



PRINCE EDWARD COUNTY DROUGHT RESPONSE AND CONTINGENCY PLAN
Prince Edward County, Virginia
ADOPTED – September 13, 2011

The water resources of Prince Edward County are vital to our quality of life. Prince Edward County receives an average of 41 inches of rainfall annually, spread fairly evenly throughout the year. In most years, rainfall is adequate to maintain and replenish our ground and surface water supplies. However, the occurrence of drought is a normal part of the weather cycle and should be expected. During droughts, water available from streams, rivers, reservoirs and wells can be severely diminished. In addition, water use can increase drastically during periods of low rainfall. Severe drought throughout the Commonwealth from 1999-2002 prompted the state government to adopt 9VAC 25-780 Local and Regional Water Supply Planning regulations which require that local governments develop and adopt a drought response and contingency plan.

The statewide Drought Assessment and Response Plan, dated March 28, 2003, was used as a framework for this Drought Response and Contingency Plan. This Plan closely mirrors the text of that document. This was done in order to provide consistency with the State plan and to utilize the expertise and effort that went into the development of that document.

Important differences between the State Drought Assessment and Response Plan and this local plan include:

1. Drought onset and stage evaluations shall be made by the County staff under advisement from, but responsive to, USGS and the State Drought Monitoring Task Force. County staff shall advise the Board of Supervisors regarding the status of the drought indicators and regarding the declaration of any stage of drought declaration.
2. To the extent possible, local data available from the USGS Groundwater Study, regional stream gages, monitoring wells, reservoir levels, and precipitation data will be utilized in drought stage declarations.

The extent to which rural residents' and communities' drinking water supplies are impacted by drought depends on many factors. Obviously, the more severe and long-lasting the drought is, the greater the impact will be. Responding proactively to a developing water shortage can greatly reduce the risk of serious drinking water shortages during a drought.

The Prince Edward County webpage will provide local officials and citizens with information regarding current drought conditions, recommended responses, and where to get additional information.

This Drought Response Plan is part of an overall water use policy that emphasizes the efficient use of water at all times, not just during drought. Overall water conservation efforts include:

1. **Water Loss Reduction:** Eliminate water leaks and reduce unaccounted-for water.
2. **Water Efficiency:** Improve water use efficiency through education, drought tolerant landscaping, and reuse.
3. **Public Education and Outreach:** Improve the effectiveness of water demand management and drought awareness by increasing public education efforts.

Drought Monitoring:

This plan includes a monitoring framework that relies upon the periodic monitoring of drought indicators to determine drought stages and resulting actions in the County.

At the State level, the Virginia Department of Environmental Quality (DEQ) monitors the National Oceanic and Atmospheric Administration (NOAA) U.S. Drought Monitor and produces information from those reports specific to Virginia on a monthly basis. The Virginia drought map is produced concurrent with the release of NOAA monthly and seasonal outlooks, which usually are released on the Thursday closest to the middle of the month.

County staff will monitor the Drought Map and the advance of drought conditions in the Commonwealth using the drought indicators described herein and other indicators such as the Standardized Precipitation Index, Palmer Drought Severity Index, Crop Moisture Index, Keetch-Byrum Drought Index, and NOAA monthly and seasonal precipitation outlooks.

Local Drought Indicators:

In order to monitor potential drought conditions staff will use four indicators to evaluate drought severity. These indicators include precipitation, stream flow, ground water levels, and reservoir level. Refer to Appendix I for more details on each drought indicator.

Declaration of Drought Stages:

The County will use the four drought indicators: precipitation, stream flows, ground water levels and reservoir levels; as the initial indicators to be considered when advising the Board of Supervisors regarding the declaration of a particular drought stage. The drought stages are watch, warning, and emergency. When indicators exceed the threshold for stage

determination, this advisement may be to declare a specific drought stage or may include an explanation of why the particular drought stage should not be declared at that time.

For example, when three of the four drought indicators indicate drought warning conditions, staff will evaluate all other drought information available and, if the majority of information warrants declaration, advise the declaration of a drought warning.

The Board may declare local drought watch, warning or emergencies, adopt emergency ordinances to address those local emergencies, and implement those ordinances prior to the declaration of a Drought Emergency by the Governor of Virginia.

