

DROUGHT MONITORING TASK FORCE

Drought Status Report

June 7, 2002

The Department of Environmental Quality compiled the following drought status report from information provided by the State Climatologist, the Virginia Departments of Agriculture and Consumer Services, Health, Forestry, Emergency Management, Game and Inland Fisheries; the Virginia Cooperative Extension Service, Farm Service Agency-USDA, the National Weather Service, and the U. S. Geological Survey.

OVERVIEW

Drought conditions have remained relatively stable since the report of May 2, 2002. Statewide rainfall for the month of May was 92% of long term average May rainfall. The jet stream and upper-air wind patterns have remained in a winter time pattern resulting in a combination of scattered thunderstorms and general rainfall. Medium-range weather forecasting models indicate that this favorable pattern will persist until mid-June. Streamflows over the majority of the Commonwealth remained at normal or above normal levels through mid-May with the notable exception of the Roanoke River basin. Streamflows in the Roanoke River basin are approaching low flow levels that will require power generation facilities that normally withdraw to end withdrawals and utilize water stored in off stream reservoirs. Streamflows have declined quickly since the last statewide storm system in mid-May with many stream gaging stations east of the Blue Ridge recording new minimum flows for the month of May. Streamflows west of the Blue Ridge remain in the normal range. It is unlikely that May rainfall produced any appreciable ground water recharge. The existing variances to reduce discharges from large reservoirs such as Smith Mountain Lake, Kerr Reservoir, and Lake Moomaw have been successful in increasing reservoir storage for future water demands. Smith Mountain Lake levels improved enough to allow an increased discharge supporting the successful operation of the Vic Thomas Striped Bass Hatchery. Lake Moomaw is currently at full conservation pool and the discharge variance has expired. Agricultural producers have taken advantage of the current soil moisture by planting crops at a significantly faster rate than the five year average. Rainfall in May generally supported agricultural needs but continued normal levels of precipitation will be required to assure normal agricultural production. Wildfire threats have been significantly reduced due to the emergence of green vegetation and high levels of humidity. The major threat of wildfires now is due to lightning strikes from thunderstorms. Public water supplies, both ground water based and surface water based, are in relatively good condition. Surface water sources have returned to near normal levels due to the precipitation of the last three months. Ground water based public water supplies in Loudoun County, Clarke County, Shenandoah County, Warren County and Fauquier County have reported dropping levels or reduced yields. While little is known on private ground water based supplies, it is anticipated that individual domestic users, especially those that utilize water table aquifers, have been or will be impacted by low ground water levels. The Department of Game and Inland Fisheries continue operations at all nine aquaculture facilities.

Stream and river flows have dropped dramatically since the last state-wide storm event in mid-May, and without continued precipitation on a regular basis, there will be reduced recreational opportunities for canoers and kayakers.

CLIMATOLOGICAL CONDITIONS

National Weather Service

With no significant rainfall across the central and eastern portions of Virginia since mid-May, precipitation totals ended the month of May slightly below normal.

High pressure, which has been dominating weather conditions over the last several days, will finally drift offshore as a weak cold front crosses the state Friday May 31st. Another relatively dry cold front slowly passes through on Saturday night and stalls south of the area. This front is expected to stay near the area and present the chance for afternoon showers and thunderstorms through Friday June the 7th. The showers are expected to be scattered in nature with varying intensities of rainfall. The possibility exists that some areas will receive little to no rainfall for the next week while other areas will receive more rain locally.

The 30 day outlook through the month of June 2002 calls for near normal precipitation and temperatures.

The 90 day outlook through the month of August 2002 calls for near normal precipitation and above normal temperatures.

The latest NOAA drought monitor indicates improved conditions over the majority of the state. An area of D-3 (extreme drought) conditions persists in the southern Piedmont, although the size of the area has been reduced since the last report. The drought monitor is included as Appendix A. The NOAA seasonal drought outlook continues to call for likely improvement in drought conditions through August 2002 and is included as Appendix B.

Report of the State Climatologist

Based upon preliminary data, May precipitation was slightly below the long-term average across the state, with totals ranging from 98% of normal in southwestern Virginia, to a low of 70% of normal in the Shenandoah Valley and surrounding mountain region. This followed a relatively wet March and April resulting in three-month precipitation totals that are essentially in the normal range. In general, drought severity in the entire northeastern United States has diminished significantly in recent months.

Precipitation departures from normal for various periods ranging from one month to three years are presented in the Appendix C. While recent precipitation approaches normal levels, accumulated precipitation deficits maximize during the previous twelve months. This deficit indicates the lack of significant ground water recharge during the winter of 2001-2002. This lack of recharge has resulted in significant ground water levels declines that are likely to impact users of shallow domestic wells for several months into the future. The areas most prone to this problem are likely to be in the Shenandoah Valley and the southern Piedmont.

Virginia has been fortunate in that jet stream and upper-air wind patterns have remained in a more "winterlike" configuration than normal. This has resulted in a combination of both scattered and general rainfall that is somewhat uncharacteristic for late May. Normally during this period the majority of rainfall originates from spotty thunderstorms. Medium-range weather forecasting models indicate that this favorable pattern will persist until mid-June.

Based on historic records there is a 70% chance that July rainfall in any year will be less than the amount of water that can be evaporated from the soil. As a result, areas of the state that currently have marginal soil moisture conditions are likely to experience some agricultural problems. While this is normally the case somewhere in the state in a given summer, the likelihood appears to be greatest in the southern Piedmont and the Shenandoah Valley this year.

PROVISIONAL ASSESSMENT OF HYDROLOGIC CONDITIONS IN VIRGINIA

United States Geological Survey

Streamflows at most streamgaging stations east of the Blue Ridge Mountains have declined to below normal levels with several gaging stations indicating new record minimums for the month of May. Streamflows at most streamgaging stations west of the Blue Ridge Mountains have declined from mid-May levels, but still maintain levels in the normal range of flow. The last major statewide storm event occurred on May 18-19, 2002, and most streamgages across the State recorded normal to above-normal streamflow at that time. There have been two precipitation events since May 19, 2002; however, only the mountains of Virginia received any appreciable precipitation during these events.

