

## **Summertown Water System**

## **Drought Management Plan**

Summertown Water System  
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PWSID#: TN0000676

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## Definitions

For the purpose of the Plan, the following definitions shall apply:

Allowed water hours: Watering is allowed between 6:00pm through 6:00am . No watering is allowed between 6:00am and 6:00pm. This time period places the greatest amount of stress on drinking water systems.

Conservation: Practices, techniques, and technologies that improve the efficient use of water, reduce the consumption of water, reduce the loss or waste of water, so the supply is conserved and made available for future use.

Customer: Any person, company, entity, or organization using water supplied by the Summertown Water System.

### Drought Stages

- A. Normal Conditions: Water supply is adequate and water quality is acceptable under normal management. The focus during this stage is on communication with customers, and the general public of the Summertown Water System.
- B. Drought Alert: When conditions indicate that water shortages are imminent, if no changes occur in current water usage and/or current water supply. Water shortages may occur as water use increases, or supply diminishes. The focus during this stage is on increased monitoring to identify worsening conditions and awareness and preparation for response if conditions become worse.
- C. Voluntary Reductions: Begin voluntary water use reduction to avoid shortages, relieve stressed wells and the need to impose increasingly stringent water use restrictions.
- D. Mandatory Restrictions: A mandatory restriction is a management plan designed to avoid depletion of water, to assure at least minimum water supplies to customers, and health and safety.
- E. Emergency Management: A fixed amount of water per customer is allowed if the Mandatory Restrictions stage falls short of objectives.

Essential Water Use: Water uses that are necessary or required for the protection of the public, health, safety, and welfare include:

- A. Water used for human consumption and sanitation.
- B. Water used for fire.
- C. Water used for livestock (may be restricted).

## Goals, Purpose, and Intent

This Drought Management Plan (Plan) describes the conditions that require supply management and demand responses for temporary or potentially recurring water supply shortages by the Summertown Water System and establishes policies and procedures that offer strategies for an effective response to water shortages. This Plan is needed when water usage in Summertown Water System service area approaches the System's supply, treatment, or delivery capacity.

This Plan is based on current water availability. The effectiveness of the Plan is impacted by the availability of raw water supply during drought conditions and customer compliance with the Plan.

The TDEC drought plan guidance provides the following goals for a system's Drought Management Plan:

- To detect and monitor the type and severity of a water shortage situation, water supply situation, or hydraulic system situation.
- To take the appropriate action in order to minimize adverse impacts, damage, or losses, protect health and save lives;
- To ensure water is safe to drink and establish a plan to notify customers of any necessary and appropriate protective actions (e.g., Issue Boil Water or Do Not Drink Notices);
- To remain in compliance with state and federal drinking water regulations during an emergency response; and
- To address and repair damaged water system components on a prioritized schedule.

If circumstances warrant, modifications to the Plan may be necessary. The Plan gives Summertown Water System Board (Board) the authority to modify the Plan.

## Source Water Description

Summertown Water System water supply is drawn from five shallow wells located at district water works that feed into two raw water standpipes. Rainfall within the Summertown Water System watershed area varies greatly and impacts the speed at which wells are replenished. Summertown also purchases water from the City of Lawrenceburg (Lawrenceburg) and blends the water with the well water just mentioned. Lawrenceburg is a surface water system that sources water from a surface water stream, Shoal Creek and a spring, Hope Spring.

## System Description

The Summertown water system was constructed in 1963. It serves a population of 4,325. The treatment plant is rated at 425-450 MGD. The average system demand is 299,000 gal per day (gpd) and they purchase approximately 130,000 gpd of water from Lawrenceburg. Lawrenceburg sells water to many neighboring systems. There is a control valve between Summertown and Lawrenceburg which connects into the distribution system.

Summertown has five wells that feed into two raw water standpipes. When all five wells are operated, the total capacity is limited to 675 gallons per minute (gpm). The individual well capacities are as follows: Well #1 – 50 gpm, Well #2 – 100 gpm, Well #3 – 100 gpm, Well #4 – 325 gpm, and Well #5 – 150 gpm. The Water Treatment Plant design capacity is approximately 260 gpm. The main pump house,

where Summertown adds hypochlorite for disinfection, has two available pumps and Summertown runs one pump at a time and in series. There is a time delay between when a well turns off and the next one turns on, at this time no water is being drawn. When one well reaches about three to four feet left in the well the next one turns on.

\*\*The State of TN allows systems to include the capacity of their groundwater wells rated production (gpm) to be included as part of the 24-hour capacity of the system, hence the discrepancy between the Plant’s rating of 450 MGD and the design capacity of 260 gpm (0.37 MGD).

