



**October 1, 2007**

To subscribe: please email [coop@icprb.org](mailto:coop@icprb.org)

*The ICPRB, through its Section for Cooperative Water Supply Operations on the Potomac (CO-OP), coordinates water supply operations during times of drought and recommends releases of stored water. These operations ensure adequate water supplies for the major Washington metropolitan area water users and for environmental flow levels.*

**Summary/conclusions:**

The probability of releases this fall from the Washington metropolitan area’s back-up water supply reservoirs is low. At this time of year, water supply demands have already begun to decrease, while river flows historically begin to increase. Cooler temperatures and less incident sunlight are the drivers, reducing transpiration from trees and plants in the basin, and evaporation from the river. Water supply demands have decreased to about 500 MGD due to decreased outdoor water use, and river flow is unlikely to decrease to levels that would require water supply releases from water supply storage in regional reservoirs (approximately a one-percent probability). Although there has not been much rain over the summer, groundwater baseflow into the river has been enough to prevent the need for water supply releases over the summer. Groundwater levels in the most productive part of the basin are in relatively good shape, and the Potomac flow has been receding more slowly than it would if groundwater levels were lower. Water supply storage is full in regional reservoirs used to augment the Potomac.

**ICPRB outlook:**

There is a 1 percent conditional probability that Potomac flow will drop below 600 million gallons per day (MGD) at Little Falls through December 31 of this year. Releases occur when predicted flow is less than demand and minimum flow requirements. At this time of year, demand from the Potomac River is less than it would be in the summer, currently averaging 480 MGD over the prior week for water supply withdrawals plus a 100 MGD minimum flow recommendation at Little Falls.

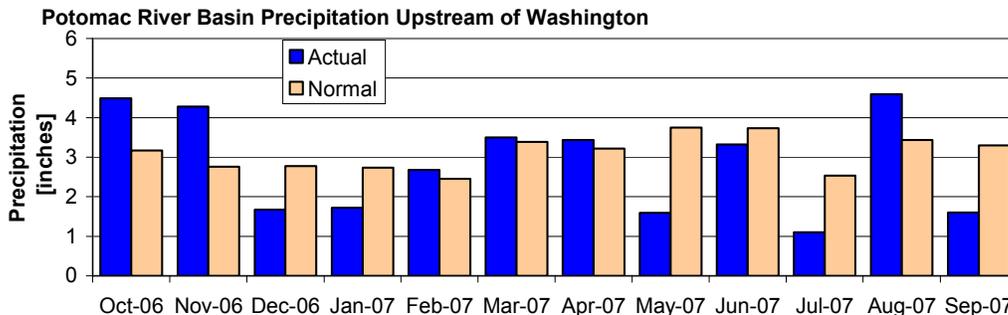
The conditional probability is estimated by analyzing the historical stream flow records and giving consideration to recent stream flow values, precipitation totals for the prior 12 months, current groundwater levels, and the current Palmer Drought Index. Past years in which watershed conditions most closely resemble current conditions are weighted more heavily to determine conditional probability. The historical probability is based on an analysis of the historical stream flow record without weighting for current conditions, and the conditional probability is considered the more reliable indicator.

**Outlook for Potomac River at Little Falls – Watershed conditions as of October 1, 2007**

Low flow threshold (MGD)	Historical probability of lower flow Oct 1 through December 31	Conditional probability of lower flow Oct 1 through December 31
1200	52%	100%
1000	30%	54%
800	12%	25%
700	4%	7%
600	1%	1%