Streamflow levels declined quickly because of the lack of precipitation combined with low ground-water storage levels. For the past few months, precipitation amounts are near normal for Virginia, but because of low fall/winter precipitation amounts, ground-water levels are well below normal. Therefore, without periodic statewide precipitation events, streamflows decline rapidly because of below-normal ground-water discharge to streams.

For the past three years, water-table ground-water levels have declined steadily throughout the State. Below-normal precipitation during the winter months allowed only minimal recharge to the ground-water system. Precipitation during the summer months is seldom recharged to the ground-water system because most of the moisture remains in the soil and is taken up by evaporation and transpiration. Streamflows in the summer normally are maintained by ground-water storage (highest in early spring) and then decline as ground-water levels decline to their lowest levels in the fall. Streamflow for the past two summers was maintained at near-normal levels by runoff from storm events crossing the State every seven to ten days. This pattern of storms was unusual for Virginia where summer precipitation is usually from thunderstorms and precipitation amounts are highly variable across the State. Should normal precipitation patterns return, rapid declines to relatively low streamflows can be expected. The change to summertime precipitation patterns generally occurs in late May and may already be in progress.

Streamgages in the Rappahannock, York, lower James, Chowan, and Roanoke River basins are recording flows well below normal for the month of May, and several gaging stations are at or below monthly minimums for daily values in May. Streamgages in the Shenandoah, Potomac, Kanawha, Big Sandy, and Tennessee River Basins are recording flows in the normal to just below normal range of flows for the month of May.

Appendix D contains flow duration and current flow conditions for selected U.S. Geological Survey and Virginia Department of Environmental Quality surface-water gaging stations. Data are provisional and subject to revision. The normal range of flows is defined as flows in the middle two quartiles (between those flows equaled or exceeded 75 percent of the time and those flows equaled or exceeded 25 percent of the time).

Department of Environmental Quality, Status of Major Reservoirs

Smith Mountain Lake is 1.0 foot below full and slowly falling. Inflow is approximately 300 cfs and outflow is 650 cfs as required by the FERC license. Releases for striped bass spawning in late April and May resulted in the successful operation of the Vic Thomas Hatchery.

Kerr Reservoir in Southside is at 301.2 feet above mean sea level and slowly falling. The lake is 0.7 feet below the guide curve. Inflows are much below normal, on the order of 2000 cfs; outflows are 3800 cfs. Lack of rain and the need to release water for water quality purposes means the Lake will begin to fall over the summer.

Philpott Reservoir near Martinsville is 7.0 feet below normal and stable. Minimum releases have been cut back to one fourth of their normal condition. Swimming beaches have been unable to open due to the low water.

The three reservoirs listed above are in the Roanoke River Basin which continues to receive below normal rainfall. Streamflow in the Roanoke (Staunton) River is beginning to approach flowby levels at which certain power plants are required to stop withdrawing and use off stream storage.

Lake Moomaw in western Virginia is full and operating under their normal summer water quality release. Inflow is 197 cfs and outflow is 261 cfs. If trends continue the Lake will fall slowly and steadily over the summer as this reservoir augments flow in the James River basin as it is designed to do.

VIRGINIA AGRICULTURAL SITUATION

Virginia Department of Agriculture and Consumer Services

Local Disaster Designation Requests

With the addition of Franklin County, seventeen Virginia localities have submitted requests to the Governor for federal drought disaster designation. The U.S. Department of Agriculture has completed and evaluated damage assessment reports on seven of these localities -- Goochland, Prince Edward, Brunswick,

Buckingham, Cumberland, Fluvanna, and Louisa. The Secretary of Agriculture has approved the Governor's request for disaster designation for Goochland and Prince Edward Counties. These designations include all contiguous localities. Damage assessment reports are pending from USDA for Rockbridge, Rockingham, Augusta, Wythe, Bland, Bedford, Nelson, Page, Orange and Franklin.

Soil/Crop Conditions

The Virginia Agricultural Statistics Service reports that some areas of Virginia have experienced significant amounts of rainfall resulting in improved topsoil moisture in those areas. Some areas had large amounts of rain with flooding delaying hay harvesting. Several areas reported that below average hay crops because of the earlier dry weather but saw some hay and pasture improvement from the May rains. Other areas reported they had no rain, causing topsoil moisture levels to decrease. Many areas encountered frost damage from freezing temperatures over a few nights causing some farmers to replant.

Tables describing topsoil moisture, crop condition, and crop progress are contained in Appendix E.

FOREST SITUATION IN VIRGINIA

Virginia Department of Forestry

Wildfire Conditions

Wildfire activity remains light as summertime weather conditions prevail. Humid conditions and green vegetation substantially reduces the intensity of any fires which occur, and makes control efforts much easier to accomplish. Drought like conditions similar to the early spring are beginning to return to some areas of the state where rainfall has diminished. Afternoon thunderstorms and associated lightning strikes represent the largest threat for wildfire starts at the present time. These afternoon storms have already caused a few wildfires. A few of these wildfires have occurred in remote mountainous terrain with limited access that makes fire-fighting more difficult.

The mountainous far southwestern portion of the state is an area with great potential for developing significant wildfire activity as a result of lightning. Fortunately, this area continues to receive periodic rainfall limiting the number of wildfires in this area as well as the overall number of fires in the state. Through May 31, the VDOF has responded to 1236 wildfires for over 8916 acres. This level of activity is well above the normal five and ten year averages.

The VDOF continues to remain in contact with other state and federal wildfire cooperators on this developing situation. Preparations are in place to deal with potential wildfire problems that are expected to continue into the summer and fall.

PUBLIC WATER SUPPLY SYSTEMS

Virginia Department of Health

Normal to above normal rainfall during the last three months has replenished most of the surface water supplies around the Commonwealth.