There are 3 elevated tanks: Freedom tank (250,000 gallons (gal)), Tank 1 (100,000 gal), and Tank 2 (50,000 gal). There are pressure sensors on the tanks which control water level. The system has two raw water standpipe tanks (12,000 gal and 8,000 gal). There is one booster station to the Freedom tank with a 100 gpm pump. Tank 1 and Tank 2 are filled directly from the treatment plant. The system treats water with sodium hydroxide for a pH adjustment and hypochlorite for disinfection. The system has 115 miles of water main as recorded in 2020 with 1,879 service connections. The system has installed Polyvinyl Chloride (PVC) pipe in 75% of its system in the last 4 years to replace asbestos cement pipe. The distribution system is flushed twice a year. There are no lead lines in the system, but there are known lead fixtures and lead packers.

## System Risks

Summertown is at risk of drought-related hazards that threaten critical infrastructure and services. The location of the system and system-specific factors both impact drought-related risks. The Drought Management Plan may be implemented based on the following risks to the system.

<b>Drought-related Risks</b>
Decreases in annual precipitation may result in reduced groundwater recharge. Increases in average temperature may result in increased evaporation of surface water and increased water loss from vegetation. These conditions in addition to decreased raw water supply, increased demand, and competition between commercial and community needs may result in reduced raw water availability.
<b>Geographic-specific Risks</b>
Summertown is located in the Southeastern Region of the United States. The frequency, duration and intensity of droughts are likely to continue to increase in the Southeast. Net water supply in the Southeast is expected to decline over the next several decades due to droughts, declines in annual precipitation, and increased demand due to higher temperatures and competing uses (USEPA, 2023).
<b>System-specific Risks</b>
<ul style="list-style-type: none"> <li>– Summertown has an estimated 27% water loss.</li> <li>– Lawrenceburg’s water source uses a stream that may be impacted by climate change and the town could run out of water to supply to Summertown.</li> <li>– Summertown Water System has 2 direct hook ups to Lawrenceburg, they can supply only up to 60% of customers on this, 40% of customers are reliant on groundwater produced by system</li> </ul>

## Drought Plan Matrix

The Community Water System Drought Stages Matrix (Drought Plan Matrix) describes what indicators will be used to determine the drought stage of the water system. Based on the drought stage, the matrix describes the actions Summertown will take in the event of a continuing drought. The matrix is based on the TDEC Community Water System Drought Phases.

Summertown will use the Drought Plan Matrix below to assess its five-day average production rate (i.e., the amount of water produced in the previous five-day period) to determine the status of water availability in the system and identify drought conditions. Utility employees will work with individual customers to determine reduction targets if customers' use varies. The water reduction targets for each Drought Stage will be based on the average usage in the billing period of the most recent year. The calculation to determine water usage reduction goals will be based on the cumulative usage of all customers' meters.

<b>ALERT COLOR</b>	<b>DROUGHT STAGE/ALERTS</b>	<b>INDICATOR/TRIGGER POINTS</b>	<b>GOAL</b>	<b>ACTIONS</b>
NA	<p><b>Normal Conditions</b> Water supply is adequate; water quality is acceptable under normal management. Normal water conditions at Lawrenceburg.</p>	<ul style="list-style-type: none"> <li>Ground water is at normal operating levels</li> </ul>	Water conservation	<ul style="list-style-type: none"> <li>Customers asked to use water wisely.</li> <li>Adopt standby rates, other necessary ordinances and codes and establish mutual aid agreement, interconnections, conservation education, etc.</li> </ul>
YELLOW	<p><b>Drought Alert</b> Lower than normal precipitation, declining ground water levels, greater than normal demand</p>	<ul style="list-style-type: none"> <li>U.S. monitor abnormally dry</li> <li>Early Indicators of Drought</li> <li>Ground water levels reach below the annual average</li> <li>Rainfall is below the 2-year average</li> <li>Lawrenceburg issued Drought Alert.</li> </ul>	Notify public	<ul style="list-style-type: none"> <li>Customers asked to reduce water usage by 15%.</li> <li>Monitor water sources and daily water use and anticipate user demand.</li> <li>Increase water main leak detection efforts.</li> </ul>
ORANGE	<p><b>Voluntary Reductions</b> Lower than normal rainfall, increasing demand, water supply deteriorating, water quality deteriorating</p>	<ul style="list-style-type: none"> <li>U.S. monitor moderate drought, State Level 1</li> <li>Water demand reaches 75% of well capacity in Summertown.</li> <li>Low groundwater level.</li> <li>Lawrenceburg issued Voluntary Reductions.</li> </ul>	Notify public, cut demand at 10%, conserve water	<ul style="list-style-type: none"> <li>Customers asked to reduce water usage by 25%.</li> <li>Implement "Voluntary Reductions" Stage at plan indicator point(s). Potential water use reduction measures include curtailment of outside uses, education, and pricing.</li> <li>If reduction goal is not obtained, implement mandatory restrictions.</li> <li>Notify TDEC.</li> </ul>
RED	<p><b>Mandatory Restrictions</b> continued decline in water supply that threatens the ability of the system to meet average daily demand.</p>	<ul style="list-style-type: none"> <li>U.S. monitor severe drought, State Level 2</li> <li>Water demand reaches 85% of well capacity.</li> <li>Low groundwater level.</li> <li>Lawrenceburg issued Mandatory Restrictions</li> </ul>	Notify public, cut demand at 25% or more	<ul style="list-style-type: none"> <li>Customers asked to reduce water usage by 50%.</li> <li>Implement "Mandatory restrictions" Stage at plan trigger points; restrictions could include banning of some outdoor water uses, per capita quotas and percent reductions of non-residential users.</li> <li>Notify TDEC of source conflicts.</li> </ul>
PURPLE	<p><b>EMERGENCY MANAGEMENT</b> Severe water supply or water quality problems due to very limited resources, availability</p>	<ul style="list-style-type: none"> <li>U.S. monitor, Extreme Drought</li> <li>Water demand reaches 95% of well capacity.</li> <li>Low groundwater level.</li> <li>Lawrenceburg issued a state of emergency for water supply.</li> </ul>	Notify public, cut demand, Commissioners Daily meetings	<ul style="list-style-type: none"> <li>Notify Tennessee Emergency Management Agency (TEMA) and request emergency declaration.</li> <li>Provide bottled water and sanitation supplies to users.</li> <li>Make hospitals and firefighting a priority.</li> <li>Initiate hauling of water.</li> <li>Comply with Commissioner's Orders.</li> </ul>