Response to Drought:

Staff will use the following general descriptions of three drought stages when advising the Board of Supervisors concerning drought declarations. These descriptions should not be viewed as absolute requirements for drought designation, but as a mechanism to be used by staff to reach the appropriate drought advisement. The specific response activities that are delineated in Appendix II and Appendix III, for the three drought stages, should be viewed as activities that should be initiated in response to a drought stage declaration. The three drought stages are:

Drought Watch responses are intended to increase awareness of climatic conditions that are likely to precede the occurrence of a significant drought event. During this drought stage, the activities that are suggested are to prepare for the onset of a drought event. The response in this stage is voluntary conservation.

Voluntary conservation involves the reduction of non-essential uses and a general increase in awareness to conserve water. It is unlikely that significant water use reductions will occur at this stage although it is possible that the increased public awareness of water conservation activities may reduce water use up to 5%.

Drought Warning responses are intended to alert the community that the onset of a significant drought event is imminent. Water conservation and contingency plans would begin to be implemented and all users would be encouraged to reduce water use. At this stage, conservation activities are voluntary and may result in reductions in water use of 5-10%.

Drought Emergency responses are those that are required during the height of a significant drought event. During these times, it is likely that some water supplies will not provide the quantity of water needed by all users. Non-essential uses of water should be eliminated. Mandatory water conservation requirements shall be

initiated at this stage. Mandatory water conservation activities generally result in water use reductions of 10-15%. Penalties can be enforced for noncompliance with this stage.

Water sources used by community water systems and self supplied water users vary considerably across the County. Water conservation requirements for water users whose source of water supply is a reservoir or a free-flowing stream will likely be different than requirements for a water user who relies entirely on groundwater for water supply. The development of a water conservation and contingency plan that takes into account the nature of a particular water source and the nature of the end use of the water is necessary to assure that proper water conservation activities are instituted at the proper times. In general, water supplies that rely on sources with significant storage (for example, groundwater based systems) will realize greater benefits of water conservation activities initiated early in a drought cycle when compared to supplies that rely solely on free flowing streams. It is likely that individual private well users, especially those who rely on shallow water table wells, will receive the largest benefit from their early individual initiation of water conservation activities.

APPENDIX I DROUGHT INDICATORS

Precipitation Deficits:

Precipitation deficits will be monitored by comparing current precipitation amounts with historical precipitation values as a percent of normal long-term average values. Comparisons will be made using data compiled by the Office of the State Climatologist. Normal long-term average precipitation is defined as the mean precipitation for a thirty-year period of record for the area and time period being evaluated.

Precipitation amounts will be evaluated based on the water year (beginning October 1). Water years are a natural dividing point for water supply drought, as precipitation that falls in the first six months of a water year is analogous to “putting money in the bank.” Precipitation that occurs during this six-month period has the potential to recharge ground water, which will sustain stream flows and support withdrawals from wells during the following six-month period when moisture deficits naturally develop as evaporation and plant transpiration generally exceed precipitation. If a precipitation deficit outside of the normal range exists at the end of a water year, the precipitation records will carry forward until a normal condition is reached (i.e. if a precipitation deficit exists on October 1, precipitation records for the previous twelve months will be evaluated until the twelve-month deficit is eliminated).

Streamflow/Spring Discharge:

The Appomattox River streamflow gage (USGS Station 02039500) will be used to monitor streamflow response to drought conditions. Representative daily flow values will be compared with historic flow statistics for the period of record. County staff will access USGS data utilizing the percentile methods described above in determining drought stages.

Ground Water Levels:

The nearest ground water monitoring well is the Buckingham Observation Well, USGS Local Number 41H 3. Measured ground water levels will be compared with historic level statistics for the period of record. Measured ground water levels above the 25th percentile for all historic levels will be defined as normal conditions. Measured ground water levels between the 10th and 25th percentiles for all historic levels will be defined as drought watch conditions. Measured ground water levels between the 5th and 10th percentile for all historic levels will be defined as drought warning conditions. Measured ground water levels below the 5th percentile for all historic levels will be defined as drought emergency conditions.