The large municipalities in the greater Richmond region have regular meetings to discuss water conservation. Voluntary conservation on a regional basis was implemented April 1 and there are no plans to change status at this time. In addition, Botetourt County (Dal-Nita Hills), Clarke County Sanitary Authority (Boyce-Millwood), Stoney Creek Sanitary District, Williamsburg, Portsmouth, Chesapeake, Suffolk, Leesburg, Town of Hamilton, Town of Lovettsville, Lake Caroline, Waterloo Estates, and Stafford have initiated or continue voluntary water conservation. The City of Roanoke, Craigsville, Spotsylvania County, and the City of Fredericksburg have initiated mandatory water conservation requirements.

Ground water based public water supplies in Clarke, Loudoun, Fauquier, Shenandoah, and Warren County have reported dropping levels or reduced yields.

Appendix G contains detailed reports of public water supply conditions in the six field offices. The Abingdon Field Office has no reported problems or issues with either ground water or surface water sources.

The Virginia Department of Emergency Management has revised the procedures for reporting private potable supply problems to include all current contact information. These procedures provide a consistent method for local governments to report private water supply problems and to seek assistance in correcting those problems. The procedures have been placed on the VDEM website and localities have been informed of the location of the procedures.

FISHERIES AND RECREATIONAL IMPACTS

Virginia Department of Game and Inland Fisheries

The April and early May rains provided much needed moisture for recreational users. Trout stocking was completed on schedule with only limited changes required due to early (February and March) low flows. Operations at all nine (9) of the Department's aquaculture facilities continue, with some modifications to operations at the Vic Thomas Striped Bass Hatchery (Roanoke River).

Stream and river flows have dropped dramatically, and without continued precipitation on a regular basis, we will see reduced recreational opportunity for canoers and kayakers. With the exception of Smith Mountain Lake (approximately one (1) foot below summer pool) reservoirs with public boat ramps are at recreational summer levels.

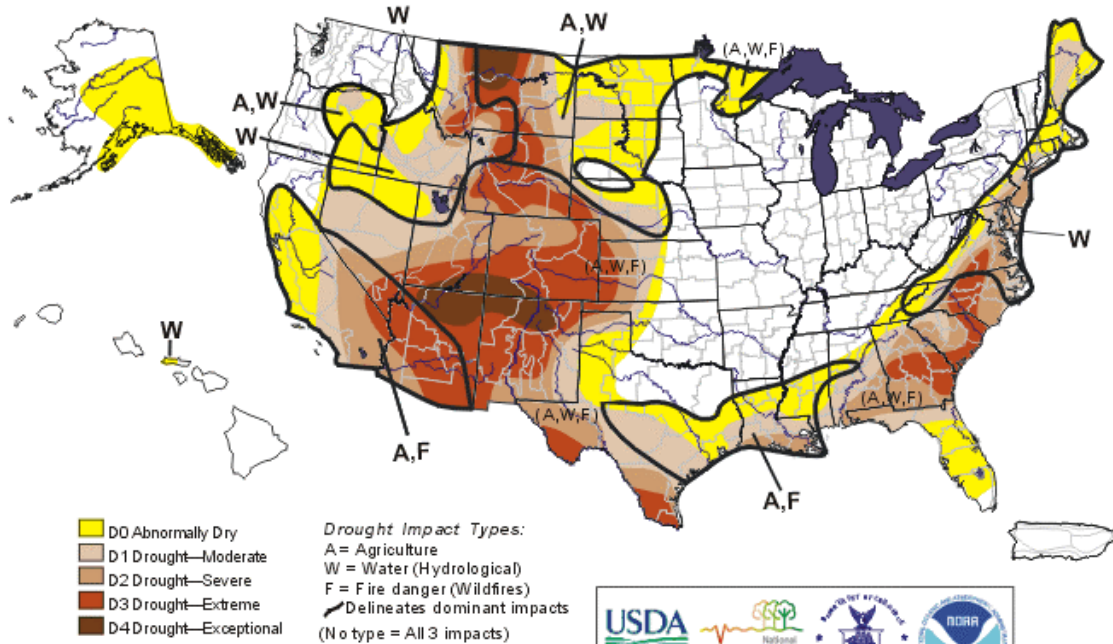
Lower ground water supplies are of concern at the Department's trout rearing facilities, which are dependent upon a combination of spring water and rainfall to raise fish to the desired size to begin stocking in October.

APPENDIX A

U.S. Drought Monitor

June 4, 2002

Valid 8 a.m. EDT



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

Drought Impact Types:
 A = Agriculture
 W = Water (Hydrological)
 F = Fire danger (Wildfires)
 — Delineates dominant impacts
 (No type = All 3 impacts)