## Enforcement

Initiation & Termination Procedures – All decisions to implement this plan, to move from one Drought Stage to another, and to terminate actions taken because of the drought conditions will be made through a resolution of the Board, with or without input from the community.

The Board may implement an ordinance that may state either a new rate schedule, surcharges, or a penalty for violation of the ordinance during the most severe drought stages.

There are numerous Drought Stages, defined in the Drought Matrix. When the Summertown Water System is operating under non-normal conditions, no person shall knowingly or intentionally allow the use of water from the Summertown Water System in a manner contrary to the provisions of the Drought Management Plan, or in an amount that exceeds the permitted amount by the drought stage in effect.

Person or persons that violate provisions of the Plan will be subject to the provisions noted below\*:

1. First Offence – Warning (verbal) and violation notice in mail
2. Second Offence – Warning and a \$100.00 fine
3. Third Offence – Warning and a \$500.00 fine
4. Fourth Offense – Termination of water service

\*Termination of water service shall be an option at any time if the responsible party or account holder does not comply with the provisions of the Plan within the time frame on the notice.

When a water service is terminated, the responsible party or account holder is required to pay all fines before service reconnection is made. The responsible party will also pay for the fee to turn the water service back on.

## Alert Responses

The Alert Response table details the response actions that may be taken by the Utility, Customers, Schools, and Fire Department at each drought stage. Alert response actions are recommended unless Summertown is in Mandatory Restrictions.

**Alert Response Table**

Drought Stage	Utility Response- actions the water system can take	Customer Response- actions that the community can take	Schools	Fire Department
<b>Normal Conditions</b>	<ol style="list-style-type: none"> <li>1. Respond to leaks as soon as possible</li> <li>2. Reduce irrigation of public areas</li> <li>3. Reduce flushing of water mains</li> <li>4. Ask customers to reduce water use</li> <li>5. Keep records and know distribution system layout and number of connections</li> <li>6. Conduct rate study- charge customers for use, the more you use the more you pay</li> <li>7. Develop conservation education/program</li> <li>8. Keep records of water produced versus water sold- water accountability</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce water use</li> <li>2. Correct leaks in the home- i.e., toilet/faucet leaks</li> <li>3. Report any leaks</li> </ol>	<ol style="list-style-type: none"> <li>1. Report any leaks</li> <li>2. Use water wisely</li> </ol>	<ol style="list-style-type: none"> <li>1. Use water wisely</li> <li>2. Be prepared to use water from other sources if possible (ponds, pools, etc.)</li> <li>3. Work with water system to account for fire hydrant water use.</li> </ol>
<b>Drought Alert</b>	<ol style="list-style-type: none"> <li>1. Monitor water sources and daily use for each purpose (residential, commercial)</li> <li>2. Anticipate demand</li> <li>3. Monitor water quality</li> <li>4. Alert decision makers of the status</li> <li>5. Initiate community awareness and call for voluntary conservation</li> </ol>	<ol style="list-style-type: none"> <li>1. Report leaks</li> <li>2. Reduce water usage by 15%</li> <li>3. No washing of vehicles or driveways</li> <li>4. No filling of pools from Utility Water System</li> </ol>	<ol style="list-style-type: none"> <li>1. Report leaks</li> <li>2. Reduce water usage by 15%</li> <li>3. Use disposable products for cafeteria to reduce the need to use dishwasher</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce water use by 15%</li> <li>2. No washing of trucks, drives, or bays</li> <li>3. Use water from other sources (ponds, pools, etc.)</li> </ol>