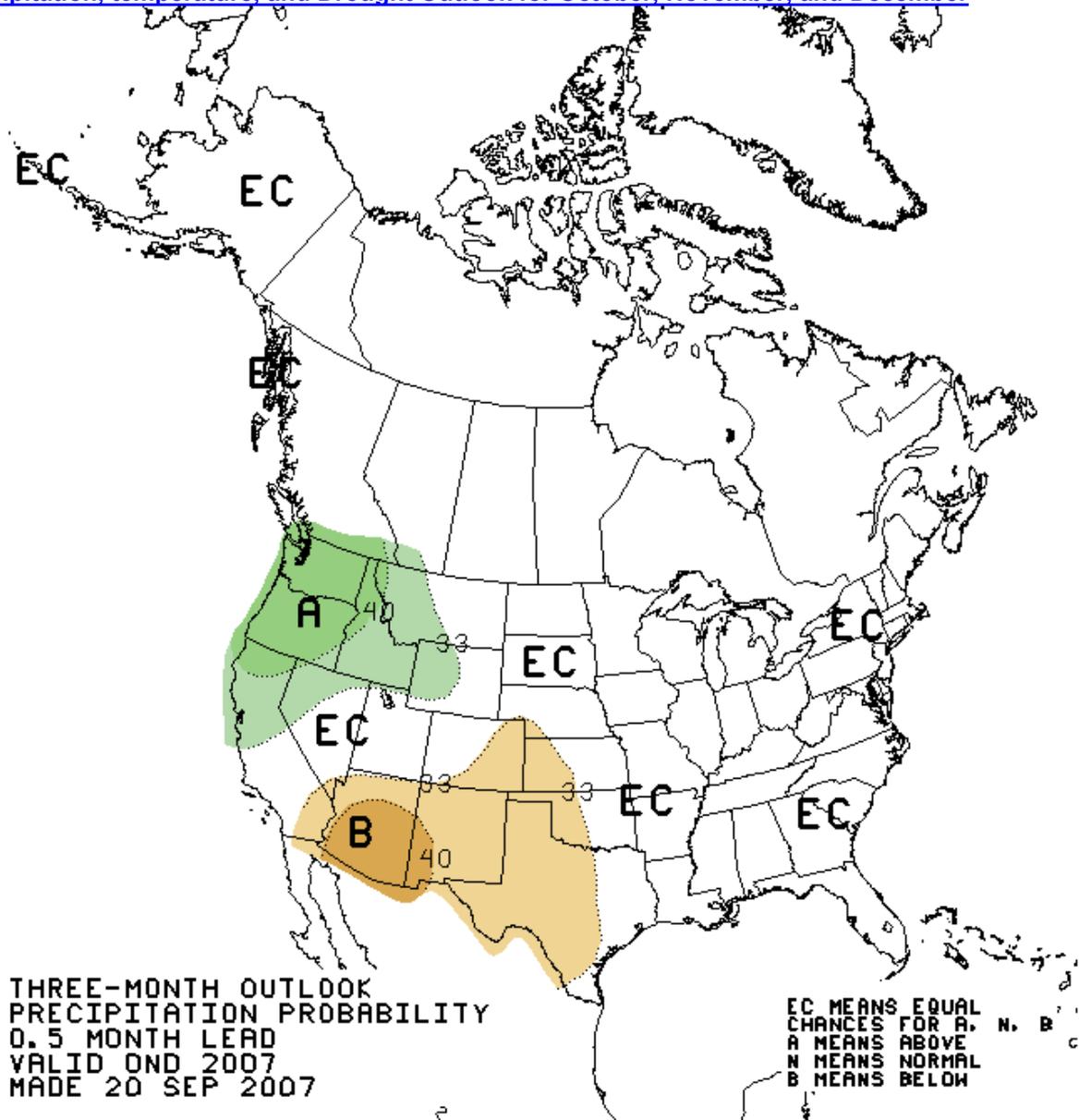
**Precipitation summary for the Potomac basin:**

The National Weather Service’s Middle Atlantic River Forecast Center reports that precipitation in the Potomac basin upstream of Washington, D.C., has been 3.3 inches below average for the prior 12 months (since October 1, 2006), for a total of 34.0 inches. September precipitation through the amounts to 1.6 inches, 1.7 inches below normal.



Data source: Middle Atlantic River Forecast Center, NWS

Precipitation, temperature, and Drought Outlook for October, November, and December



The Climate Prediction Center (CPC) of the National Oceanic and Atmospheric Administration predicts equal chances of above or below average precipitation in the Potomac basin for October, November and December. The CPC calls for above normal chances of higher than average temperature over much of the basin for October, November, and December. (Image source: CPC).