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

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



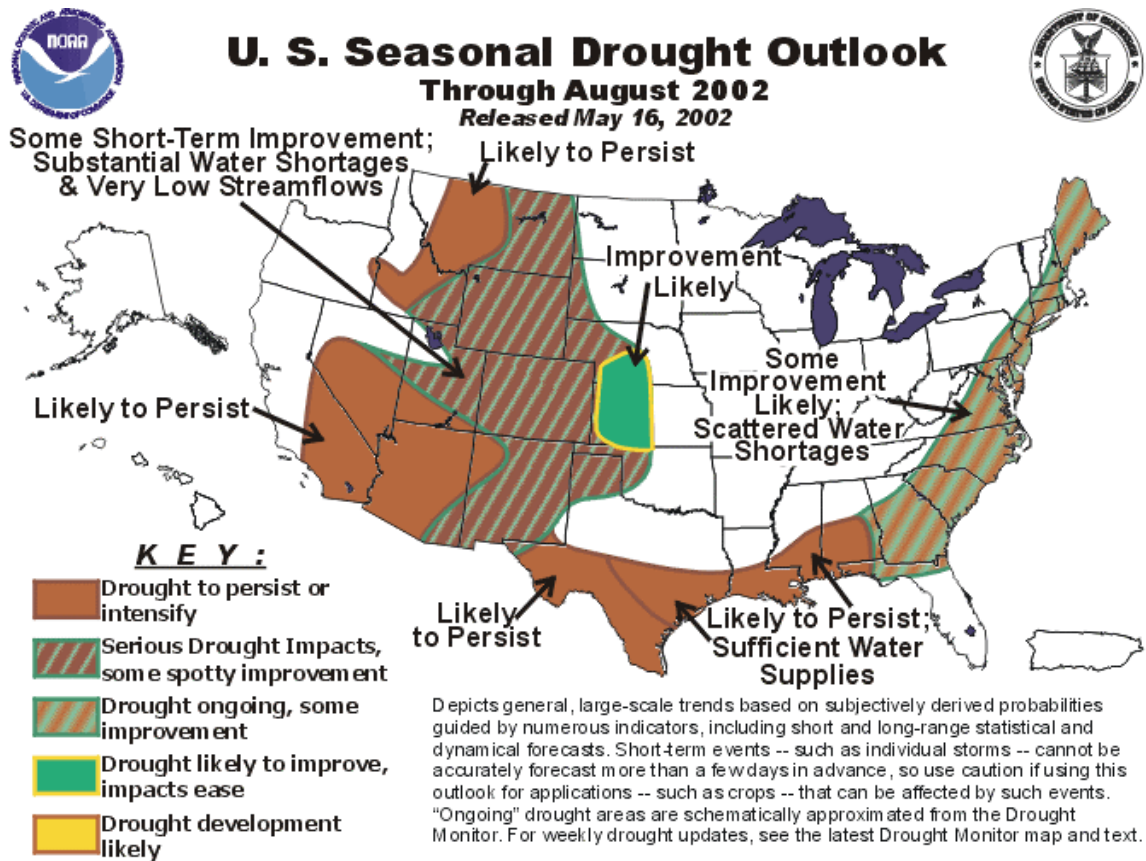
Released Thursday, June 6, 2002

Author: Douglas LeComte, NOAA A/CPC

National Drought Summary – April 9, 2002

The East: The strong thunderstorms that hit the Northeast on May 31 caused D1 drought to retreat in Maine, Connecticut, southern New York and northwestern New Jersey, but D2 (severe drought) persisted from western Long Island through southern New Jersey into Maryland. The storms missed most of this region, where rainfall deficits since last September still exceed 10 inches. Monitoring wells in central Maryland are near record lows for this time of year. One to 2-inch rainfall totals in parts of Georgia and North Carolina had little impact on drought (D1 to D3), as high temperatures offset some of the benefits of the moisture. June 2 and 3 temperatures neared triple digit levels in South Carolina and Georgia. D2 drought expanded slightly westward and northward in South Carolina due to the heat and low rainfall.

APPENDIX B



Latest Seasonal Assessment - From mid-April to mid-May, drought conditions continued to ease slowly and erratically along most of the Eastern Seaboard from South Carolina to Maine, especially in northern and western sections of the region. Drought at least temporarily ended in the central Appalachians and foothills and in far southeastern New England, including the Boston, MA area. Most areas still affected are currently in moderate to severe drought, with some extreme drought lingering in parts of southern Virginia and the Carolinas. So far, the drought has not significantly affected agriculture, because timely near- to above-normal rainfall has kept topsoils sufficiently moist since early March. On the other hand, streamflows remain low from the mid-Atlantic region southward, and both reservoir stores and groundwater levels have improved somewhat but remain critically low in a number of areas, particularly those that rely on shallow wells for their water supplies. Six-month precipitation totals through mid-May were six to nine inches below normal in a swath from southern New England southward through the Carolinas, and twelve-month totals were at least a foot below normal in portions of southwest New England, the lower Northeast, the northern mid-Atlantic region, the southern Virginia and North Carolina Piedmont, and the South Carolina coastal plain. Our outlook for the East Coast continues to call for slow and incomplete improvement, with the likelihood that some water shortages will persist into August. It should be pointed out that long-range outlooks for the warm season in the East have low confidence, and it would not take an especially long period of below-normal rainfall and above-normal temperatures for drought impacts to quickly intensify.

APPENDIX C

One, two, three, six, twelve, twenty four, and thirty six month precipitation departures by Climatological Division.

One Month Precipitation Departures

Climatological Division	MAY 2002	MAY NORMAL	MAY DEPARTURE	MAY % DEPARTURE
Tidewater	2.90	3.89	-0.99	75%
Eastern Piedmont	3.30	3.98	-0.68	83%
Western Piedmont	4.10	4.25	-0.15	96%
Northern	3.90	4.08	-0.18	96%
Central Mountain	2.70	3.87	-1.17	70%
Southwestern	4.20	4.30	-0.10	98%
Statewide	3.50	3.82	-0.32	92%

Two Month Precipitation Departures

Climatological Division	APRIL-MAY 2002	APRIL-MAY NORMAL	APRIL-MAY DEPARTURE	APRIL-MAY % DEPARTURE
Tidewater	6.00	6.88	-0.88	87%
Eastern Piedmont	5.50	7.06	-1.56	78%
Western Piedmont	6.10	7.68	-1.58	79%
Northern	8.00	7.22	0.78	111%
Central Mountain	6.70	6.93	-0.23	97%
Southwestern	6.80	7.94	-1.14	86%
Statewide	6.40	7.11	-0.71	90%

Three Month Precipitation Departures

Climatological Division	MARCH-MAY 2002	MARCH-MAY NORMAL	MARCH-MAY DEPARTURE	MARCH-MAY % DEPARTURE
Tidewater	10.51	10.77	-0.26	98%
Eastern Piedmont	9.63	10.80	-1.17	89%
Western Piedmont	10.66	11.54	-0.88	92%
Northern	11.68	10.43	1.25	112%
Central Mountain	10.83	10.16	0.67	107%
Southwestern	13.07	11.69	1.38	112%
Statewide	10.95	10.84	0.11	101%