Drought Stage	Utility Response- actions the water system can take	Customer Response- actions that the community can take	Schools	Fire Department
<b>Voluntary Reductions</b>	<ol style="list-style-type: none"> <li>1. Implement conservation goal-voluntary outside restrictions</li> <li>2. Monitor cutbacks in use and revenue- be prepared to raise rates-impose surcharges, impose penalties</li> <li>3. If conservation goal is not met go to next phase-restrictions-prepare ordinances and compliance requirements-penalties</li> </ol>	<ol style="list-style-type: none"> <li>1. Report leaks</li> <li>2. Reduce water use by 25%</li> <li>3. No watering of plants or lawns</li> <li>4. No filling pools from Utility Water System</li> <li>5. No washing of vehicles from Utility Water System</li> <li>6. No washing of driveways or concrete surfaces from Utility Water System</li> </ol>	<ol style="list-style-type: none"> <li>1. Report leaks</li> <li>2. Reduce water use by 25%</li> <li>3. Use disposable products in cafeteria</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce water usage by 15%</li> <li>2. Reduced pumper truck training or hose practice</li> <li>3. Use water from other sources (ponds, pools, etc.)</li> </ol>
<b>Mandatory Restrictions</b>	<ol style="list-style-type: none"> <li>1. Implement restrictions/bans</li> <li>2. Prohibition on new connections- no new water taps installed</li> <li>3. Correct system leaks</li> <li>4. Notify primacy agency</li> <li>5. Start search for emergency funding</li> <li>6. Notify customers of Mandatory Drought Restrictions by newspaper, radio, handouts</li> <li>7. Issue warning to customers not in compliance with Drought Management Plan</li> <li>8. Monitor users having problems following restrictions- Shut off water if not following restrictions</li> <li>9. Further prioritize use of water</li> <li>10. Rationing of water may be possible at this time</li> </ol>	<ol style="list-style-type: none"> <li>1. Report leaks</li> <li>2. Reduce water usage by 50%</li> <li>3. No watering plants or lawns</li> <li>4. No washing vehicles from Utility Water System</li> <li>5. No filling pools from Utility Water System</li> </ol>	<ol style="list-style-type: none"> <li>1. Report leaks</li> <li>2. Reduce water use by 50%</li> <li>3. Use disposable products in cafeteria</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce water use by 50%</li> <li>2. No water use except for firefighting only or public safety</li> <li>3. Use water from other sources (ponds, pools, etc.)</li> </ol>

## Procedure for Granting Variances & Exemption

Summertown Water System may grant any customer an exemption or variance from the Drought Management Plan for good cause upon written request. The Utility will treat all customers equally concerning exemptions and variances and shall not discriminate in granting exemptions and variances. No exemption or variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

1. The water user may apply for an exemption or variance if compliance with water restrictions under this Drought Management Plan would result in extraordinary hardship. Extraordinary hardship means a permanent damage to property, including perishable raw or processed products, or other personal or economic loss which is substantially more severe than the losses other water users are subject to.
2. A water user that believes it suffers an extraordinary hardship and desires to be exempt from the restrictions of water use shall submit a written request with full documentation supporting the need for the requested relief to Summertown Water System. The application shall contain information specifying:
  - The nature of the hardship claimed and reason for the requested exemption or variance.
  - The efforts taken by the applicant to conserve water and extent to which water use may be reduced by the applicant without extraordinary hardship.
3. Summertown Water System shall advise the applicant of its decision, in writing, regarding the application. An exemption or variance will be granted only to the extent necessary to relieve extraordinary hardship.

## Resources

Guidance for Developing Community Water System Drought Management Plans- Tennessee Department of Environment and Conservation (TDEC) of Water Resources-

[https://www.tn.gov/content/dam/tn/environment/water/documents/droughtmgmtplan\\_guidance.pdf](https://www.tn.gov/content/dam/tn/environment/water/documents/droughtmgmtplan_guidance.pdf)

National Integrated Drought Information System- <https://www.drought.gov/states/tennessee>

Drought Contingency Plan Public Water System-

<https://www.rcac.org/wp-content/uploads/2015/08/DroughtContingencyPlanTemplate-IHS.doc>

USEPA, 2023. CREAT Tool. [Retrieved: January 31, 2023, from <https://www.epa.gov/crwu/climate-resilience-evaluation-and-awareness-tool-creat-risk-assessment-application-water>]