

DROUGHT MONITORING TASK FORCE

Drought Status Report

May 19, 2008

Statewide precipitation for the previous water year (October 1, 2006 through September 30, 2007) was below normal (81% of normal). Statewide precipitation for the period from October 1, 2006 through May 16, 2008 was below normal (82% of normal). Statewide precipitation for the period from January 1, 2008 through May 16, 2008 is in the normal range (90% of normal) and precipitation is in the normal range for each of the drought monitoring regions for this period. Precipitation greater than 85% of normal is considered to be in the normal range. The relatively wet period from February 1 until May 16 has had a significant effect on accumulated precipitation deficits across the Commonwealth. The following drought evaluation regions are currently below normal for the period beginning October 1, 2006; Big Sandy (75%), New River (79%), Roanoke (79%), Upper James (83%), Northern Virginia (83%), Northern Piedmont (79%), and the Northern Coastal Plain (80%). Cumulative precipitation deficits for the period beginning October 1, 2006 improved by multiple percentage points across the Commonwealth since the last report. The Middle James, Shenandoah, Chowan, York-James, Southeast Virginia, and Eastern Shore drought evaluation areas currently are in the normal range of precipitation for this extended period. Appendix A contains precipitation tables for periods dating to October 1, 2006. The long-range monthly climatologic outlook calls for equal chances of below normal, normal and above normal precipitation and temperatures for the Commonwealth through June of 2008. The long-range seasonal outlook calls for equal chances of below normal, normal and above normal precipitation and temperatures for the Commonwealth through August 2008.

The latest NOAA drought monitor indicates significant improvement in drought conditions throughout the Commonwealth and is included as Appendix B. Appendix C contains information from the national drought monitor with only Virginia displayed. Currently less than 8% of the Commonwealth is experiencing drought conditions. The NOAA seasonal drought outlook through August 2008 indicates that drought conditions are likely to improve. The seasonal drought outlook is included as Appendix D.

Seven day average streamflows for May 18 are normal in the majority of the Commonwealth with a small area in the southern portion of the Blue Ridge physiographic province where streamflows are below normal (10th to 24th percentiles). While drought monitoring ground water levels data is scarce, ground water levels are generally in the lower range of expected water levels in areas east of Route 95 and are generally lower than normal in the area west of Route 95. Fifteen dedicated drought monitoring wells are at levels indicative of normal ground water levels and four are at levels indicative of moderate hydrologic drought (10th to 24th percentiles). Ground water levels in the vast majority of dedicated monitoring wells have shown increases in water levels in the last month indicating a period of ground water recharge. Some of the apparent increases in ground water levels recorded in dedicated monitoring wells may be due to the increase of pressure due to near surface saturation by the heavy rainfall events during early May. The actual benefit of these rainfall events to ground water will likely be demonstrated by actual ground water levels in these wells around the first of June. Levels of most large reservoirs have continued to rebound over the last month and are now full.

While the Virginia Department of Health has not reported any impacts to public water supplies that have compromised their ability to provide the needs of their customers' 28 systems remain on voluntary water conservation requirements and 3 systems remain on mandatory water conservation requirements. Appendix E contains a table of waterworks that includes systems that have initiated water conservation requirements.

The Department of Forestry reports that the spring wildfire season has ended and that recent precipitation has significantly increased forest fuel moisture conditions. Since January 1st, The VDOF responded to more than 995 wildfires which have burned more than 25,000 acres, as well as damaging or destroying 15 homes and 44 other structures. On a positive note, the VDOF has saved or protected 563 homes and 371 other structures during this same period. These numbers are all well above 5 and 10 year averages for the period. The next real threat for significant wildfire development will return later this fall.

The Virginia Department of Game and Inland Fisheries reports that boat ramps are all open with the exception of those closed for renovation or repairs. Spring trout stocking is progressing on schedule with the only impacts being fish that are smaller than average due to the previous year's drought that reduced hatchery flows and necessitated reducing feeding. The spring turkey season closed on Saturday May 17, and there have been minimal issues with fire due to the wet conditions. Reservoir and stream flows have benefited significantly from the recent rains. The Department is shutting down its largest trout production for renovations, and above average rainfall would be very beneficial in maximizing production at the other facilities. Reproductive success of many fish species improves during springs and summers with average to slightly above average flows. So far, 2008 is shaping up to be a good year for fish reproduction.

While the intensity of drought impacts has decreased significantly during the last month, the lower than normal level of ground water is still cause for some concern regarding the potential for drought impacts to intensify as the growing season progresses. The significantly wet period from April 1 until now will likely forestall the development of drought conditions until early July at the earliest. It is important to remember that localized drought impacts, particularly agricultural drought impacts, are a normal occurrence in an "average" Virginia summer.

Reports from the Climatology Office of the University of Virginia, the National Weather Service, the Virginia Department of Agriculture and Consumer Services, the Virginia Department of Environmental Quality, and the United States Geological Survey follow.

Report of the Climatology Office of the University of Virginia

The past thirty days have seen continued widespread rainfall associated with a number of frontal passages. As a result, precipitation totals for April were above (or much above) normal for all regions. Precipitation for the first half of May has been more variable, but only the most southwestern portions of Virginia have been significantly below normal. Taken together, April and May mark the first protracted period of statewide above-normal precipitation in over a year.

Although the longer-range outlooks (through August) give little useful guidance, the pattern of frequent frontal passages seems likely to continue for the very near future. Nonetheless, at this time of year it is expected that the primary mechanism for rainfall will shift to more scattered thunderstorm activity. Now that the growing season is well underway, normal rainfall amounts will soon fail to compensate for moisture loss from evaporation and plant uptake.

As the summer progresses, there is an increasing likelihood that tropical cyclone activity will bring precipitation to the Commonwealth. Since this hurricane season is forecast to be more active than average, tropical systems (or their remnants) may be an important factor in summer water availability.

Report of the National Weather Service

The 6-10 day and 8-14 day outlooks both suggest a continuation of the abnormally wet/cool regime that we have experienced for the last few weeks. This suggests we could go into early June before we make the typical summer transition from widespread precipitation events to a more convective/showery regime. This delay will be a benefit from the standpoint of water resources as we may extend the period when we may potentially benefit from additional ground water storage prior to moving into a high evapo-transpiration time of year.

Virginia Department of Agriculture and Consumer Services Status of Agricultural Drought

According to the USDA Crop Weather Report released on May 12, 2008, 90% of topsoil moisture was adequate. Most areas in the state continue to receive significant rain but the total rainfall year-to-date is still below normal. The western and southwestern parts of the state did not get the heavy rain received by the eastern portion of the state in April.

Impact on the Dairy Industry

Dairymen are busy harvesting small grains for silage and planting corn. The budgets of dairymen continue to be strained by the high cost of grain, hay, fertilizer, diesel fuel and other inputs. The reserve supplies of feed have been used up on nearly all farms. The outlook is improving for spring pastures and hay crop yields.

Impact on Crops

Pastures grass is growing with recent rains and warmer temperatures in Central VA. In the southwestern portion of the state grass and small grain crops are below normal. Recent rains have significantly relieved drought conditions for Virginia farmers. In fact, many areas reported that wet conditions caused planting delays for corn and tobacco. With the condition of the hay crop improving and producers making their first cutting of the year, it appears as if hay shortages will be reduced or even eliminated. Prices for hay have been higher than normal due to past shortages. Prices for all types of hay are higher than 2006 with increases of 7% to 140%. Farmers are hoping that increased supplies of hay will lead to lower prices in the upcoming months.

Nursery/Horticulture:

Virginia's Nursery and Landscape Industry reports that the recent rains have helped to provide needed soil moisture and to replenish depleted irrigation ponds from last year's drought. Unfortunately, last year's drought reduced normal plant

growth and much nursery stock did not achieve its expected annual increase in diameter, which would have increased the plant's value to the nurseryman. Landscapers often held off filling orders when conditions were too dry for digging and planting, resulting in commercial nursery sales being reduced by 35-40%. Nurseries and landscapers are playing catch up this spring and sales are very good; however, if the current trend of extremely wet conditions continues it could cause an increase in fungal disease problems in last year's root damaged and already stressed plant material. If severe drought conditions return again during the 2008 growing season, it could be catastrophic to Virginia's nursery and landscape industries.

