



Regional Water Supply Plan

Prepared for
Fluvanna County and the Town of Columbia

(as required by 9VAC 25-780-10 through 190)

Purpose of Water Supply Plan

- Ensure that adequate and safe drinking water is available;
- Encourage, promote and protect all other beneficial uses of water resources;
- Encourage, promote and develop incentive for alternate water sources; and
- Promote conservation.

Sources of Information

- VDEQ Records
- VDH Records
- Waterworks Owners' Records
- Other state and federal sources

Major Sections of Plan

- Description of sources of water
- Description of uses of water
- Existing resources
- Demand management
- Drought assessment and responses
- Projected demands (through 2060)
- Alternatives for future demands

Sources (Community Water Systems)

Name	Population Served	Source	Annual Withdrawal (MGD)
Fluvanna Correctional Center	1,200	Mechunk Creek	0.114
Lake Monticello	10,813	Rivanna River	0.634
Columbia, Town of	104	Ground Water	0.004
Fork Union S.D.	1,020	Ground Water	0.190
Oakland School	-	Ground Water	0.013
Palmyra	26	Ground Water	0.004
Woodslodge Cottages	30	Ground Water	0.001
Stagecoach Hills	70	Ground Water	Not Metered
Pine Grove MHP	62	Ground Water	0.004

Water Supply Plan requires estimates of:

- Water used by industry, i.e. Dominion Generation,
- Water used for livestock and crops,
- Water used to irrigate golf courses,
- Water used by self-supplied homes, businesses, and others

Summary of All Withdrawals

Community Systems	Population	Annual Withdrawal (MG)
Columbia, Town of	104	1.43
Fork Union S.D.	1,020	69.29
Lake Monticello	10,813	231.30
Palmyra	26	1.51
Pine Grove Mobile Home Park	62	1.58
Stagecoach Hills (estimated)	70	2.58
Woodslodge Cottages	30	0.354
Oakland School	0	5.08
Fluvanna Correctional Center	<u>1,200</u>	<u>41.44</u>
SUBTOTAL	13,325	354.56
Self-Supplied Residential	12,743	469.77
NTNC Systems		10.46
TNC Systems (estimated .5 MG per business per year)		1.50
Self-Supplied Businesses (70 estimated, 250,000 gallons per year)		17.50
Agricultural – Livestock		3.01
Agricultural – Crops		374.25
Dominion (Ground Water)		0.77
Dominion Generation (Surface Water)		54,147.00
Lake Monticello Golf		19.00
Laurel Ridge Golf / Rivanna Resort (estimated)		19.00
TOTAL	26,068	55,416.82 MG
		151.82 MGD

Existing Resources

- Geology
- Ground water hydrology
- Surface hydrology
- Groundwater recharge
- Watersheds
- Water quality – groundwater
- Endangered species
- Scenic River
- Historical sites
- Archeological sites
- Soils
- Wetlands
- Land conservation
- Conservation districts / Conservation easements

Water Demand Management

Summary of practices in place in Fluvanna that encourage water conservation:

- Fork Union
- Women's Correctional Center
- Lake Monticello

Drought Assessment and Response Plan

Regulation requires a plan with 3 levels of response to drought conditions

Level	Compliance	Goal
Drought watch	Voluntary	Increase awareness of possible drought
Drought warning	Voluntary	Reduce water use by 10-15%; drought is imminent
Drought emergency	Mandatory	In effect during the height of a drought event; reduce water use by an additional 10-15%

Drought Assessment and Response Plan

- Fluvanna County will reduce “unaccounted for” water in county-owned systems (i.e. Fork Union and any future systems).
- Fluvanna County will encourage ongoing water demand management and water conservation activities by increasing public education efforts.
- Drought conditions will be monitored and reported to the County Administrator who will inform the Board of Supervisors of drought conditions.