Six Month Precipitation Departures

Climatological Division	DEC 2001 - MAY 2002	DECEMBER-MAY NORMAL	DECEMBER-MAY DEPARTURE	DECEMBER-MAY % DEPARTURE
Tidewater	16.42	21.05	-4.63	78%
Eastern Piedmont	15.77	20.67	-4.90	76%
Western Piedmont	16.97	21.32	-4.35	80%
Northern	15.09	18.78	-3.69	80%
Central Mountain	15.06	18.21	-3.15	83%
Southwestern	20.03	21.24	-1.21	94%
Statewide	16.45	20.19	-3.75	81%

Twelve Month Precipitation Departures

Climatological Division	JUNE 2001 - MAY 2002	1 - YEAR NORMAL	1 - YEAR DEPARTURE	1 - YEAR % DEPARTURE
Tidewater	34.71	43.65	-8.94	80%
Eastern Piedmont	32.07	43.27	-11.20	74%
Western Piedmont	31.84	44.76	-12.92	71%
Northern	34.35	40.75	-6.40	84%
Central Mountain	29.93	39.38	-9.45	76%
Southwestern	39.50	43.30	-3.80	91%
Statewide	33.75	42.21	-8.46	80%

Twenty Four Month Precipitation Departures

Climatological Division	JUNE 2000 - MAY 2002	2 - YEAR NORMAL	2 - YEAR DEPARTURE	2 - YEAR % DEPART.
Tidewater	77.80	87.30	-9.50	89%
Eastern Piedmont	68.98	86.54	-17.56	80%
Western Piedmont	69.84	89.52	-19.68	78%
Northern	71.50	81.50	-10.00	88%
Central Mountain	68.82	78.76	-9.94	87%
Southwestern	79.10	86.60	-7.50	91%
Statewide	72.80	84.42	-11.62	86%

Thirty Six Month Precipitation Departures

CD	JUNE 1999 - MAY 2002	3 - YEAR NORMAL	3 - YEAR DEPARTURE	3 - YEAR % DEPARTURE
Tidewater	134.04	130.95	3.09	102%
Eastern Piedmont	115.40	129.81	-14.41	89%
Western Piedmont	113.68	134.28	-20.60	85%
Northern	111.07	122.25	-11.18	91%
Central Mountain	105.96	118.14	-12.18	90%
Southwestern	114.08	129.90	-15.82	88%
Statewide	116.36	126.63	-10.27	92%

APPENDIX D

Flow duration and current flow conditions for selected U.S. Geological Survey and Virginia Department of Environmental Quality surface-water gaging stations

	MINIMUM DAILY FLOW, PERIOD OF RECORD (CFS)	MINIMUM MAY FLOW, PERIOD OF RECORD (CFS)	7Q2 (CFS)	7Q10 (CFS)	PERCENT OF TIME FLOW EQUALED OR EXCEEDED FOR MAY DAILY MEAN FLOWS (CUBIC FEET PER SECOND)			CURRENT CONDITIONS FLOW (CFS)/ DURATION (PERCENT)
					75%	50%	25%	
								May 31, 2002
<u>SHENANDOAH RIVER BASIN</u>								
South River near Waynesboro, Va.	17	34	30	24	76	112	180	28/>95
South Fork Shenandoah River at Front Royal, Va.	107	331	344	235	919	1,381	2,120	1,040/70
North Fork Shenandoah River at Cootes Store, Va.	0.2	9.4	3.2	0.77	60	120	264	75/70
North Fork Shenandoah River near Strasburg, Va.	35	89	-	-	311	500	845	545/45
<u>POTOMAC RIVER BASIN</u>								
Goose Creek near Leesburg, Va.	0.4	40	12	2.5	142	229	402	173/65
<u>RAPPAHANNOCK RIVER BASIN</u>								
Rappahannock River at Remington, Va.	2.9	98	50	11	364	604	941	413/70
Rapidan River near Culpeper, Va.	2.2	97	-	-	277	428	654	126/>95
<u>YORK RIVER BASIN</u>								
Pamunkey River near Hanover, Va.*	47	114	-	-	426	673	1,150	75/>95
Mattaponi River near Beulahville, Va.	.78	33	48	14	261	460	844	37/>95

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					75%	50%	25%	
								May 31, 2002
<hr/>								
<u>JAMES RIVER BASIN</u>								
Jackson River near Bacova, Va.	13	36	26	20	92	149	246	84/80
Potts Creek near Covington, Va.	15	27	24	17	90	140	244	53/95
Cowpasture River near Clifton Forge, Va.	40	98	73	54	252	385	677	253/75
Craig Creek at Parr, Va.	25	57	43	31	171	276	488	74/>95
James River at Buchanan, Va.*	257	496	378	271	1,287	1,909	3,172	928/90
Maury River near Buena Vista, Va.	22	114	89	62	342	524	911	157/>95
Hardware River below Briery Run near Scottsville, Va	0.1	21	24	7.5	66	100	154	13/>95
Rivanna River at Palmyra, Va.	5.2	132	-	-	336	519	818	78/>95
James River at Cartersville, Va.	330	1,330	1,120	584	4,037	5,916	8,855	1,460/>95
Appomattox River at Farmville, Va.	6.3	47	52	21	129	189	276	55/>95
Appomattox River at Mattoax, Va.	13	126	86	30	295	439	664	128/>95
Chickahominy River near Providence Forge, Va.	0.07	7.6	16	4.0	94	165	284	14/>95
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<u>CHOWAN RIVER BASIN</u>								
Nottoway River near Sebrell, Va.	14	116	82	24	473	794	1,480	104/>95
Blackwater River near Franklin, Va.	0.07	1.5	-	-	139	352	682	28/95
Meherrin River near Lawrenceville, Va.	4.2	65	52	16	193	286	437	71/>95