Reservoir Levels:

The level of water in the Sandy River Reservoir will be monitored. Reservoir level reduced to 85% of total usable volume will be defined as drought watch; reservoir level reduced to 75% of total usable volume will be defined as drought warning and drought emergency conditions will be implemented when the reservoir level is 65% of total usable volume.

Other Indicators:

Staff will evaluate all other available drought information during deliberations related to the development of drought stage recommendations. Other drought indicators that may be considered include the Standardized Precipitation Index, Palmer Drought Severity Index, Crop Moisture Index, NOAA monthly and seasonal precipitation outlooks.

APPENDIX II

LOCAL GOVERNMENT ACTIONS IN RESPONSE TO DROUGHT

Normal Conditions

Indications:

No more than one indicator outside of the normal range:

- Precipitation exceeds the percent of normal precipitation for the time period in precipitation table.
- Stream flows are above the 25th percentile.
- Ground water levels are above the 25th percentile for all historic levels.
- Sandy River Reservoir level is greater than 85% of total usable volume.

Action to be taken:

- None, but County staff shall notify the Board of Supervisors if any indicator is outside of the normal range.

Drought Watch

Indications:

At least two indicators meet the following conditions:

- Precipitation levels are at or below the percent of normal precipitation for the time period in precipitation table.
- Stream flows fall between the 10th and 25th percentile.
- Ground water levels fall between the 10th and 25th percentile for all historic levels.
- Sandy River Reservoir level is between 75% and 85% of total usable volume.

Action to be taken:

- Staff will advise the Board of Supervisors regarding the declaration of a Drought Watch.
- The Board will issue a press release indicating the reasons for the declaration.
- Staff, under advisement from the Board will notify the Town of Farmville, Hampden-Sydney College and any other community water systems of the Drought Watch status. (Note: The Town of Farmville's Drought Management Plan will govern the Town's actions related to drought, the notice from the Board is for information purposes only. See Appendix IV for Farmville's Drought Plan).
- Citizens and non-residential users will be asked to begin voluntary water conservation (See Appendix III).
- Staff will continue to monitor conditions and provide monthly reports of drought conditions to the Board.
- The Board will make monthly reports of drought conditions available to media outlets.

- The Board will encourage all community water systems and self supplied water users who withdraw more than 10,000 gallons per day to review existing drought water conservation methods as outlined in this document.
- The County will include water conservation information on their website and will distribute water conservation information as broadly as possible.
- Staff will monitor reports of water shortages and report problems to the Board on a monthly basis.

Public Notice:

- Notice of the voluntary use reduction shall be published in the Farmville Herald once each week during which the restrictions are in effect.

Drought Warning

Indications:

At least three indicators meet the following conditions:

- Precipitation levels are at or below the percent of normal precipitation for the time period in precipitation table.
- Stream flows falls below the 10th percentile.
- Measured ground water levels fall below the 10th percentile for all historic levels.
- Sandy River Reservoir level is between 65% and 75% of total usable volume.

Action to be taken:

- Staff will advise the Board of Supervisors regarding the declaration of a Drought Warning.
- The Board will issue a press release indicating the reasons for the declaration.
- Staff, under advisement from the Board will notify the Town of Farmville, Hampden-Sydney College and any other community water systems of the Drought Warning status. (Note: The Town of Farmville's Drought Management Ordinance will govern the Town's actions related to drought, the notice from the Board is for information purposes only.)
- Citizens and non-residential users will be asked to begin voluntary water conservation (See Appendix III).
- Staff will continue to monitor regional conditions and provide monthly reports of drought conditions to the Board. Significant changes in drought conditions will be reported biweekly.
- The Board will make monthly reports of drought conditions available to media outlets.
- Community waterworks and self supplied water users who withdraw more than 10,000 gallons per day will initiate voluntary water conservation requirements as described in this plan.

- All self-supplied users who withdraw less than 10,000 gallons per day, including private well users, will be encouraged to voluntarily reduce or eliminate non-essential uses of water.
- The County will include water conservation information on their website and will distribute water conservation information as broadly as possible.
- Staff will monitor reports of water shortages and report problems to the Board on a monthly basis.
- All County government offices and institutions will initiate the reduction or elimination of non-essential uses of water with the goal of reducing total water usage by 5-10%.

