84	6.84	21
EXETER 475	VS	1981	+ 0.43	+ 0.80	+ 1.47	13.51	19
EXETER 554	SS	1988	+ 0.30	+ 0.64	+ 1.42	8.75	21
FOSTER 40	HT	1991	+ 0.06	+ 0.72	+ 0.20	3.26	19
FOSTER 290	HT	1992	+ 0.25	+ 0.64	+ 2.45	4.53	28
HOPKINTON 67	ST	1991	+ 1.29	+ 2.47	+ 2.96	13.47	19
LINCOLN 84	VS	1946	- 0.15	+ 0.50	+ 0.98	4.07	19
LITTLE COMPTON 142	ST	1992	- 3.84	- 0.09	- 0.59	10.50	27
NEW SHOREHAM 258	UT	1991	+ 0.04	+ 0.72	+ 2.27	10.28	> 21
NORTH KINGSTOWN 255	VS	1954	+ 0.26	+ 1.22	+ 2.33	6.11	> 21
NORTH SMITHFIELD 21	TS	1947	- 0.36	+ 0.08	+ 1.06	6.55	19
PORTSMOUTH 551	HT	1992	- 5.38	+ 1.00	+ 1.68	30.62	27
PROVIDENCE 48	TS	1944	- 0.10	+ 0.02	+ 3.35	3.23	> 21
RICHMOND 417	VS	1976	+ 0.10	+ 0.22	+ 1.05	5.73	21
RICHMOND 600*	TS	1977	+ 0.53	+ 1.23	+ 2.08	32.21	> 31
RICHMOND 785	FS	1989	+ 0.61	+ 1.71	+ 2.83	22.46	19
SOUTH KINGSTOWN 6	VS	1955	+ 0.55	+ 1.24	+ 2.74	9.80	> 21
SOUTH KINGSTOWN 1198	FS	1988	+ 0.26	+ 0.86	+ 2.46	6.44	21
TIVERTON 274	TT	1990	-----	-----	-----	-----	
WARWICK 59	ST	1991	- 0.03	+ 0.09	+ 0.60	4.43	21
WESTERLY 522	FS	1969	+ 0.03	+ 0.46	+ 0.83	11.11	21
WEST GREENWICH 181	US	1969	- 0.25	- 0.03	+ 0.51	14.72	19
WEST GREENWICH 206	ST	1991	+ 0.00	+ 0.21	+ 0.19	3.79	21

-----  
 >> 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

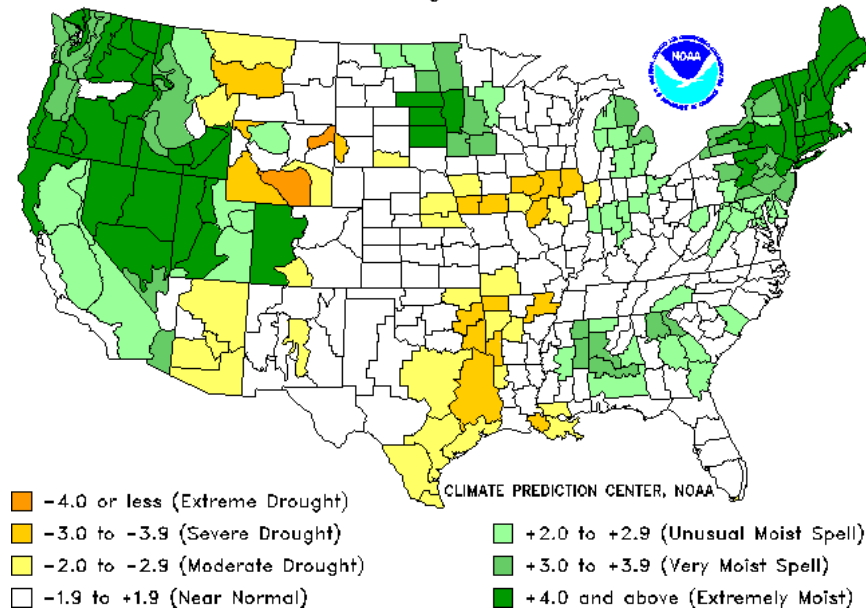
TOPOGRAPHIC (TOPO) SETTING: F=FLAT, G=FLOOD PLAIN, H=HILLTOP, S=HILLSIDE,  
 T=TERRACE, U=UNDULATING, V=VALLEY, W=UPLAND DRAW  
 Table LITHOLOGY (LITHO): G=GRAVEL, R=ROCK, S=SAND, T=TILL

Table 4: Drought Severity Index by Divsion

## Drought Severity Index by Division

Weekly Value for Period Ending 28 JAN 2006

Long Term Palmer

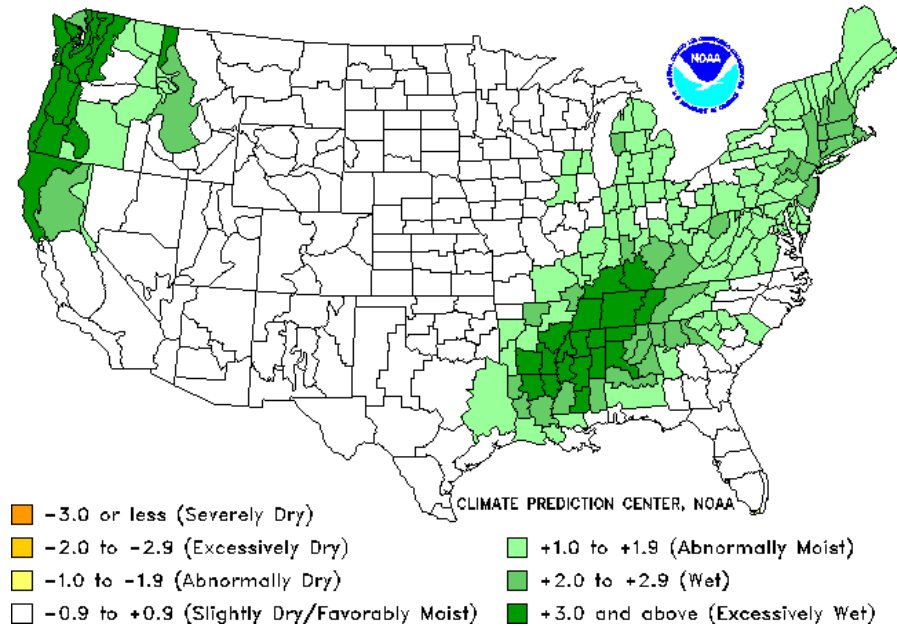


**Table 5: Crop Moisture Index – 28 January 2006**

## Crop Moisture Index by Division

Weekly Value for Period Ending 28 JAN 2006

Short Term Need vs. Available Water in 5 Ft Profile



## DISCUSSION

Water conditions for Rhode Island have remained wet during this winter period of water recharge and includes 15.7 inches of snowfall received between December 1, 2005 through January 31, 2006, a 1.4 inch departure from normal. Water conditions will continue to be monitored over the next month.

**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](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](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/cmi.gif)