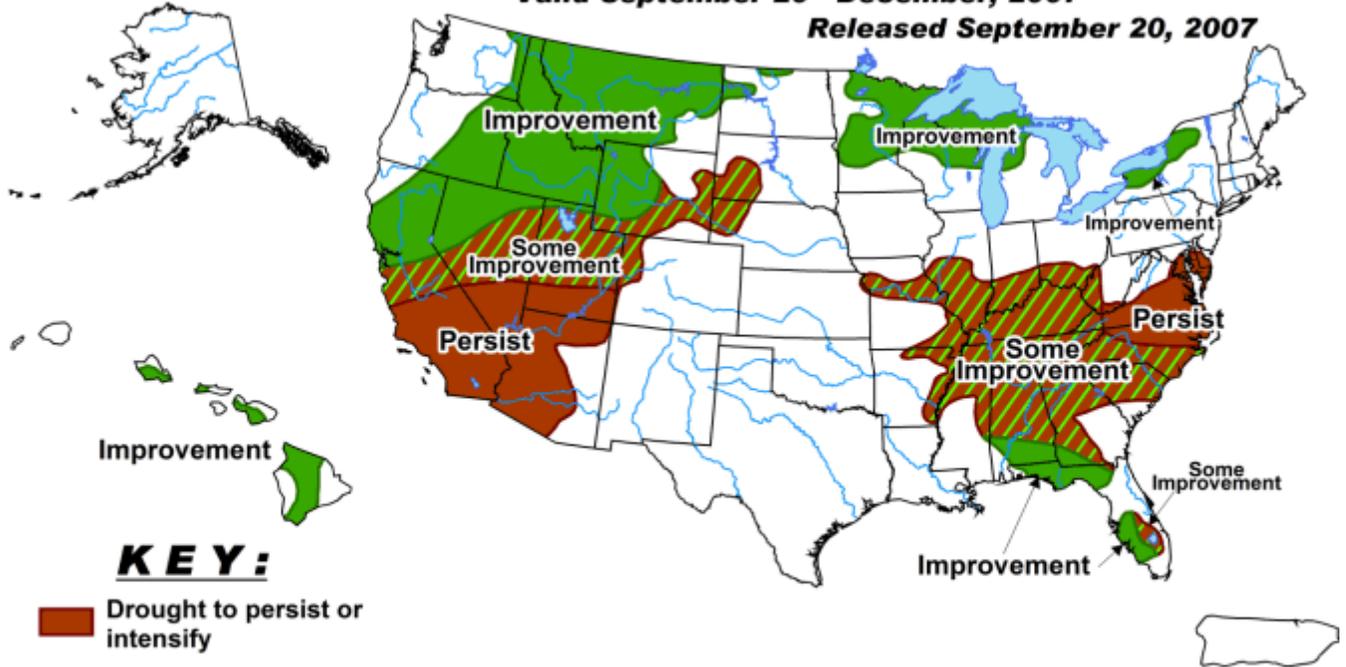


# U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid September 20 - December, 2007

Released September 20, 2007



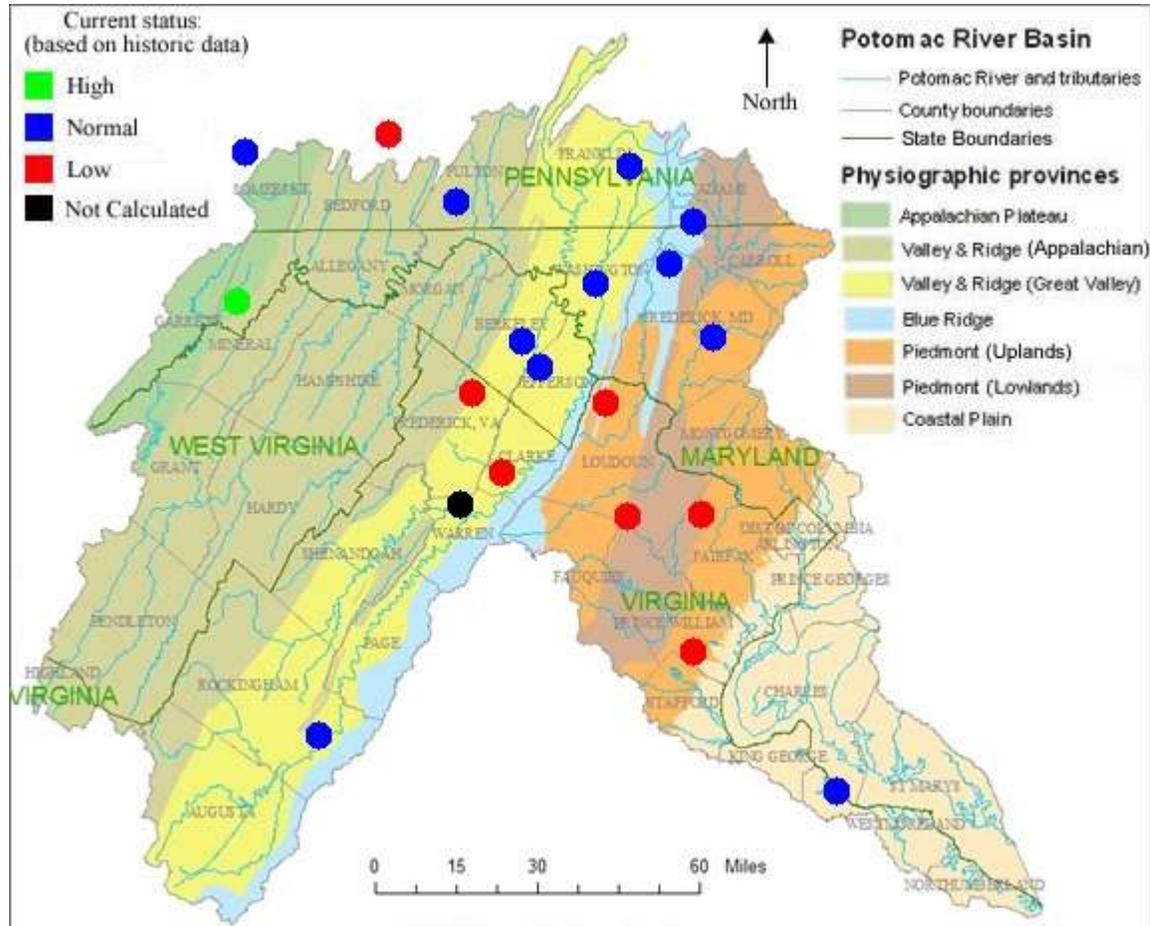
## KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

As of Sept. 20, the CPC's Seasonal Drought Outlook forecasts drought conditions to improve for the Potomac basin. (Image Source: CPC)