Public Notice:

- Notice of the voluntary use reduction shall be published in the Farmville Herald once each week during which the restrictions are in effect.

Drought Emergency

Indications:

All four indicators meet the following conditions:

- Precipitation levels are at or below the percent of normal precipitation for the time period in precipitation table.
- Stream flows are at or below the 5th percentile.
- Measured ground water levels fall are at or below the 5th percentile for all historic levels.
- Sandy River Reservoir level is 65% or less of total usable volume.

Action to be taken:

- Staff will advise the Board of Supervisors regarding the declaration of a Drought Emergency.
- The Board will issue a press release indicating the reasons for the declaration.
- Staff, under advisement from the Board will notify the Town of Farmville, Hampden-Sydney College and any other community water systems of the Drought Emergency status (Note: The Town of Farmville's Drought Management Ordinance will govern the Town's actions related to drought, the notice from the Board is for information purposes only.)
- Citizens and non-residential users will be asked to begin voluntary water conservation (See Appendix III).
- Staff will continue to monitor regional conditions and provide monthly reports of drought conditions to the Board, significant changes in drought conditions will be reported weekly.
- The Board will encourage media outlets to publicize updates of drought conditions by developing weekly press releases.
- The Board will encourage all public waterworks (public wells) and self supplied water users who withdraw more than 10,000 gallons per day to

initiate mandatory water conservation requirements listed as Mandatory Non-essential Water Use Restrictions in Appendix III.

- The County will include water conservation information on their website and will distribute water conservation information as broadly as possible.
- Staff will continue to monitor reports of water shortages and report problems to the Board on a monthly basis.
- Community waterworks and self-supplied water users who withdraw more than 10,000 gallons per day will initiate mandatory water conservation requirements contained in drought water conservation and contingency plans that include the mandatory non-essential water use restrictions listed in Appendix III.

Public Notice:

- Notice of the mandatory use reduction shall be published in the Farmville Herald once each week during which the restrictions are in effect.

APPENDIX III RESPONSE TO DROUGHT

VOLUNTARY CONSERVATION FOR DROUGHT WATCH STAGE

INDOOR RESIDENTIAL USE:

- Use dishwashers only when they are full.
- Wash only full loads of laundry. Adjust water level if possible.
- Turn off faucets while brushing teeth, shaving, etc.
- Reduce water used per flush by installing toilet tank displacement inserts. A plastic jug may often be used as an alternative.
- Do not use the toilet as a trash can (flushing down tissues, etc.).
- Keep a bottle of water in the refrigerator, so as not to run the tap to get cold water.
- Take shorter showers and shallow baths.
- Do not use a garbage disposal.

OUTDOOR USE:

Lawns

- Water before 10:00 a.m. to prevent evaporation during the hottest part of the day. (Morning is better than evening, when the dampness encourages growth of fungus.)
- Water only when lawn shows signs of wilt. Grass that springs back when stepped on does not need water.
- Water thoroughly (long enough to soak roots); not frequently (a light sprinkling evaporates quickly and encourages shallow root systems).
- Water slowly to avoid runoff.
- Do not let the sprinkler run any longer than necessary.
- Allow a maximum of one inch of water per week on your lawn.
- Use automatic shutoff nozzles on hoses to avoid waste when watering flowers and shrubs.
- Aerate lawns by punching holes 6 inches apart. This allows water to reach roots rather than run off.
- Position sprinklers to water the lawn, not the pavement.
- Avoid watering on windy days when the wind not only blows water off target, but also causes excess evaporation.
- Keep sprinkler heads clean to prevent uneven watering.
- Adjust hose to simulate a gentle rain. Sprinklers that produce a fine mist waste water through evaporation.
- Install automatic shut off devices on automatic sprinkler systems.
- Know how to turn off an automatic irrigation system in case of rain.
- Use an alarm clock or stove timer to remind you to shut off sprinklers that do not have timers.

Vegetables and Flower Gardens

- Water deeply, slowly, and weekly. Most vegetables require moisture to a depth of 6 to 8 inches.
- Keep soil loose so water can penetrate easily.
- Keep weeds out to reduce competition for water.
- Put the water where you want it and avoid evaporation by using soil-soakers or drip irrigation hoses, not sprinklers.