Impact on Streams and Wells

Recent rains temporarily swelled small streams, creeks and rivers, but water levels quickly returned to below normal indicating low ground water levels. April brought good rainfall to Northwest and Central Virginia, but Southwest Virginia is still very dry. The few scattered showers in the Southwest have done little to improve the drought situation. In Central Virginia water levels are improved but not normal. For the first time since November, Northwestern Virginia surpassed normal average monthly rainfall for April and Shenandoah County cautioned its citizens to conserve well water since very little refill has occurred over the winter months.

Disaster Designations

Due to the extreme agricultural drought, 93 Virginia counties and 34 independent cities received a Secretarial disaster designation in 2007 as a primary natural disaster area. York and Arlington counties and the independent cities of Alexandria, Bristol, Falls Church, Poquoson, and Norton were named contiguous disaster areas.

Waivers for Hauling of Emergency Supplies Extended

At the request of the Virginia Department of Agriculture and Consumer Services (VDACS), the Virginia Department of Emergency Management (VDEM) authorized motor carrier exemptions to hours worked, and the Virginia Departments of Transportation and Motor Vehicles granted temporary waivers of registration and license requirements along with normal weight and width restrictions for carriers transporting emergency supplies of hay or animal feed. The exemptions, which became effective at 6 a.m. August 11, 2007, have been extended through 6 a.m., June 15, 2008. The exemptions apply to the entire state since every Virginia locality has received either a primary or contiguous drought disaster designation from the United States Department of Agriculture.

Virginia Department of Environmental Quality Condition of Major Reservoirs

All major reservoirs are full or nearly full. Lake Anna was actually one foot above full last week due to heavy rains. Kerr Reservoir is five feet above the guide curve. The Corps is attempting to lower the elevation of the lake without flooding low lying farmland and bottomland hardwood forests. The other two large Corps of Engineers Lakes, Lake Philpott and Lake Moomaw are also full. Smith Mountain Lake is full. Stripper releases have not caused Smith Mountain Lake to subside. Two large water supply reservoirs for the Western Virginia Water Authority that serve the Roanoke area were formerly a cause for concern. Now Carvins Cove Reservoir is 95% full and Spring Hollow Reservoir is 85% full.

United States Geological Survey Streamflow and Ground Water Levels

Streams across the State are still responding to rains received last week. Most streamflow gages are recording normal to above normal flows based on May flow statistics. Analysis of 7-, 14-, and 28-day running average statistics shows similar normal or above normal flows. However, some streamflow gages in southwest Virginia (Tennessee, Big Sandy, Kanawha, and the headwaters of the Roanoke River Basins) are recording flows below normal. Storm precipitation totals for the last week were lower in southwest Virginia than in the rest of the State.

While some of the precipitation may become recharge to the ground-water system, an increasing per cent of the total is intercepted for evaporation and transpiration. The best indication of how much of the precipitation recharges the ground-water system will be shown in the recession of the streamflow hydrographs. If the hydrographs drop rapidly to pre-rain flows, then there was very little recharge. If the hydrograph recession slows at some value above the pre-rain flows, then some ground-water recharge occurred. Usually around mid-May in Virginia, precipitation changes from frontal origin to a more scattered convective origin. The result of this is heavy localized precipitation, with many areas remaining nearly dry for long periods.

Ground-water levels have shown improvement over the last month, but the data coverage is limited and results are mixed with most wells recording below normal to normal ranges in water levels. Streamflow conditions are still the best indicator of ground-water conditions in areas where there is limited well data.

Streamflow conditions based on daily values for May 16 are presented in Appendix F. Area summaries of 7-day average streamflows from the USGS drought watch web page show similar flow conditions and are presented in Appendix G. Current conditions are generally higher than depicted by seven day average stream flows as flows continue to increase due to the recent significant precipitation events. Ground water levels based on conditions on May 16 are presented in Appendix H.

APPENDIX A

Precipitation departures by Drought Evaluation Region.

PRELIMINARY PRECIPITATION SUMMARY

Prepared:
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DROUGHT REGION	OBSERVED	May 1, 2008 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1 Big Sandy	1.26	2.33	-1.08	54%
2 New River	1.29	2.04	-0.75	63%
3 Roanoke	2.51	2.10	0.42	120%
4 Upper James	1.71	2.07	-0.36	83%
5 Middle James	3.40	2.05	1.35	166%
6 Shenandoah	2.66	1.86	0.80	143%
7 Northern Virginia	6.39	2.10	4.29	304%
8 Northern Piedmont	3.97	2.04	1.93	194%
9 Chowan	2.31	1.98	0.33	117%
10 Northern Coastal Plain	4.47	2.01	2.46	222%
11 York-James	2.39	2.07	0.32	116%
12 Southeast Virginia	1.79	1.87	-0.08	96%
13 Eastern Shore	3.46	1.70	1.76	203%
Statewide	2.77	2.06	0.71	134%

DROUGHT REGION	OBSERVED	Apr 1, 2008 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1 Big Sandy	6.70	6.09	0.61	110%
2 New River	6.45	5.59	0.86	115%
3 Roanoke	7.43	5.90	1.54	126%
4 Upper James	6.61	5.47	1.14	121%
5 Middle James	8.52	5.39	3.12	158%
6 Shenandoah	7.03	4.78	2.25	147%
7 Northern Virginia	8.70	5.40	3.30	161%
8 Northern Piedmont	7.97	5.33	2.64	150%
9 Chowan	9.20	5.41	3.79	170%
10 Northern Coastal Plain	6.77	5.10	1.67	133%
11 York-James	10.43	5.37	5.06	194%
12 Southeast Virginia	10.10	5.12	4.98	197%
13 Eastern Shore	7.53	4.62	2.91	163%
Statewide	7.73	5.48	2.25	141%

DROUGHT REGION		OBSERVED	Mar 1, 2008 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	10.50	10.34	0.16	102%
2	New River	9.00	9.26	-0.26	97%
3	Roanoke	10.47	10.17	0.31	103%
4	Upper James	9.09	9.26	-0.17	98%
5	Middle James	11.62	9.45	2.16	123%
6	Shenandoah	9.55	7.98	1.57	120%
7	Northern Virginia	11.43	9.06	2.37	126%
8	Northern Piedmont	10.60	9.14	1.45	116%
9	Chowan	12.93	9.78	3.15	132%
10	Northern Coastal Plain	10.08	9.38	0.70	107%
11	York-James	15.11	10.06	5.05	150%
12	Southeast Virginia	13.23	9.32	3.91	142%
13	Eastern Shore	9.66	8.93	0.73	108%
	Statewide	10.80	9.52	1.28	113%

DROUGHT REGION		OBSERVED	Feb 1, 2008 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	12.98	13.92	-0.94	93%
2	New River	10.74	12.19	-1.44	88%
3	Roanoke	12.68	13.48	-0.80	94%
4	Upper James	10.98	12.11	-1.13	91%
5	Middle James	14.22	12.57	1.65	113%
6	Shenandoah	11.49	10.39	1.10	111%
7	Northern Virginia	14.09	11.73	2.36	120%
8	Northern Piedmont	13.00	12.11	0.89	107%
9	Chowan	15.70	12.95	2.75	121%
10	Northern Coastal Plain	12.59	12.52	0.07	101%
11	York-James	18.80	13.59	5.21	138%
12	Southeast Virginia	16.85	12.82	4.03	131%
13	Eastern Shore	12.85	12.12	0.72	106%
	Statewide	13.22	12.65	0.57	104%