**Groundwater:**



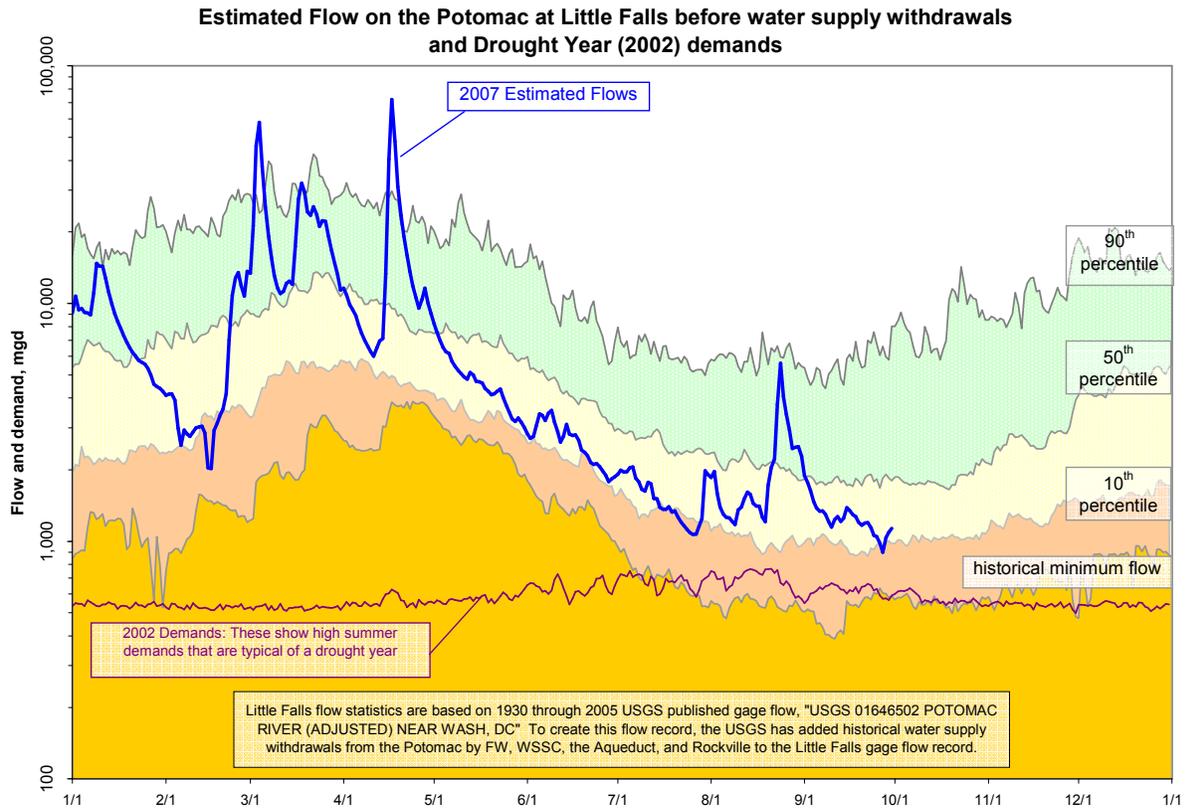
Monitoring wells show that most groundwater levels are “normal” to “low” throughout most of the basin (Image source: United States Geological Survey, created 9/21/2007). The Great Valley has the best (highest) baseflow characteristics during droughts, and five of the seven groundwater wells are “normal” in this physiographic province. In this graphic, USGS defines “high” as greater than 75<sup>th</sup> percentile, “normal” as between the 25<sup>th</sup> and 75<sup>th</sup> percentiles, and “low” as less than the 25<sup>th</sup> percentile.

**Reservoir Storage:**

Facility	Percent Full	Current usable storage, bg	Total usable capacity, bg
WSSC's Patuxent reservoirs	53	5.4	10.2
FW's Occoquan Reservoir	53	4.3	8.0
Little Seneca Reservoir	100	3.8	3.8
Jennings Randolph water supply	100	13.3	13.3
Jennings Randolph water quality	52	8.6	16.6
Savage Reservoir	62	3.8	6.2

### Estimated Potomac River flow:

The estimated Potomac flow at Little Falls averaged 1.3 billion gallons per day in September, about 68 percent of median flow. Estimated flow is the flow that would have occurred before water supply withdrawals, and is based on estimated withdrawal data and on provisional Little Falls gage data. Recent flows dropped to as low as the tenth percentile, but increased due to basin-wide precipitation in late September.



### Environmental Flow-by:

Average Potomac flow at Little Falls in September was well above the minimum flow recommendation of 100 MGD.