	MINIMUM DAILY FLOW, PERIOD OF RECORD (CFS)	MINIMUM MAY FLOW, PERIOD OF RECORD (CFS)	7Q2 (CFS)	7Q10 (CFS)	PERCENT OF TIME FLOW EQUALED OR EXCEEDED FOR MAY DAILY MEAN FLOWS (CUBIC FEET PER SECOND)			CURRENT CONDITIONS FLOW (CFS)/ DURATION (PERCENT)
					75%	50%	25%	
								May 31, 2002
ROANOKE RIVER BASIN								
Roanoke River at Roanoke, Va.*	19	60	58	35	190	281	428	109/>95
Pigg River near Sandy Level, Va.	25	117	96	47	213	326	442	127/>95
Roanoke River at Randolph, Va.*	179	480	847	426	1,871	2,540	3,582	880/>95
Dan River at Paces, Va.	244	755	-	-	1,552	2,248	3,207	683/>95
Hyc0 River near Denniston, Va.*	2.5	15	-	-	50	86	171	7.6/>95
KANAWHA RIVER BASIN								
New River at Allisonia, Va.	453	997	1,040	725	2,258	3,100	4,346	1,170/>95
Little River at Graysontown, Va.	47	103	109	69	241	340	474	123/>95
Walker Creek at Bane, Va.	24	61	44	33	174	267	455	104/95
BIG SANDY RIVER BASIN								
Russell Fork at Haysi, Va.	0.2	10	8.7	1.0	114	209	428	94/80
TENNESSEE RIVER BASIN								
South Fork Holston River near Damascus, Va.	40	97	99	73	302	431	652	217/90
North Fork Holston River near Saltville, Va.	2.0	39	34	24	154	242	410	101/90
Clinch River at Cleveland, Va.	37	97	81	54	322	518	894	212/90
Powell River near Jonesville, Va.	18	45	42	24	213	347	613	221/75
* indicates some regulation								

APPENDIX E

Virginia Agriculture Statistic Services report of topsoil moisture,
crop condition and crop progress.

TOPSOIL MOISTURE PERCENT				
Week Ending	Very Short	Short	Adequate	Surplus
May 26	1	19	74	6
May 19	1	9	82	8
May 12	0	6	77	17
May 5	0	15	70	15

CROP CONDITION PERCENT					
Crop	Very Poor	Poor	Fair	Good	Excellent
Pastures	1	9	30	52	8
Livestock	0	1	17	70	12
Other Hay	1	11	29	50	9
Alfalfa Hay	1	3	30	52	14
Corn for Grain	1	9	34	47	9
Winter Wheat	2	14	31	45	8
Barley	2	13	35	45	5
Tobacco, Flue-Cured	0	0	30	48	22
Tobacco, Burley	4	5	45	46	0
Tobacco, Dark Fire-Cured	0	0	33	58	9
Tobacco, Sun	0	0	1	99	0
Peanuts	0	0	16	81	3
Cotton	0	5	21	71	3
Summer Potatoes	0	0	10	60	30
Apples	2	1	55	41	1
Peaches	15	9	51	24	1

CROP PROGRESS PERCENT – WITH COMPARISONS				
Crop	This Week	Last Week	Last Year	5 Year Average
Corn for Grain Planted	95	89	94	88
Corn Emerged	85	75	NA	NA
Soybeans Planted	35	24	33	25
Soybeans Emerged	24	12	NA	NA
Winter Wheat Harvested	1	0	NA	NA
Barley	7	5	3	1
Flue-Cured Tobacco Transplanted	95	83	94	89
Burley Tobacco Transplanted	41	21	43	39
Dark Fire Tobacco Transplanted	87	65	87	72
Sun Tobacco Transplanted	87	63	97	64
Peanuts Planted	93	85	99	93

APPENDIX F

Virginia Department of Health Field Office Reports for Public Water Systems

(Note: The first digit in the PWSID number indicates the field office location of the waterworks. PWSID 2770650 is located in the Lexington Field Office, etc.)

PWSID 1-Abingdon 2-Lexington 3-Southeast VA 4-East Central 5-Danville 6-Culpeper	Waterworks	Source Name	Restrictions N-No M-Mandatory V-Voluntary	Situation B-Better, S-Same, W-Worse
2023730	Dal-Nita Hills	One Drilled Well	V	W: System serves 35 connections. Well production has dropped off to approximately 5 to 7 gpm. Owner has asked customers to conserve. New well site has been approved. Owner is hauling water from Botetourt County Greenfield's system to fill storage tank as needed. Owner will drill a new well.
2770650	Roanoke City - Carvins Cove	Carvins Cove Reservoir/Tinker Creek/Catawba Creek	M	S: Reservoir levels 22.4' below spillway - situation steadily worsening; however, recent rains have helped. Partial Mandatory restrictions imposed when reservoir level is between 22 and 26 feet below spillway. (Restricts outdoor usage between 10 AM and 7 PM). (Stage 3)
2015150	Craigsville		M	S: Craigsville spring production off, well production off, construction nearing completion of interconnecting water line with Augusta Springs.
2015575	South River S.D. (ACSA)	Coles Run	N	S: Coles Run reservoir level down 5-6 feet-no impact on system due to multiple sources.
2017300	Millboro	Millboro Spring	N	S: Recent rains have improved spring flows. Several large leaks have also been found and repaired.
2091150	Monterey		N	S: Monterey well production off. New well construction was completed and now is in operation. Situation is improving.
2790600	Staunton		N	S: Staunton-Middle River flow reduced.
2043250	Boyce-Millwood	Prospect Hill Spring	V	S: Spring yield is down from normal historical levels. Voluntary measures instituted to reduce water demand. Presently exploring options to eliminate spring bypassing and development of additional water sources.