DROUGHT REGION		OBSERVED	Jan 1, 2008 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	15.25	17.65	-2.40	86%
2	New River	11.98	15.40	-3.41	78%
3	Roanoke	13.57	17.40	-3.82	78%
4	Upper James	12.25	15.39	-3.14	80%
5	Middle James	15.19	16.23	-1.04	94%
6	Shenandoah	12.48	13.24	-0.76	94%
7	Northern Virginia	15.47	15.01	0.46	103%
8	Northern Piedmont	15.89	15.63	0.26	102%
9	Chowan	16.88	17.06	-0.18	99%
10	Northern Coastal Plain	13.81	16.27	-2.47	85%
11	York-James	20.21	17.73	2.48	114%
12	Southeast Virginia	18.36	16.98	1.38	108%
13	Eastern Shore	14.65	15.68	-1.03	93%
	Statewide	14.59	16.29	-1.70	90%

DROUGHT REGION		OBSERVED	Dec 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	18.16	21.29	-3.13	85%
2	New River	14.43	18.11	-3.67	80%
3	Roanoke	16.79	20.65	-3.85	81%
4	Upper James	15.21	18.34	-3.13	83%
5	Middle James	17.87	19.40	-1.53	92%
6	Shenandoah	15.42	15.83	-0.41	97%
7	Northern Virginia	18.50	18.11	0.39	102%
8	Northern Piedmont	18.79	18.91	-0.12	99%
9	Chowan	21.02	20.08	0.94	105%
10	Northern Coastal Plain	16.55	19.55	-3.00	85%
11	York-James	24.32	21.12	3.20	115%
12	Southeast Virginia	22.02	20.16	1.86	109%
13	Eastern Shore	19.22	18.92	0.30	102%
	Statewide	17.66	19.41	-1.75	91%

DROUGHT REGION		OBSERVED	Nov 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	19.86	24.57	-4.71	81%
2	New River	14.88	21.14	-6.26	70%
3	Roanoke	17.27	24.01	-6.73	72%
4	Upper James	15.62	21.70	-6.08	72%
5	Middle James	18.39	22.91	-4.52	80%
6	Shenandoah	16.53	18.88	-2.35	88%
7	Northern Virginia	20.08	21.52	-1.44	93%
8	Northern Piedmont	19.66	22.71	-3.05	87%
9	Chowan	21.47	23.19	-1.72	93%
10	Northern Coastal Plain	17.66	22.69	-5.04	78%
11	York-James	25.14	24.49	0.65	103%
12	Southeast Virginia	22.58	23.23	-0.64	97%
13	Eastern Shore	20.06	21.86	-1.80	92%
	Statewide	18.46	22.64	-4.18	82%

DROUGHT REGION		OBSERVED	Oct 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	21.82	27.45	-5.63	79%
2	New River	18.59	24.31	-5.72	76%
3	Roanoke	20.89	27.72	-6.83	75%
4	Upper James	17.99	24.95	-6.96	72%
5	Middle James	22.01	26.75	-4.74	82%
6	Shenandoah	18.74	22.07	-3.33	85%
7	Northern Virginia	23.33	25.00	-1.67	93%
8	Northern Piedmont	22.67	26.70	-4.03	85%
9	Chowan	24.57	26.77	-2.20	92%
10	Northern Coastal Plain	23.03	26.20	-3.17	88%
11	York-James	28.98	28.02	0.96	103%
12	Southeast Virginia	27.85	26.89	0.97	104%
13	Eastern Shore	23.43	25.07	-1.65	93%
	Statewide	21.77	26.14	-4.37	83%

DROUGHT REGION		OBSERVED	Sep 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	23.07	30.91	-7.84	75%
2	New River	20.23	27.72	-7.49	73%
3	Roanoke	22.97	31.95	-8.98	72%
4	Upper James	20.24	28.45	-8.21	71%
5	Middle James	22.82	30.88	-8.06	74%
6	Shenandoah	20.68	25.74	-5.06	80%
7	Northern Virginia	24.50	29.07	-4.57	84%
8	Northern Piedmont	23.66	30.98	-7.32	76%
9	Chowan	25.53	31.20	-5.67	82%
10	Northern Coastal Plain	24.28	30.29	-6.02	80%
11	York-James	30.88	32.92	-2.04	94%
12	Southeast Virginia	28.58	31.32	-2.74	91%
13	Eastern Shore	24.99	28.68	-3.70	87%
	Statewide	23.19	30.14	-6.95	77%

DROUGHT REGION		OBSERVED	Aug 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	24.25	34.74	-10.49	70%
2	New River	21.42	31.03	-9.60	69%
3	Roanoke	23.80	35.67	-11.87	67%
4	Upper James	21.69	31.78	-10.09	68%
5	Middle James	25.54	34.70	-9.16	74%
6	Shenandoah	23.46	29.07	-5.61	81%
7	Northern Virginia	26.36	32.92	-6.56	80%
8	Northern Piedmont	26.04	34.80	-8.76	75%
9	Chowan	27.54	35.51	-7.97	78%
10	Northern Coastal Plain	25.72	34.15	-8.43	75%
11	York-James	33.21	37.79	-4.58	88%
12	Southeast Virginia	32.06	36.44	-4.38	88%
13	Eastern Shore	27.48	32.55	-5.07	84%
	Statewide	25.06	33.97	-8.91	74%

DROUGHT REGION		OBSERVED	Jul 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	28.75	39.22	-10.48	73%
2	New River	24.35	34.82	-10.47	70%
3	Roanoke	27.08	40.06	-12.98	68%
4	Upper James	24.03	35.82	-11.79	67%
5	Middle James	27.90	39.11	-11.21	71%
6	Shenandoah	25.45	32.83	-7.38	78%
7	Northern Virginia	28.82	36.69	-7.87	79%
8	Northern Piedmont	27.57	39.20	-11.63	70%
9	Chowan	30.60	40.02	-9.42	76%
10	Northern Coastal Plain	27.14	38.60	-11.46	70%
11	York-James	36.65	42.89	-6.24	85%
12	Southeast Virginia	35.37	41.51	-6.14	85%
13	Eastern Shore	29.57	36.55	-6.98	81%
	Statewide	27.79	38.31	-10.52	73%

DROUGHT REGION		OBSERVED	Jun 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	31.49	43.36	-11.87	73%
2	New River	27.39	38.67	-11.28	71%
3	Roanoke	30.00	43.95	-13.95	68%
4	Upper James	27.78	39.53	-11.75	70%
5	Middle James	31.25	42.62	-11.37	73%
6	Shenandoah	28.73	36.54	-7.81	79%
7	Northern Virginia	30.76	40.55	-9.79	76%
8	Northern Piedmont	29.72	43.21	-13.49	69%
9	Chowan	32.81	43.67	-10.86	75%
10	Northern Coastal Plain	29.00	42.16	-13.17	69%
11	York-James	38.84	46.30	-7.46	84%
12	Southeast Virginia	38.59	45.12	-6.53	86%
13	Eastern Shore	34.83	39.53	-4.71	88%
	Statewide	30.65	42.10	-11.45	73%

DROUGHT REGION		OBSERVED	May 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	33.24	48.18	-14.95	69%
2	New River	29.17	42.88	-13.71	68%
3	Roanoke	31.97	48.28	-16.31	66%
4	Upper James	29.80	43.81	-14.01	68%
5	Middle James	33.71	46.86	-13.15	72%
6	Shenandoah	30.92	40.38	-9.46	77%
7	Northern Virginia	32.02	44.89	-12.87	71%
8	Northern Piedmont	31.81	47.43	-15.62	67%
9	Chowan	35.70	47.76	-12.06	75%
10	Northern Coastal Plain	30.24	46.32	-16.08	65%
11	York-James	40.39	50.57	-10.18	80%
12	Southeast Virginia	40.55	48.98	-8.42	83%
13	Eastern Shore	36.57	43.05	-6.49	85%
	Statewide	32.68	46.36	-13.68	70%