Drought Monitoring

- Staff will monitor the Virginia Drought Map
- Additionally the following will be monitored:
 - Precipitation deficits
 - Two nearby observation wells located in Louisa and Albemarle Counties
 - Flow gages in the Rivanna, James and Slate Rivers
 - Other data as available and relevant

Declaration of Drought

- County Administrator will advise the Board of Supervisors concerning drought declarations.
- The drought declaration and any related water use restrictions will be posted on the County's website and published in local newspapers.
- When the Board of Supervisors declares a drought condition, the Town of Columbia and the owner / operators of all the Community Water Systems will be notified.
- DOC will continue to follow the existing DOC Drought Plan.

Drought Plan and Ordinance

- Drought Plan includes conditions that warrant declaration of a drought stage and recommended voluntary conservation measures for the watch and warning stages as well as mandatory conservation action during the drought emergency stage.
- The Drought Plan will be implemented through a drought ordinance adopted by the Board of Supervisors.
- Before the Water Supply Plan is submitted to VDEQ, the Board of Supervisors should hold a public hearing to adopt the drought ordinance.

Projected Water Demands

- Projections through 2060 are included in the Plan.
- Projected water demand is based on projected population growth, 2029 future Land Use Map, and recent trends in residential building permits.
- Projected demands include the demands met by Community Water Systems AND future demands met by individual private wells.

Projected Water Demands

	2010	2020	2030	2040	2050	2060
Water supplied by CWS	1.0	1.9	3.7	4.4	5.5	7.
Water supplied by NTNC systems	0.0	0.0	0.0	0.0	0.0	0.0
Self-supplied	1.7	2.1	2.4	3.1	3.8	4.8
SUBTOTAL	2.7	4.0	6.1	7.5	9.3	11.8
Agricultural use	1.0	1.0	1.0	1.0	1.0	1.0
Dominion	148.3	148.3	148.3	148.3	148.3	148.3
Irrigation - Golf	.1	.1	.1	.1	.1	.1
SUBTOTAL	149.4	149.4	149.4	149.4	149.4	149.4
TOTAL	152.1	153.4	155.5	156.9	158.7	161.2

Statement of Need to Alternatives Analysis

- “Statement of Need” compares the projected demands to the capacity of the existing system.
- Alternative analysis outlines options for additional water sources.

In most cases, the alternatives discussed are not planned and will need additional analysis to determine the technical, financial, political and regulatory feasibilities.

Statement of Need - Columbia

Groundwater can serve the area for the next 20 years.

When demands exceed the capacity of the groundwater other options include:

- Extend Fork Union System to serve Columbia – this is only viable if Fork Union is receiving water from some source other than groundwater.
- Develop surface water source for Columbia.
- Utilize water from a source developed in Goochland or Cumberland.

Statement of Need – Fork Union

Projected demands over next 20 years do not exceed permitted capacity.

System struggles with limited quantities and quality. Options include:

- Utilize water withdrawal permit and develop water treatment plant close to Fork Union.
- Rivanna is a potential source if additional withdrawals from the Rivanna are permitted by VDEQ.
- If no additional options available in Fluvanna, consider sources from Albemarle or Louisa County.

Statement of Need - Palmyra Community

The three drilled wells are adequate to meet current demands. If area continues to grow water demands will exceed the permitted capacity of the existing system.

Alternatives include:

- Additional use of groundwater to meet needs and other improvements to the system to increase capacity.
- Development of additional community water system.
- Use of Rivanna River for surface water source if Lake Monticello system is expanded.

Statement of Need – Lake Monticello

If service area of the Lake Monticello facility does not expand beyond Rivanna Election District, current source will be adequate to meet projected demands through 2030 and possibly through 2050.

Additional sources include:

- Mechunk Creek as additional source of surface water to the facility;
- Assuming the facility serves Zion Crossroads area and Fork Union area; potential source would be the James River.

Statement of Need – Stagecoach Hills

The system has adequate capacity to serve the existing connections and the subdivision is built-out.

Should the exiting wells fail or needs additional source:

- Develop additional well(s),
- Obtain water from the Lake Monticello system, and
- Community could be provided water from County system if James River Water Authority system is developed.