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2171250	Stoney Creek Sanitary District		N	S: Well yield is off. Authority has reduced pumping capacity by 40% based on lower water table levels. Process of developing new 350 GPM well and water treatment plant.
2187406	Front Royal		N	B: Lifted water use restrictions in accordance with VWPP requirements. Conservation controls implemented at 30% (voluntary), 17% (mandatory), 15% (emergency), and 13% (rationing) of mean stream flow based on 14-day running average. At present, 14-day running average stream flow is 40% of mean stream flow.
2187522	High Knob Subdivision	Springs and wells	N	W: Spring yields have dropped significantly and wells are being increasingly relied upon to meet water demand.
2003250	Albemarle County / Crozet	Beaver Creek Reservoir	N	B: Beaver Creek Reservoir is currently down 3.17 feet from normal "full". The previous all time low water level on record (Feb. 2002) was 8 feet below normal "full".
2003600	Charlottesville/Albermarle County	Sugar Hollow (Observatory WTP)	N	B: The Sugar Hollow reservoir (Observatory WTP) is full and has been returned to service. Ragged Mountain reservoir is 3.09 feet below normal. Overall, source water availability is at 96.5% of "full available capacity" (this includes both the South Rivanna system and the Sugar Hollow/Ragged Mountain system).
2003725	Charlottesville/Albermarle County	South Rivanna (South Rivanna WTP)	N	S: Their main reservoir-South Rivanna (South Rivanna WTP) is full and overflowing.
2065250	Fluvanna Correctional Center	Mechunk Creek	N	B: The raw water impoundment is full and overflowing (40MG capacity). The facility is using approximately 150,000 GPD of finished water and is currently able to pump 620,000 GPD of raw water from Mechunk Creek.
3700500	Newport News	Little Creek, Diascund, Skiffes Creek, Harwoods Mill and Lee Hall Reservoirs	N	B: As of 05/16/02, the large reservoirs (Little Creek and Diascund) were 100 % full and the small reservoirs (Skiffes Creek, Lee Hall and Harwoods Mill) were 91 % full. RO plant still at 2 MGD. Essentially, both the water plants now have the full raw water storage capacity available at this time. No voluntary or mandatory conservation measures in effect at this time.

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3830850	Williamsburg	Waller Mill Reservoir	V	S: As of 05/16/02, Waller Mill reservoir is 5 1/2 inches below the primary spillway (in the previous report it was 10 inches below the primary spillway). Voluntary conservation measures are in effect as of March 30, 2002.
3650150	Ft. Monroe	Big Bethel Reservoir System	N	S: The water plant was shut down in mid-December for replacement of valves, and switched to Newport News water. To my knowledge, the plant is not back on line yet.
3095490	James City Service Authority Central System		N	S: No significant impact on water levels in wells.
3670800	Virginia-American, Hopewell	Appomattox River/James River	N	S: No problems with water quantity. Water quality is still fluctuating with changes in the tide. Situation is Stable.
3183550	Jarratt	Nottoway River	N	S: No quality or quantity problems noted. Situation is Stable.
3595250	Emporia	Meherrin River	N	S: The reservoir levels are still at "normal". No recent restrictions to power plant (see item 2, below). Situation is Stable.
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.	N	B: As of 05/13, reservoirs are at 96.7% of total capacity (increase from 95.2% on 04/22). Historic reservoir capacity at this time of year is 94.7%. Avg. pumping from Lake Gaston = 22.2 MGD; Blackwater River = 0 MGD (pump off 04/09); Nottoway River = 0 MGD (pump off 04/09). Western Branch reservoir 1.0 ft below spillway; Lake Wright 0.3 ft below spillway; other reservoirs flowing over spillways. Wells are OFF. Not currently considering conservation measures, but that could change with continued dry weather.
3740600	Portsmouth	Lakes Cohoon, Meade, Kilby, and Speights Run	V	B: As of 05/13, reservoirs are at 99% of useful capacity. This is a (+) 9% change since 04/22. Median capacity for the month is 100%, average capacity is 98% (period of 1969-2001). Both emergency wells are OFF. Estimated 217 days of storage remaining at current pumpage (16.5 MGD) and no rainfall. City Council voted to establish Voluntary Conservation at meeting of 11/27/01. The restrictions took effect on 11/30/01.

PWSID 1-Abingdon 2-Lexington 3-Southeast VA 4-East Central 5-Danville 6-Culpeper	Waterworks	Source Name	Restrictions N-No M-Mandatory V-Voluntary	Situation B-Better, S-Same, W-Worse
3550050	Chesapeake - Western Branch system	Western Branch system	V	S: This portion of the city is consecutive to (receives water from) the city of Portsmouth. Because Portsmouth decided to go on voluntary restrictions, Chesapeake has decided to follow Portsmouth's lead, for ALL residents of the city. City Council voted to establish Voluntary Conservation at the meeting on 11/27/01. The restrictions took effect on 11/30/01.
3550052	Chesapeake - South Norfolk system	South Norfolk system	V	S: This portion of the city is consecutive to (receives water from) the city of Norfolk. Because Portsmouth decided to go on voluntary restrictions, Chesapeake has decided to follow Portsmouth's lead, for ALL residents of the city. City Council voted to establish Voluntary Conservation at the meeting on 11/27/01. The restrictions took effect on 11/30/01.
3550051	Chesapeake - NW River system	NW River system	V	B: As of 5/16, chlorides levels in the Northwest River are about average (30-40 PPM) and well water levels have recovered 100 %. When they inject into the aquifer, the well levels increase. Plant production has been normal. Because a portion of the city (a separate system from the NW River system) is served from Portsmouth, Chesapeake has decided to follow Portsmouth's lead, for ALL residents of the city. City Council voted to establish Voluntary Conservation at the meeting on 11/27/01. The restrictions took effect on 11/30/01.
3800805	City of Suffolk	Central System	V	B: As of 5/16, reservoir system is 95% full in Crumps Mill. This is a 5% increase from the last report. Lone Star Lakes is at 94% full. There has not been any change since the last report. Lone Star makes up the majority of the Northern Lakes. The Southern Lakes were at 70%. This is a 17.5% increase from the last report. The city can pump from this reservoir to Lone Star if needed. The city also purchase finished water from Portsmouth, which enters the central system in downtown Suffolk. As such, this system has followed the lead of the Portsmouth system and has adopted Voluntary Conservation.