DROUGHT REGION		OBSERVED	Apr 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	37.70	51.94	-14.24	73%
2	New River	32.29	46.43	-14.14	70%
3	Roanoke	35.18	52.08	-16.89	68%
4	Upper James	33.30	47.21	-13.91	71%
5	Middle James	36.95	50.20	-13.26	74%
6	Shenandoah	34.49	43.30	-8.80	80%
7	Northern Virginia	35.75	48.19	-12.44	74%
8	Northern Piedmont	34.91	50.72	-15.82	69%
9	Chowan	40.13	51.19	-11.06	78%
10	Northern Coastal Plain	33.95	49.41	-15.46	69%
11	York-James	44.43	53.87	-9.44	82%
12	Southeast Virginia	45.07	52.23	-7.16	86%
13	Eastern Shore	41.12	45.97	-4.86	89%
	Statewide	36.32	49.78	-13.46	73%

DROUGHT REGION		OBSERVED	Mar 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	40.84	56.19	-15.35	73%
2	New River	36.32	50.10	-13.77	73%
3	Roanoke	38.87	56.35	-17.47	69%
4	Upper James	36.94	51.00	-14.06	72%
5	Middle James	40.00	54.26	-14.26	74%
6	Shenandoah	37.37	46.50	-9.13	80%
7	Northern Virginia	38.91	51.85	-12.94	75%
8	Northern Piedmont	37.34	54.53	-17.20	68%
9	Chowan	42.70	55.56	-12.86	77%
10	Northern Coastal Plain	36.76	53.69	-16.93	68%
11	York-James	46.15	58.56	-12.41	79%
12	Southeast Virginia	47.01	56.43	-9.42	83%
13	Eastern Shore	42.90	50.28	-7.39	85%
	Statewide	39.39	53.82	-14.43	73%

DROUGHT REGION		OBSERVED	Feb 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	42.24	59.77	-17.53	71%
2	New River	37.98	53.03	-15.05	72%
3	Roanoke	40.92	59.66	-18.73	69%
4	Upper James	39.39	53.85	-14.46	73%
5	Middle James	41.97	57.38	-15.41	73%
6	Shenandoah	39.43	48.91	-9.48	81%
7	Northern Virginia	41.75	54.52	-12.77	77%
8	Northern Piedmont	39.78	57.50	-17.72	69%
9	Chowan	44.87	58.73	-13.86	76%
10	Northern Coastal Plain	39.27	56.83	-17.57	69%
11	York-James	47.90	62.09	-14.19	77%
12	Southeast Virginia	49.28	59.93	-10.65	82%
13	Eastern Shore	45.68	53.47	-7.79	85%
	Statewide	41.48	56.95	-15.47	73%

DROUGHT REGION		OBSERVED	Jan 1, 2007 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	45.42	63.50	-18.08	72%
2	New River	40.94	56.24	-15.30	73%
3	Roanoke	44.80	63.58	-18.77	70%
4	Upper James	42.40	57.13	-14.73	74%
5	Middle James	45.54	61.04	-15.50	75%
6	Shenandoah	40.99	51.76	-10.77	79%
7	Northern Virginia	43.99	57.80	-13.81	76%
8	Northern Piedmont	42.30	61.02	-18.73	69%
9	Chowan	47.39	62.84	-15.45	75%
10	Northern Coastal Plain	43.51	60.58	-17.08	72%
11	York-James	50.51	66.23	-15.72	76%
12	Southeast Virginia	52.45	64.09	-11.64	82%
13	Eastern Shore	47.85	57.03	-9.18	84%
	Statewide	44.54	60.59	-16.05	74%

DROUGHT REGION		OBSERVED	Dec 1, 2006 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	47.41	67.14	-19.73	71%
2	New River	42.72	58.95	-16.23	72%
3	Roanoke	46.98	66.83	-19.85	70%
4	Upper James	44.39	60.08	-15.69	74%
5	Middle James	47.13	64.21	-17.08	73%
6	Shenandoah	42.11	54.35	-12.24	77%
7	Northern Virginia	45.65	60.90	-15.25	75%
8	Northern Piedmont	44.05	64.30	-20.25	69%
9	Chowan	49.56	65.86	-16.30	75%
10	Northern Coastal Plain	45.21	63.86	-18.65	71%
11	York-James	52.33	69.62	-17.29	75%
12	Southeast Virginia	54.90	67.27	-12.37	82%
13	Eastern Shore	50.60	60.27	-9.67	84%
	Statewide	46.39	63.71	-17.32	73%

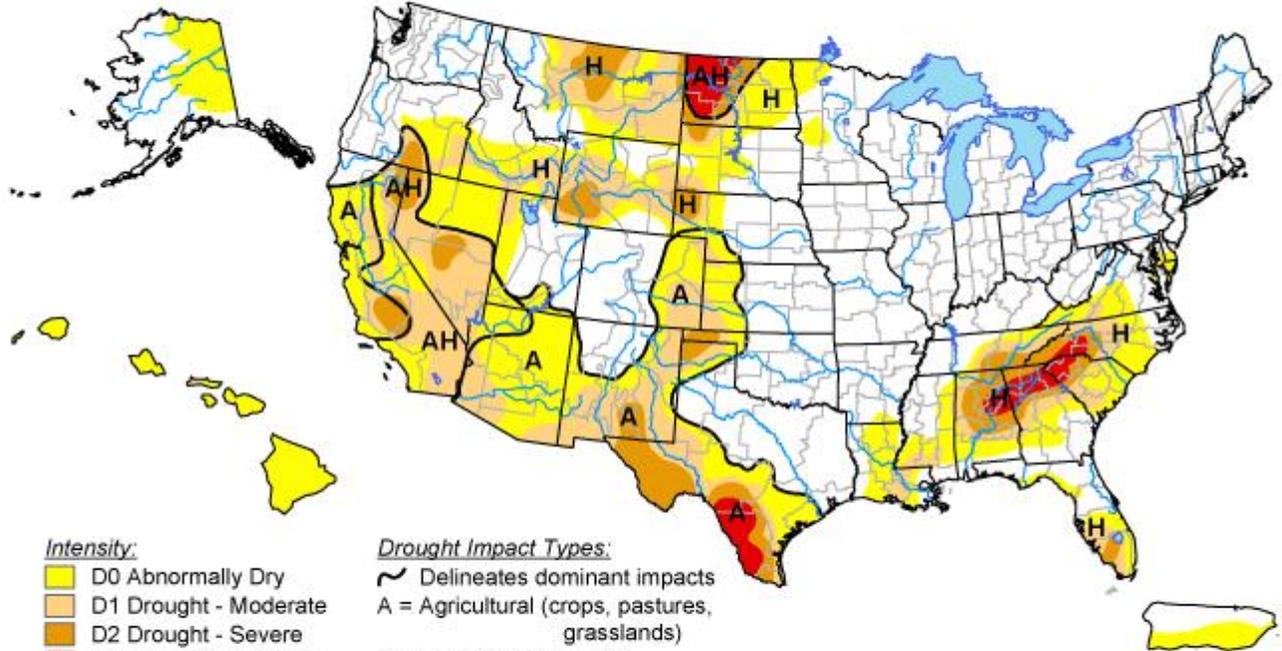
DROUGHT REGION		OBSERVED	Nov 1, 2006 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	50.17	70.42	-20.25	71%
2	New River	46.67	61.98	-15.30	75%
3	Roanoke	52.37	70.19	-17.81	75%
4	Upper James	48.17	63.44	-15.27	76%
5	Middle James	52.86	67.72	-14.86	78%
6	Shenandoah	46.26	57.40	-11.14	81%
7	Northern Virginia	51.45	64.31	-12.86	80%
8	Northern Piedmont	50.35	68.10	-17.75	74%
9	Chowan	56.93	68.97	-12.04	83%
10	Northern Coastal Plain	50.51	67.00	-16.49	75%
11	York-James	57.99	72.99	-14.99	79%
12	Southeast Virginia	62.52	70.34	-7.82	89%
13	Eastern Shore	55.48	63.21	-7.73	88%
	Statewide	51.55	66.94	-15.39	77%