### Drought Status:

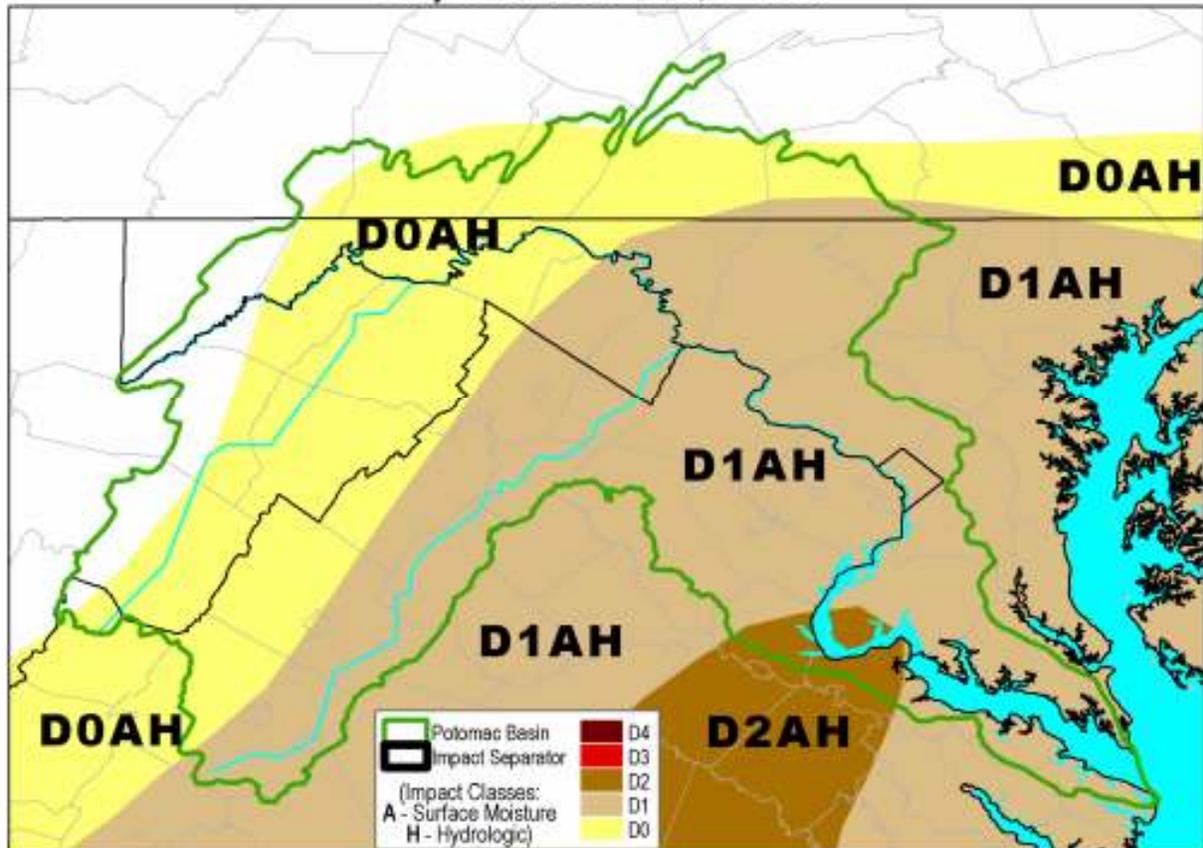
The Metropolitan Washington Council of Government's (MWCOG's) Drought Awareness Response Plan status is "Normal." The drought status may change to "Watch" if so declared by the MWCOG's Drought Coordination Committee. This Committee meets when the CPC's drought monitor shows more than 75 percent of the Potomac basin in D-1 status (see next page). As of September 25, about 55 percent of the Potomac Basin is in D-1 status or dryer.

### Drought Monitor and Soil moisture:

The latest Potomac Basin Drought Monitor (see next page) from the NOAA Climate Prediction Center (CPC) indicates "normal" to "D0 - Abnormally Dry" to "D1- Drought - Moderate" conditions for the Potomac Basin upstream of Washington. The Palmer Drought Severity Index shows "moderate" to "severe drought" soil moisture conditions for the majority of the basin upstream of Washington region (see graphic below).