Trees and Shrubs

- Water deeply with a soil-soaker or drip-irrigation.
- Water only when needed. Check the depth of soil dryness by digging with a trowel.
- Mulch to reduce evaporation. A 2" - 3" layer of wood chips, pine needles, grass clippings, or straw keeps the soil cool in summer.
- Dig troughs around plants to catch and retain water.
- Water trees growing in full sun more often than those in shade.
- Do not use sprinklers. Apply water directly at the base of trees.
- Do not fertilize during the summer. Fertilizing increases a plant's need for water.
- Postpone planting until fall when there is generally less demand for water.
- If you have a water meter, determine the amount of water being used outdoors by comparing water bills for summer and winter.

Livestock

- Consider installation of automatic waterers. These devices spread water use out throughout the day rather than filling troughs once per day.

VOLUNTARY CONSERVATION FOR DROUGHT WARNING STAGE

INDOOR RESIDENTIAL USE:

- Use dishwashers only when they are full.
- Wash only full loads of laundry. Adjust water level if possible.
- Turn off faucets while brushing teeth, shaving, etc.
- Reduce water used per flush by installing toilet tank displacement inserts. A plastic jug may often be used as an alternative.
- Do not use the toilet as a trash can (flushing down tissues, etc.).
- Keep a bottle of water in the refrigerator, so as not to run the tap to get cold water.
- Take shorter showers and shallow baths.
- Do not use a garbage disposal.

OUTDOOR USE:

Lawns

- Limit lawn watering to once per week. Water before 10:00 AM. Allow a maximum of one inch of water per week on your lawn.
- Water only when lawn shows signs of wilt. Grass that springs back when stepped on does not need water.
- Water thoroughly (long enough to soak roots); not frequently (a light sprinkling

evaporates quickly and encourages shallow root systems).

- Water slowly to avoid runoff.
- Do not let the sprinkler run any longer than necessary.
- Use automatic shutoff nozzles on hoses to avoid waste when watering flowers and shrubs.
- Aerate lawns by punching holes 6 inches apart. This allows water to reach roots rather than run off.
- Position sprinklers to water the lawn, not the pavement.
- Avoid watering on windy days when the wind not only blows water off target, but also causes excess evaporation.
- Keep sprinkler heads clean to prevent uneven watering.
- Adjust hose to simulate a gentle rain. Sprinklers that produce a fine mist waste water through evaporation.
- Install automatic shut off devices on automatic sprinkler systems.
- Know how to turn off an automatic irrigation system in case of rain.
- Use an alarm clock or stove timer to remind you to shut off sprinklers that do not have timers.
- Allow grass to maintain a 4" height, grass will absorb water more efficiently.

Vegetables and Flower Gardens

- Watering with containers that have a capacity of five (5) or fewer gallons is permitted at any time.
- Water deeply, slowly, and weekly. Most vegetables require moisture to a depth of 6 to 8 inches.
- Keep soil loose so water can penetrate easily.
- Keep weeds out to reduce competition for water.
- Put the water where you want it and avoid evaporation by using soil-soakers or drip irrigation hoses, not sprinklers.

Trees and Shrubs

- Do not plant new landscaping or grass.
- The watering of shrubbery, trees, plants, or any other vegetation, except indoor plantings, greenhouse or nursery stocks should be limited to once a week.
- Water deeply with a soil-soaker or drip-irrigation.
- Water only when needed. Check the depth of soil dryness by digging with a trowel.
- Mulch to reduce evaporation. A 2" - 3" layer of wood chips, pine needles, grass clippings, or straw keeps the soil cool in summer.
- Dig troughs around plants to catch and retain water.
- Water trees growing in full sun more often than those in shade.
- Do not use sprinklers. Apply water directly at the base of trees.
- Do not fertilize during the summer. Fertilizing increases a plant's need for water.
- Postpone planting until fall when there is generally less demand for water.
- If you have a water meter, determine the amount of water being used outdoors by comparing water bills for summer and winter.

Exceptions

- Limited watering for new lawns and watering by commercial nurseries of freshly

planted plants upon planting and once a week for five (5) weeks following planting is allowed during a drought warning.