DROUGHT REGION		OBSERVED	Oct 1, 2006 NORMAL	- May 16, 2008 DEPARTURE	% OF NORM.
1	Big Sandy	55.14	73.30	-18.16	75%
2	New River	51.66	65.15	-13.49	79%
3	Roanoke	58.41	73.90	-15.48	79%
4	Upper James	55.10	66.69	-11.59	83%
5	Middle James	60.56	71.56	-11.01	85%
6	Shenandoah	51.50	60.59	-9.09	85%
7	Northern Virginia	56.23	67.79	-11.56	83%
8	Northern Piedmont	56.88	72.09	-15.21	79%
9	Chowan	64.63	72.55	-7.92	89%
10	Northern Coastal Plain	56.59	70.51	-13.93	80%
11	York-James	65.99	76.52	-10.53	86%
12	Southeast Virginia	67.58	74.00	-6.41	91%
13	Eastern Shore	62.41	66.42	-4.01	94%
	Statewide	57.79	70.44	-12.65	82%

APPENDIX B

U.S. Drought Monitor

May 13, 2008
Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, May 15, 2008
Author: Michael James, JAWF/CPC/NOAA

APPENDIX C

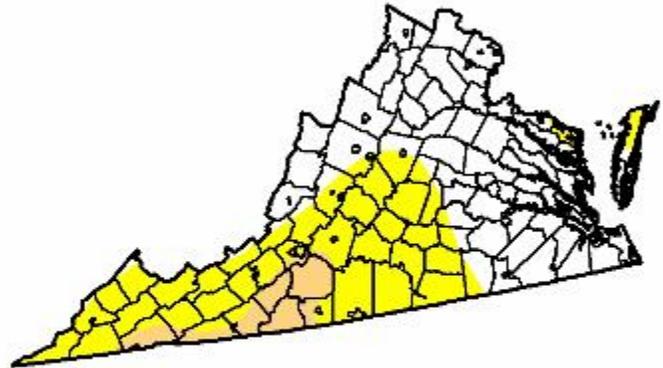
U.S. Drought Monitor Virginia

May 13, 2008

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	51.8	48.2	7.7	0.0	0.0	0.0
Last Week (05/06/2008 map)	16.8	83.2	33.3	0.0	0.0	0.0
3 Months Ago (02/19/2008 map)	6.7	93.3	79.3	40.9	3.3	0.0
Start of Calendar Year (01/01/2008 map)	8.0	92.0	74.8	27.3	9.2	6.3
Start of Water Year (10/02/2007 map)	0.1	99.9	92.7	76.4	25.0	5.0
One Year Ago (05/15/2007 map)	84.1	15.9	1.9	0.0	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements

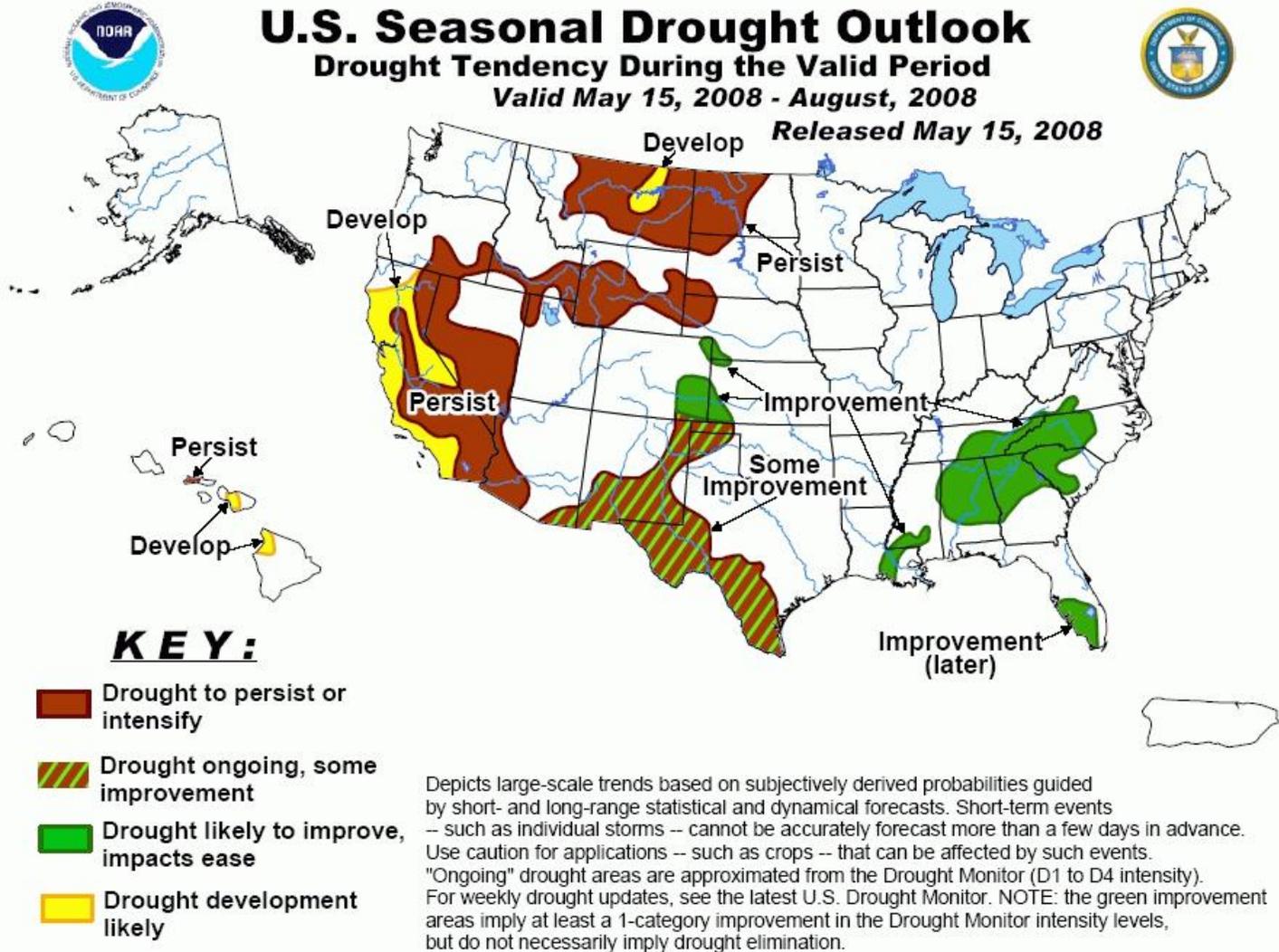
<http://drought.unl.edu/dm>



Released Thursday, May 15, 2008

Author: Michael James, JAWF/CPC/NOAA

APPENDIX D



APPENDIX E

Condition of Public Water Supplies

April 18, 2008

ODW Drought Situation Report

Date: **5/14/08**

	Restriction totals
Mandatory	3
Voluntary	28
Total	31

N-None
M-Mandatory
V-Voluntary

B-Better
S-Stable/Same
W-Worse

PWSID	Waterworks	Source Name	Restrictions	Situation	Population Served
1105400	Lee County PSA	KVS Quarry	N	S 05/12/08: Water level in quarry is holding steady compared to last month; level falls about an inch and then rises about an inch with rainfall; currently at 133.5 inches below catwalk . Level was 132 inches below catwalk on 04/14/08.	2,500
1169725	Town of Nickelsville	Wells	N	B 05/13/08: Well production had dropped and voluntary conservation notice issued 8/31/07. Well production steady now. All wells are pumping at their safe yields for the following hrs/day, controlled by timers: Well #1 5 hrs/day; Well #3 8 hrs/day; Well #4 14 hrs/day; Well #5 9 hrs/day; Well #6 8 hrs/day; Well #7 (Park Well/emergency well) no longer being used; not needed; Well #8 14 hrs/day. Repairing leaks, but accountability is satisfactory.	900
1195050	Town of Appalachia	reservoir	N	W 05/12/08: down 9.5" from overflow. 96 MG left, 212 days ± 10 left. Level was 4" down on 4/14/08. Our concern about this source is low due to their ability, achieved last year, to pump from the Powell River into the reservoir. Not currently pumping from river.	3,280
2003250	Albemarle County / Crozet	Beaver Creek Reservoir	V	S - Beaver Creek Reservoir is full. Drought Watch still in effect since 1/2/08	5,768
2003600	Charlottesville/Albemarle County	Sugar Hollow and Ragged Mountain Reservoirs (Observatory WTP)	V	S - Sugar Hollow reservoir is full. Ragged Mountain reservoir is full. Drought Watch still in effect since 1/2/08	40,743
2003675	Albemarle County / Scottsville	Totier Creek Reservoir	V	S - Totier Creek reservoir is full. Drought Watch still in effect since 1/2/08	700
2003725	Charlottesville/Albemarle County	South Fork Rivanna (South Rivanna WTP)	V	S - South Fork Rivanna reservoir is full. Drought Watch still in effect since 1/2/08	54,200
2023720	Town of Troutville	Five Drilled Wells	N	S - Town reported the pumping rate of their No. 3 well dropped from 123 gpm to 40 gpm. The pumping rates of the other four wells are the same.	500
2023730	Dal-Nita Hills	Drilled Well	V	B - Well yield has increased from to 4 to 5 gpm to 17 gpm. Owner is hauling water, as needed, to keep storage tank full. Letter provided to the customers advising them of the situation.	100

2043125	Berryville, Town of	Shenandoah River	V	S - Voluntary conservation requested on 11 December 2007.	2,965
2065250	Fluvanna Correctional Center for Women	Mechunk Creek and on-site Raw Water Reservoir	V	B - Reservoir is 95% full (~38 MG stored). Moderate Drought Condition continues to conserve water.	1,650
2171750	Town of Strasburg	North Fork Shenandoah River	V	S - Voluntary conservation has been requested. Stream flow approx 487 cfs on 17 April 2008	4,500
2560100	Town of Clifton Forge	Smith Creek	V	S - Voluntary conservation has been requested.	4,679
2660345	City of Harrisonburg	North River, Dry River/Switzer Reservoir (Rawley Springs)	V	S - Voluntary conservation has been requested. This has not been implemented as a result of limited low source water quantity, but rather at the request of the Governor's letter requesting conservation.	44,500
3053280	DCWA Central (Dinwiddie County)	Appomattox River Water Authority (ARWA)	N	S - Lifted restrictions on 12/27/07.	6,800
3081550	GCWSA - Jarratt	Nottoway River	N	S - Waterworks production rate still reduced due to lower demand; river level and discharge higher than April and sufficient to allow plant operation at 2.0 mgd	7,190
3093120	Isle of Wight County	Suffolk	V	B - follows Suffolk's lead on conservation.	1,284
3149700	Puddledock Road (Prince George County)	ARWA	N	S - Lifted restrictions on 12/28/07.	6,525
3550050	Chesapeake - Western Branch system	City of Portsmouth	V	S - This portion of the city is consecutive to (receives water from) the city of Portsmouth. City Council voted to go to voluntary conservation city-wide - it took effect on 24 Oct 2007. Still following Portsmouth's lead on conservation.	36,407
3550051	Chesapeake	Northwest River, City of Norfolk Raw Water (Lake Gaston)	V	S - City Council voted to go to voluntary conservation city-wide - took effect on 24 Oct 2007. Chlorides are used as an indicator of drought, the higher the levels the more concentrated the contaminant in a lesser amount of surface water. The chlorides have been average (40 mg/l) since the recent rains. City is still encouraging voluntary conservation measures.	101,175
3550052	Chesapeake - South Norfolk system	City of Norfolk	V	S - 4/17/08-This portion of the city is consecutive to (receives water from) the city of Norfolk. City Council voted to go to voluntary conservation city-wide - it took effect on 24 Oct 2007. Still following Norfolk's lead on conservation.	38,608
3570150	Colonial Heights	ARWA	N	S - Lifted restrictions on 12/1/07.	17,286
3595250	Emporia	Meherrin River	N	S - Water is going over the dam.	5,600
3670800	Virginia-American Water Company (Hopewell)	Appomattox & James Rivers	N	B - Area received high volume of rain in April. Intake levels are at mid-range or higher. The turbidity levels have not gone up considerably, but alkalinity values have decreased significantly.	25000 - Primary / 42463 Total including Consecutive System (Ft. Lee)
3710100	Norfolk	Lake Prince, Lake Burnt Mills, Western Branch reservoir, Nottoway River, Blackwater River, 4 western wells; Little Creek reservoir, Lakes Smith, Lawson, Whitehurst, and Wright. Lake Gaston.	V	B - As of 05/12, reservoirs at 95.8% (up from 91.0% on 04/14). Historic reservoir capacity is 94.7%. Avg. pumping: Lake Gaston = 6.7 MGD; Blackwater River = 10.8 MGD; Nottoway River = 14.0 MGD; Deep wells = 0 MGD; Spillway elev.: Western Branch -0.1 ft; Lake Prince 0.0 ft; Burnt Mills -3.7 ft; Lake Wright 0.2 ft; Lake Smith 0.3 ft; Blackwater River 10.8 ft; Nottoway River 14.0 ft. Called for voluntary conservation 11/1/07.	261,250 - Primary / 755,617 - Total including consecutive systems (Va Beach + military bases).
3730750	Petersburg	ARWA	N	S - Lifted restrictions on 1/8/08.	39,386

3740600	Portsmouth	Lakes Cohoon, Meade, Kilby, and Speights Run	V	B - As of 05/12, reservoirs at 100% (same as on 04/11). Median reservoir capacity is 100%, average capacity is 98% (period of 1969-2006). Both emergency wells are OFF. Estimated 245 days of reservoir storage remaining at current pumpage and no rainfall. Called for voluntary conservation on 10/10/07.	100,400 - Primary / 120,400 Total including consecutive systems (military bases)
3800805	Suffolk	Lone Star Lakes, Cumps Mill Pond	V	B - Will follow Portsmouth's lead and the region as far as conservation. As of 5/12/08-Reservoir levels look good. Southern Lakes at 78% capacity, for the Northern Lakes at 100% and Crumps Mill Pond at 86% The Southern Lakes are for emergency use only. Still purchasing water from Portsmouth per their contract, no drought measure taken to date.	62,562
3810900	Virginia Beach	Norfolk	V	B - obtains water from Norfolk. Called for voluntary conservation on 9/19/07.	423,743
4041035	APPOMATTOX RIVER WATER AUTHORITY	Surface water; Lake Chesdin	N	S- Wholesaler to Chesterfield County, Prince George County, Dinwiddie County; Cities of Petersburg and Colonial Heights. Water level is normal.	200,000
4041845	CHESTERFIELD CO CENTRAL WATER SYSTEM	Surface water; Swift Creek reservoir; purchases finished water	N	S- Purchases water from the City of Richmond and the Appomattox River Water Authority.	263,000
4057800	TAPPAHANNOCK, TOWN OF	Groundwater wells	N	S-	2,100
4073311	GLOUCESTER CO WATER TREATMENT PLT	Surface water, Beaverdam reservoir; 2 deep groundwater wells	N	S-Reservoir at 100%.	8,870
4075283	EASTERN GOOCHLAND CENTRAL WATER SYSTEM	Purchased surface water	N	S-purchases water from Henrico County	2,500
4075735	JAMES RIVER CORRECTIONAL CTR	Surface water; James River	N	S	9,300
4085398	HANOVER SUBURBAN WATER SYSTEM	Surface water; North Anna River; some groundwater wells; purchases finished water	N	S	71,000
4085770	SPRING MEADOWS-MEADOW GATE	Groundwater wells	N	S- A replacement well will be drilled shortly and other improvements are proposed in the PER.	2,300
4087125	HENRICO COUNTY WATER SYSTEM	Surface water; James River	N	S- Similar to City of Richmond	289,000
4101900	WEST POINT, TOWN OF	Groundwater wells	N	S	3,000
4127110	DELMARVA PROPERTIES	Groundwater wells	V	S-New Kent Co. encourages conservation at all county owned waterworks.	7,700
4145675	POWHATAN COURTHOUSE	Groundwater wells	N	S	2,600
4193280	COLONIAL BEACH, TOWN OF	Groundwater wells	N	S	3,300
4760100	RICHMOND, CITY OF	Surface water; James River	N	S-water levels in the James River are back to normal; under James River Regional Flow Management Plan; counties of Henrico, Chesterfield, Goochland, and Hanover counties purchase water from the City.	197,000
5515050	City of Bedford	Stoney Creek Reservoir and Wells 1 to 5	N	S - overflowing	6,946
5143210	Town of Gretna	Georges Creek Res	N	B - Town is moving forward on new supplemental source development	2,500
5029085	Buckingham County	Troublesome Creek Reservoir	N	B	5,751
5037300	Town of Keysville	Keysville Reservoir	N	B	800
5083550	Town of Halifax	Bannister River Reservoir	N	B	1,389
5780600	Town of South Boston	Dan River	N	B	9,726
5141640	Town of Stuart	South Mayo River	N	B	1,500