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				Suffolk will rescind Voluntary Conservation following Portsmouth's lead but not until the EDR is at full capacity. Situation is stable.
3800787	City of Suffolk	Route 17 Corridor	V	S: This system is consecutive to (purchases water from) the Portsmouth system. As such, this system has followed the lead of the Portsmouth system, and has adopted Voluntary Conservation. If Portsmouth goes to Mandatory Conservation, Suffolk will probably switch the supply source to their Central System (groundwater).
4041845	Swift Creek WTP (Chesterfield County)	Swift Creek Reservoir	V	B: The reservoir level is 176.2 feet. The level is 1.0 feet higher than it was 2 weeks ago and 0.8 feet below the top of the dam.
4041035	Appomattox River Water Authority	Lake Chesdin	N	S: The on-site hydroelectric plan is using most of the overflow, so that there is only a trickle going over the dam. Reportedly, the hydroelectric plant can use 1- 7" of overflow. The situation is about the same as it was two weeks ago. There are no drought-related restrictions on the production of the WTP.
4075735	James River Correctional Center	Beaverdam Creek and the James River	N	B: The water level in Beaverdam Creek is currently 4 inches above the top of the dam, which is 0.5 inches higher than it was two weeks ago.
4075630	Pagebrook (Goochland)	Groundwater	N	S: Sydnor continues to haul water weekly - 1 tanker load/week (2500 gallons).
4073311	Gloucester	Beaverdam Reservoir	N	S: The Beaverdam Reservoir water overflow elevation is 40.5. The reservoir is full and overflowing. The water level was 40.67 on May 15, 2002. Note that about a million gallons of water is allowed to flow through the reservoir every day.
all County owned systems	Hanover County	North Anna River , wells, and purchased water from the City of Richmond	V	S: Letters mailed to customers with conservation tips. In addition, general unidirectional flushing program has been discontinued.
4760100	City of Richmond	James River	V	S: The James River flows are up significantly due the recent rains. Richmond is having no problems with water withdrawals.
5029085	Buckingham County Waterworks	Troublesome Creek Reservoir	N	B: Reservoir full, 1.5-inches of overflow.
5031150	CCUSA	Otter River	N	B: Minor improvement.
5067840	Town of Rocky Mount	Blackwater Creek	N	S: But far below normal flow for this time of year.
5089376	Fieldcrest Cannon WTP	Smith River	N	S: Flow subject to release from Philpott Dam.

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5089852	Upper Smith River WTP	Smith River	N	S: Flow subject to release from Philpott Dam.
5117310	Town of Clarksville	Kerr Lake	N	S: Kerr Lake is 1.4 ft above full pond.
5117800	Town of South Hill	Meherrin River	N	S: River at South Hill is swollen from recent rain.
5590100	City of Danville	Dan River, Schofield Dam	N	B: Flow has increased slightly but still significantly below mean flow for this time of year.
5680200	City of Lynchburg	Pedlar Reservoir	N	B: Pedlar Reservoir is full. City drawing entirely from reservoir.
5067043	Town of Boones Mill	Spring	N	B: Within the past month the Town of Boones Mill Spring production has gone from a low of about 10 GPM to a current rate of greater than 40 GPM.
6059500	FCWA-Lorton/Occoquan WTPs	Occoquan Reservoir	N	S: Reservoir 99% full, 7.96 billion gallons usable storage. All of FCWA service area is on "watch" status.
6059501	FCWA-Corbalis WTP	Potomac River	N	S: Jennings Randolph and Little Seneca reservoirs on the Potomac River are both 100% full. Flow In Potomac River at Little Falls (downstream of the Washington DC intake) is currently 7,886 MGD.
6600100	City of Fairfax	Goose Creek/Beaver Dam	N	S: Water Level Status: Flowing over the dam at Goose Creek Reservoir and full at Beaver Dam reservoir.
6107600	Purcellville	Hirst Reservoirs	N	B: Reservoirs full. Town Council established "watch" status several months ago. No intentions at this time to go to warning status.
6685100	City of Manassas	Lake Manassas (Broad Run)	N	S: Current Water Level 288.76 feet; Max is 290 feet.
6153675	Quantico- Mainside	Lunga Reservoir/ Breckenridge reservoir	N	S: Water Level: Lunga 6 inches below overflow and Breckenridge full.
6107300	Leesburg	Potomac River	V	S: Current river levels at 187.9 feet. Normal level is 187.50 feet. Leesburg intake is located upstream of the FCWA and Washington DC Intakes. Signs requesting voluntary conservation have been placed around town and on town web-site.
6107150	Hamilton	GW	V	S: Groundwater levels and system demands currently stable. In process to add additional well.
6107400	Lovettsville	GW	V	S: Groundwater levels and system demands currently stable. Voluntary conservation in effect.
6047500	Town of Culpeper	Lake Pelham	N	S: No problems at this time. Reservoir is overflowing.
6061600	Town of Warrenton	Warrenton Reservoir	N	S: No problems at this time. Reservoir is near overflow.
6113200	Town of Madison	White Oak Run	N	B: Stream flow is improving, and no impact on water treatment plant to this point.

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6137500	Town of Orange	Rapidan River	N	B: Stream flow is improving, and no impact on water treatment plant to this point.
6137500	Wilderness WTP	Rapidan River	N	B: Stream flow is improving, and no impact on water treatment plant to this point.
6061665	Waterloo Estates	Groundwater (5 wells)	V	S: Decrease in well production led to a request for residents to voluntarily conserve water beginning on 3/26/02.
6033425	Lake Caroline	Lake Caroline	V	S: Lake Caroline is at normal level. Conservation measures in place.
6177280, 6177300	Spotsylvania County	Ni River Reservoir and Motts Run/Rappahannock River	M	S: Spotsylvania County declared a water emergency in mid November and instituted mandatory conservation (vehicle washing at homes not allowed). Ni River Reservoir is 2.5 feet below normal. Motts Run Reservoir is at normal level. Increased flow in Rappahannock River is at 70% mean annual flow.
6630050	City of Fredericksburg	Motts Run/Rappahannock River	M	S: City of Fredericksburg (consecutive system to Spotsylvania County) has asked for mandatory conservation based on Spotsylvania County's action.
6179100, 6179775	Stafford County	Smith Lake and Abel Lake	V	S: Stafford County has asked residents to voluntarily conserve water. Smith Lake is 1.1 feet below normal and Abel Lake is 2.5 feet below normal.