- Athletic fields may also be watered, but shall only be watered to match the evaporation-transpiration rate. Any watering must occur before 8:00 AM or after 8:00 PM.
- Greens on golf courses may be watered, but shall be watered to match the evaporation-transpiration rate. Any watering must occur before 8:00 AM or after 8:00 PM.

Other Outdoor Water Use:

- When washing automobiles, a hose with an automatic shutoff should be used. Alternatively, use a bucket or other container.
- Water should not be used to wash pavement or sidewalks.
- Swimming pools, hot tubs and spas should not be filled or topped off, except where necessary for health or safety reasons.
- Ornamental fountains should not be used.
- There should be no washing of the exterior homes or apartments or other buildings unless the use is approved by the Board of Supervisors and the use is for health and safety.

Miscellaneous

- Water should be served in restaurants only upon request.

Livestock

- Consider installation of automatic waterers. These devices spread water use out throughout the day rather than filling troughs once per day.

MANDATORY CONSERVATION FOR DROUGHT EMERGENCY STAGE

Water use restrictions shall not apply to the agricultural production of food or fiber, the maintenance of livestock including poultry, nor the commercial production of plant materials so long as best management practices are applied to assure the minimum amount of water is utilized.

INDOOR USE:

In addition to measures listed above:

- Turn off shower while soaping up, do not run water while shaving, etc.
- Use disposable eating utensils.

OUTDOOR USE:

- Vegetable gardens and food trees should be given a minimal amount of water on an individual need basis only. Watering with a bucket or other container is allowed; container must be 5-gallons or less.
- Do not water lawns and inedible plants.
- Do not use sprinklers.

- Do not allow children to play with hose or sprinklers.
- No car washing.
- Be ready to catch rainfall. Place rain barrels under drain sprouts.
- Use leftover household water if available to water plants.
- Consider delaying seeding or sodding new lawns.
- Washing of paved surfaces such as streets, roads, sidewalks, driveways, garages, parking areas, tennis courts, and patios is prohibited unless the use is approved by the Board of Supervisors for health and safety reasons.
- Noncommercial use of water for washing or cleaning of mobile equipment including automobiles, trucks, trailers and boats is prohibited.
- The washing of automobiles, trucks, trailers, boats, buses, airplanes, or any other type of mobile equipment is prohibited, except in facilities operating with a water recycling system. The facility shall post a notice in public view that a recycling system is in operation.
- Exceptions are for refuse trucks, septage haulers and buses. Other exceptions must be approved by the Board of Supervisors or a designee and must be demonstrated to be necessary for health and safety purposes.
- Use of water for the operation of ornamental fountains, artificial waterfalls, misting machines, and reflecting pools is prohibited unless they use recycled water.
- Use of water to fill and top off outdoor swimming pools, spas and hot tubs is prohibited.
- Limited irrigation of golf course greens is allowed between 6:00 AM and 8:00 AM.
- Irrigation of athletic fields is prohibited.
- Restaurants may serve water to customers only upon request.

All residential, business and industrial water users, whether supplied by public water supplies, self-supplied sources, or private water wells, who do not normally utilize water for any of the listed prohibited uses are requested to voluntarily reduce water consumption by at least 10%. This reduction may be the result of elimination of other nonessential water uses, application of water conservation practices, or reduction in essential water uses.

STATE OF EMERGENCY

In some cases, the mandatory nonessential water use restrictions may not be sufficient to protect the supplies of an individual public waterworks. When water sources are so depleted as to threaten public health and safety, it may become necessary to ration water within that system in order to assure that water is available to support essential uses. Rationing water is a more severe measure than merely banning nonessential uses of water. Under rationing, each water user is allotted a given amount of water, based on a method of allotment developed by the local government. Generally, it will be based on a percentage of previous usage or on a specific daily quantity per household. Rationing is more likely to have some effect on welfare than mandatory nonessential use restrictions, because industrial and commercial water uses may be curtailed or eliminated to assure an adequate supply is available for human consumptive uses.

The decision to ration water will typically be made by the Board of Supervisors. Staff will work closely with any entity where water rationing is required to assure that all available resources are effectively used to support these highly stressed water supply systems. The Virginia Department of Emergency Management (VDEM) is the first point of contact for waterworks or local governments who decide to ration water. VDEM will coordinate the Commonwealth's response and assistance to such entities.