5147170	Town of Farmville	Appomattox River	N	B	7,011
5011050	Town of Appomattox	Wells	V	B - Operation reports show water levels rising in the wells. The town is actively looking for additional water sources.	1,708
5135160	Town of Crewe	Crystal Lake	N	B - overflowing	3,500
5111450	Town of Kenbridge	Flat Rock Creek and Offstream Reservoir	N	S - good levels, plenty of rain	1,400
5067785	Ridgscrest	Wells	N	B	52
5067265	Hales Point	Wells	N	B	46
5067937	Stripers Landing	Wells	N	B	125
5680200	City of Lynchburg	Pedlar Reservoir	N	B - Overflowing spillway	76,000
6047070	Emerald Hill Elementary School	Groundwater	N	S - Well EHS-3 is onstream at a reliable production rate of 12 gpm. Well 1 has been reworked for improved production. Water hauling is no longer needed.	977
6047500	Town of Culpeper	Lake Pelham	N	S - On Monday, May 12, 2008, Lake Pelham continued to be full.	14,200
6061200	Marshall	Groundwater	M	S - No water was hauled in March. Water distribution system repairs and line replacements are being done.	2,134
6061600	Town of Warrenton	Reservoir on Cedar Run and groundwater	N	S - On Monday, 5/12/08, Warrenton Reservoir is full. Airlie Reservoir is full.	11,160
6107150	Town of Hamilton	Groundwater	M	S - 5/12/08 Water levels in wells improving. Several problems with well controls. Town Council voted to maintain Mandatory water use restrictions until new Well 14 is placed in service.	2,000
6107200	Town of Hillsboro	Spring/Well	N	B - Increased flow from spring has been adequate to meet current demand. A leak survey revealed 10 potential leaks in the distribution system.	58
6107221	LCSA Lenah Farms	Groundwater	V	S - 5/12/08 Voluntary conservation in place beginning 3/11/08.	810
6107350	Loudoun County Sanitation Authority	Purchase treated surface water from FCWA (Potomac River) and City of Fairfax (Goose Creek Reservoir)	V	S - 5/12/08 Voluntary conservation in place beginning 3/11/08.	167,904
6107400	Town of Lovettsville	Groundwater	V	S - 5/12/08 Voluntary water use restrictions remain in place; however there is no problem with water supply.	1,280
6107450	Town of Middleburg	Groundwater	V	B - 5/12/08 - Voluntary water use restrictions replace mandatory water use restrictions on 4/10/08.	590
6107600	Town of Purcellville	Hirst Reservoir and groundwater	V	B -- 5/12/08 Reservoir is full. Mandatory water conservation replaced with voluntary water conservation, 4/2/08.	6,300
6107650	Town of Round Hill	Groundwater	V	B - 5/12/08 - Voluntary water use restrictions replace mandatory water use restrictions on 4/1/08.	3,156
6113200	Town of Madison	White Oak Run	N	S -- Stream flow remains adequate to meet normal demands.	778
6137300	Rapidan Service Authority - Rt. 15	Purchase treated surface water from Town of Orange (Rapidan River)	N	S - Town of Orange raw water availability is well above minimum.	273
6137400	Town of Gordonsville	Purchase treated surface water from RSA and Town of Orange	N	S--No water use restrictions are in place.	1,800
6137500	Town of Orange	Rapidan River	V	S - 5/12/08 - Fourteen day running average of Rapidan River flow is 1663 cfs (withdrawal restrictions are imposed below 44 cfs).	4,500

6137999	Rapidan Service Authority - Wilderness and Lake of the Woods	Rapidan River	N	Rapidan River flow has been steady at an adequate level.	11,331
6153260	Woodbridge Mobile Home Park	Groundwater	M	S -- 5/12/08 Waterworks continues to have episodes of low pressure due to inadequate sources and leaks in the distribution system. This problem is indirectly related to drought as source problems existed previously.	320
6600100	City of Fairfax	Goose Creek Reservoir	N	B -- 5/12/08 - Beaver Dam Reservoir is full. Lifted voluntary water use restrictions on 4/7/08.	45,000
6179100 and 6179775	Stafford County	Smith Lake and Abel Lake	V	B -- Both lakes are still full. Mandatory restrictions went into effect 9/17/07, were increased 10/8/07, and were reduced 2/19/08. Mandatory restrictions lifted 3/18/08.	53,086

Notes of interest:

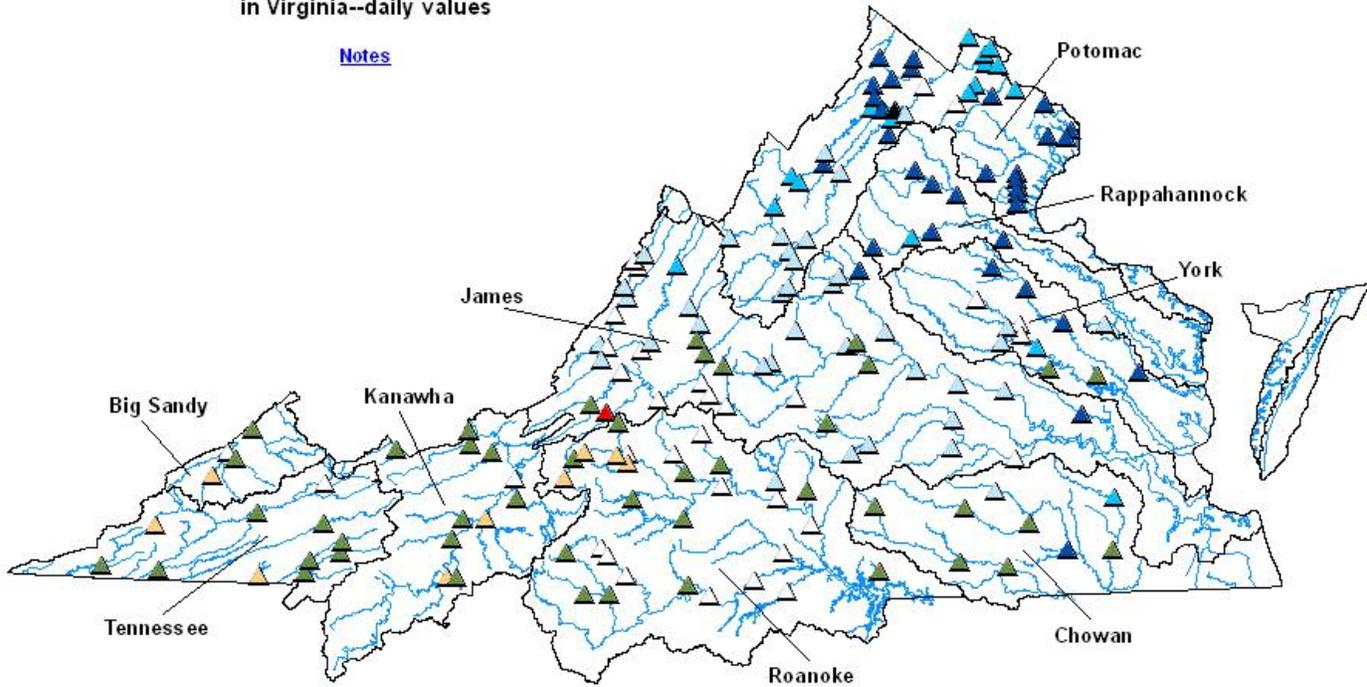
(1) Metropolitan Washington Council of Governments lifted the drought Watch, returning to Normal status, lifting a region-wide voluntary conservation advisory, on 4/1/08, covering DC, Maryland, and Northern Virginia.