# Potomac Basin Drought Monitor

September 25, 2007



## Selected Basin-Average Indices on September 23, 2007

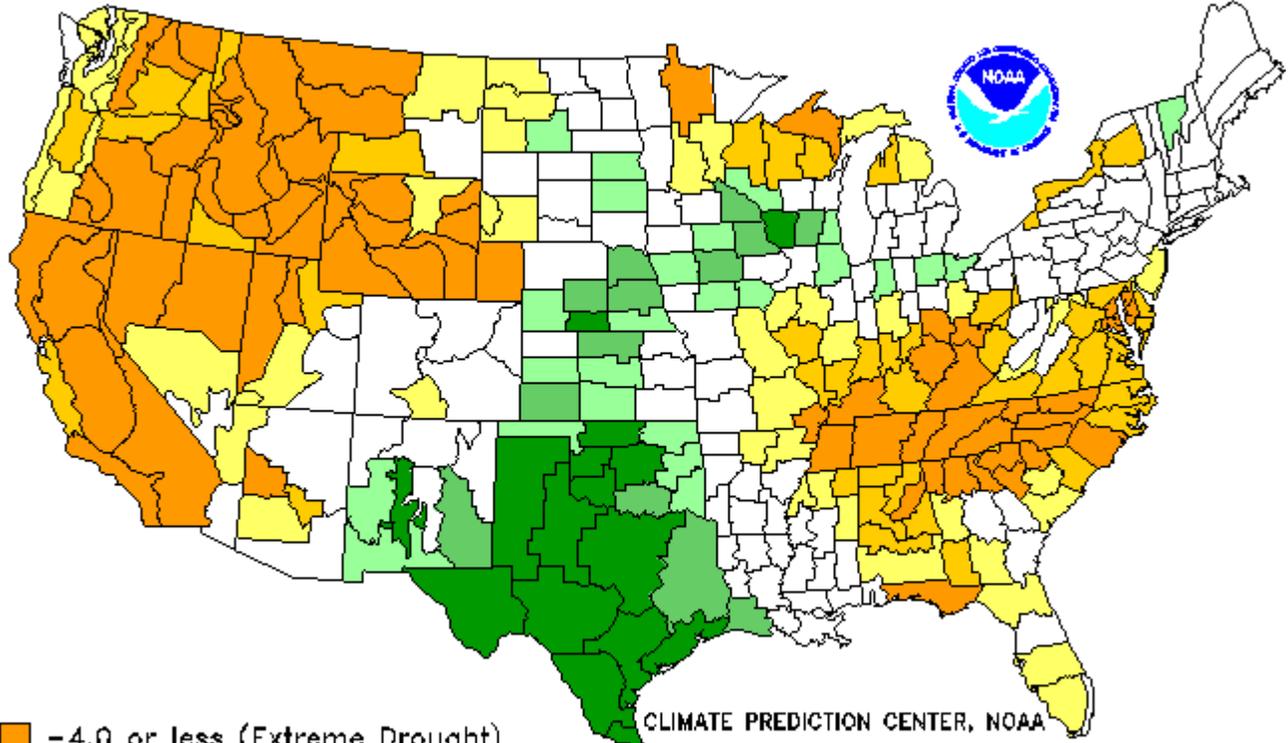
	<u>Raw Value</u>	<u>Anomaly</u>	<u>Percentile</u>
Palmer Drought	-2.39	-2.53	16.0 [D1]
Palmer Hydrologic	-2.60	-2.94	14.7 [D1]
Palmer Z	-2.22	-2.39	10.5 [D1]
CPC Soil Moisture	n/a	n/a	15.7 [D1]
1-Month Precipitation	2.10"	-1.63"	21.5 [D0]
3-Month Precipitation	8.54"	-2.87"	22.2 [D0]
6-Month Precipitation	17.37"	-5.28"	14.0 [D1]
12-Month Precipitation	37.68"	-4.09"	34.2 [--]
24-Month Precipitation	78.80"	-4.78"	42.8 [--]
<u>Basin Coverage:</u> 7.6% not dry 38.8% D0 53.3% D1 2.3% D2			<u>Basin Average:</u> D'0.50'

Information provided by the USGS, the Middle Atlantic River Forecast Center, and the National Weather Service.

# Drought Severity Index by Division

Weekly Value for Period Ending 22 SEP 2007

Long Term Palmer



- -4.0 or less (Extreme Drought)
- -3.0 to -3.9 (Severe Drought)
- -2.0 to -2.9 (Moderate Drought)
- -1.9 to +1.9 (Near Normal)

- +2.0 to +2.9 (Unusual Moist Spell)
- +3.0 to +3.9 (Very Moist Spell)
- +4.0 and above (Extremely Moist)

CLIMATE PREDICTION CENTER, NOAA