Statement of Need – Department of Corrections

There is no expectation that the prison population will change significantly. Currently meeting demand and not expected to exceed capacity.

Should additional capacity be necessary:

- Request increased withdrawal from Mechunk Creek,
- Lake Monticello CWS could provide source water,
- Proposed Fluvanna County utility could provide water if the proposed James River Water Authority system develops utilizing the James River as a source,
- Louisa County Water Authority could potentially provide source water.

Statement of Need – Pine Grove MHP

VDH notes that the average daily use is approaching the permitted capacity and encourages users to conserve water where possible.

Future sources of water include:

- Develop additional well(s), or
- Either surface water or ground water provided by a community water system with greater capacity.

Statement of Need – Woodslodge

Permitted capacity is limited to the existing homes.

In the event the well fails future sources include:

- Develop additional well(s), or
- When Zion Crossroads CPA is served by community water system – Woodslodge area could possibly be served as well.

Statement of Need – Oakland School

Currently served by four wells with adequate capacity.

Should any of the wells fail, future sources include:

- Improvements to storage or pumping,
- Develop additional well(s), or
- Utilize community water system serving Zion Crossroads CPA or Lake Monticello CPA.

Proposed Fluvanna County Community Water System / Regional Water System

Fluvanna County, Louisa County and the James River Water Authority have considered a plan to develop a regional water system that would withdraw from the James River and pump to the Pleasant Grove site where a water treatment plant would be constructed.

This system could provide water to the following locations:

- Fork Union Community Water System
- Zion Crossroads area in Louisa
- Northern portion of Fluvanna
- Palmyra and Pleasant Grove areas
- Lake Monticello area (additional source water or emergency source)
- Ferncliff area in Louisa County
- Columbia CPA when demands no longer met by groundwater

Self-Supplied Users

- Much of Fluvanna population will continue to rely on “private wells”
- Lower densities in Rural Residential and Rural Preservation areas should assure adequate supplies for residents.
- Recommend deeper drilled wells as opposed to bored wells to meet needs during droughts.

Policies to Protect Ground Water

- Ground Water Protection Policy
 - Would help manage ground water resources so that the development of new wells would not disrupt the supply for others
 - Would require hydrogeologic study and testing prior to development
 - Would determine if the site conditions are favorable to the development of wells that are sustainable
 - In some cases, an aquifer test plan and test might be required.

Policies to Protect Ground Water

- Wellhead Protection Policy
 - Assess potential threats to ground water in areas near public supply wells
 - Protect the well heads from pollution due to nearby surface or subsurface activities
 - Protections could include zoning limitations on land use, performance standards to contain and manage pollutants and
 - Contingency plans for accidents.

Policies to Protect Ground Water

- Aquifer Recharge Policies
 - Infiltration of precipitation and runoff will recharge the water table aquifer
 - Undeveloped lands provide the most favorable recharge conditions
 - Impermeable features (roads, parking lots, sidewalks, etc.) reduce recharge potential
 - Carefully planned development can enhance recharge in developed areas

Sources to Meet Projected Demands

- Regional Water System – using the James River as the source,
- Reservoir(s),
- Reduce demands by reducing usage, and
- Develop opportunities for water “reuse”.

Summary Statement

- Projected population increases and growth of business in Fluvanna will require additional sources;
- The projected demands in the Community Planning Areas can only be met by community water systems;
- Ground water will not meet all needs;
- Urban Development area will require community water system; and
- Withdrawal from James River can provide source for northern development area, Fork Union, Louisa County and Palmyra area.

Next Steps

- Draft Water Supply Plan available to public,
- Board of Supervisors will need to hold Public Hearing,
- Board of Supervisors will need to adopt the Plan and will need to adopt a Drought Ordinance,
- Town of Columbia will need to adopt the Plan and adopt a Drought Ordinance, and
- Water Supply Plan and adopted ordinances are submitted to VDEQ for review.