(2) Interstate Commission on the Potomac River Basin (ICPRB) gathers meteorological, drought, and water supply data from all of the major water suppliers in the Metro Washington area and determines the need for upstream reservoir releases, if any, to augment the flow in the Potomac River for water supply withdrawal. ICPRB has predicted that likelihood of releases from upstream reservoirs is slightly below normal.

APPENDIX F

Streamflow conditions for 05/16/2008
in Virginia--daily values

[Notes](#)



**Streamflow Statistics based on
average flows**

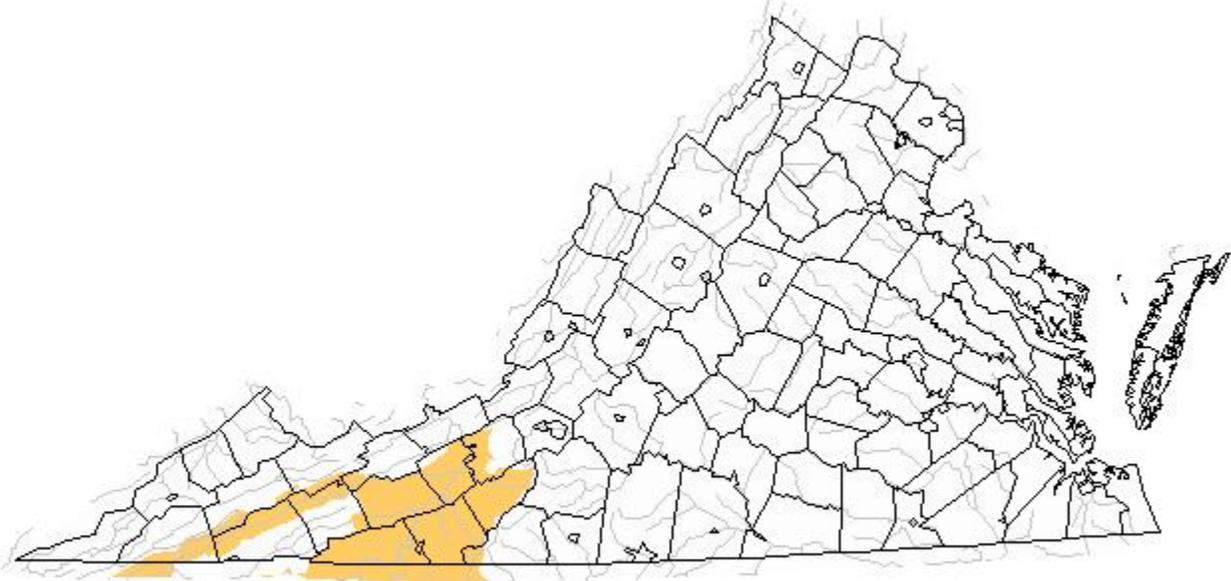
Click on map or table to select River Basin



APPENDIX G

Drought Watch -- USGS State Information on Drought Map of below normal 7-day average streamflow

Sunday, May 18, 2008

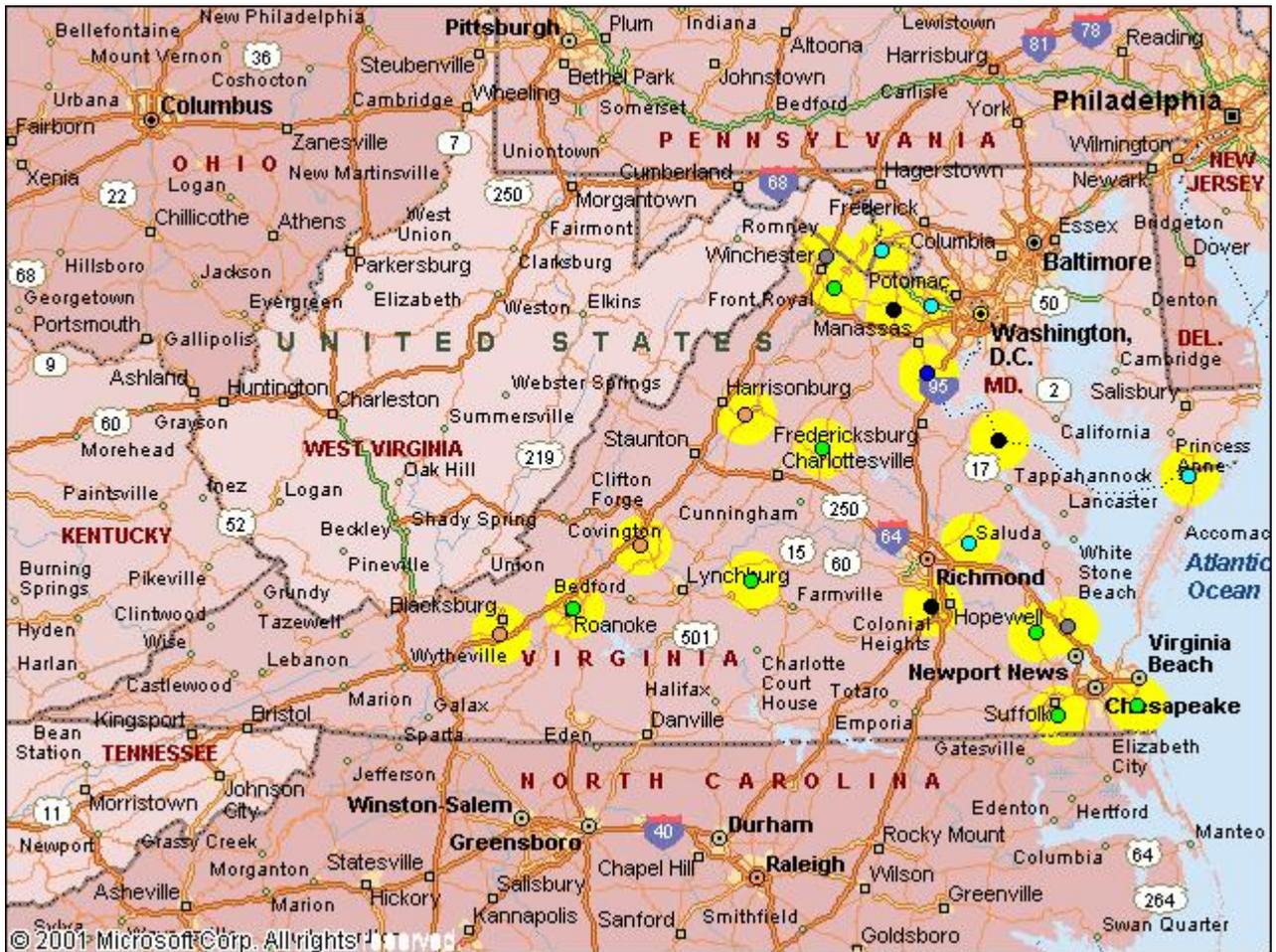


Explanation - Percentile classes				
Low	≤5	6-9	10-24	insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

APPENDIX H

Virginia Climate Response Network

May 16, 2008



Explanation - Percentile classes							
●	●	●	●	●	●	●	●
New Low	<10 Much Below Normal	10-24 Below Normal	25-75 Normal	76-90 Above Normal	>90 Much Above Normal	New High	Not Ranked