

City of Hopewell Water Conservation Plan

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SECTION 1: Summary and Background

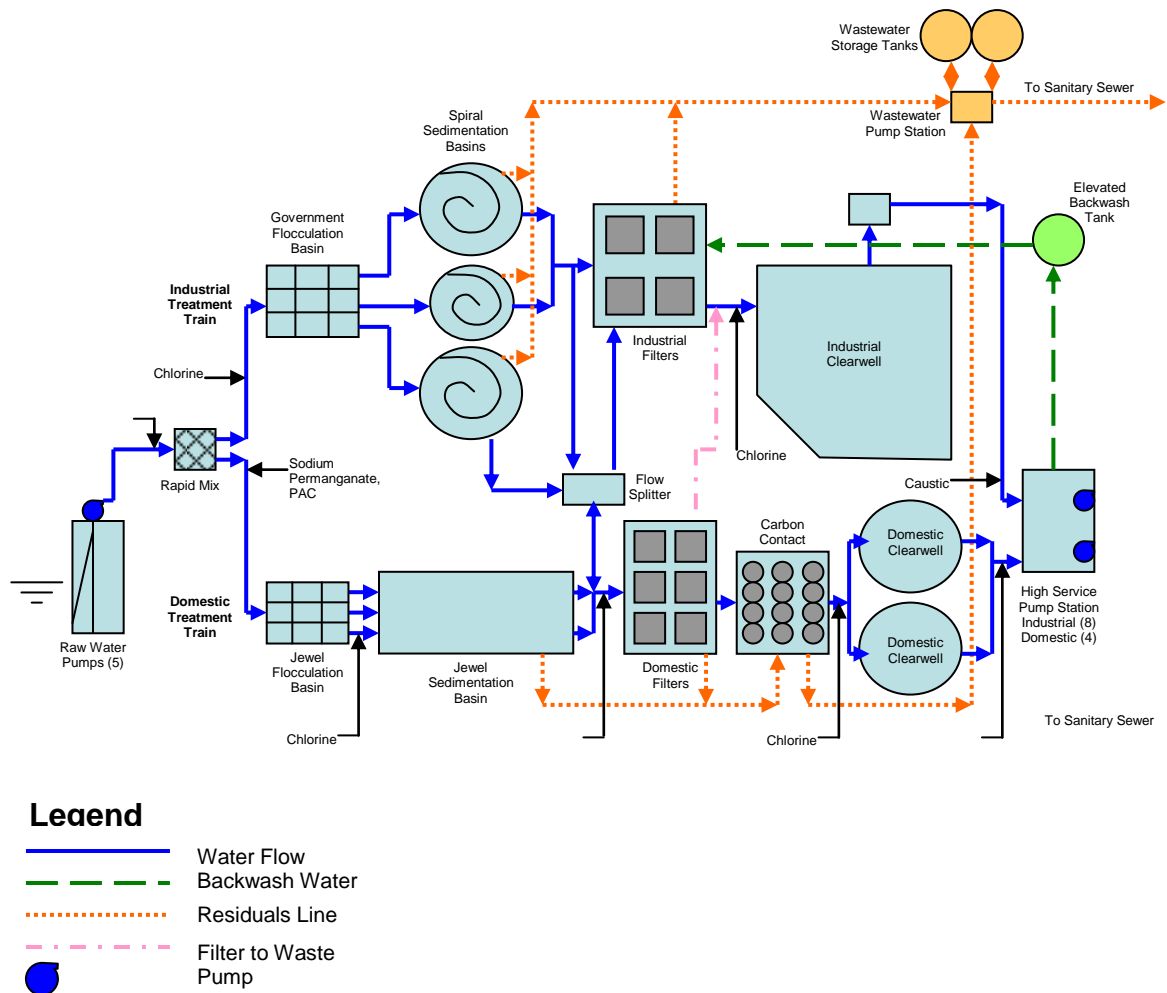
The purpose of this report is to examine possible scenarios that would require a reduction in customer load during extended peak demand periods. To date, Hopewell Operations staff has never--to the knowledge of current staff--had to issue either a voluntary, or mandatory, water conservation notice. However, in addition to complying with the requirements of the Virginia Department of Environmental Quality Water Supply Planning Program, implementation of this plan prepares the Hopewell distribution system for the unexpected.

The Hopewell system obtains its water supply from the Appomattox River approximately one mile from the confluence with the James River. The Hopewell system is supplied entirely by surface water. Calculations performed by the Virginia State Water Control Board have determined that the 1Q30 flow at the Hopewell intake is 227 MGD. The 1Q30 flow is defined as the flow occurring on the lowest-flow during each 30-year period.

Both the Appomattox River and James River are tidally influenced water bodies. As a result, the Hopewell Water Treatment facility is not affected by typical flow-by restrictions experienced by most surface water facilities during drought conditions.

The majority of the land use within the limits of the Hopewell System is a mixture of residential, urban and industrial development. Approximately 91% of the customer base is residential, 8% is commercial, and 1% is industrial and “other” customer categories.

The Hopewell Water Treatment Plant (WTP) is a conventional surface water treatment facility utilizing coagulation, mixing flocculation, sedimentation, filtration, and disinfection processes. The plant has two process trains. One treatment train supplies water to “domestic” customers, while the other supplies water to five large industrial customers located near the Hopewell WTP. Although both trains produce “potable” water, the quality of the water is slightly different. As it stands right now, the domestic train is deemed as potable water, and the industrial train is deemed as non-potable water. The “industrial” treatment train does not have fluoride or corrosion inhibitor added. Also, while this flow is filtered, it does not pass through the carbon contactors located on site. Please note, the “industrial” treatment train is not subject to drinking water standards enforced by the Virginia Department of Health. The following exhibit illustrates both of the Hopewell WTP process trains.



The current permitted capacity of the Hopewell Water Treatment Plant is 36 MGD. The system's highest peak day demand of 31 MGD occurred on August 17th, 2007.

The following sections detail conservation measures, list key stakeholders, detail the implementation plan, and discuss public relations/public awareness.

SECTION 2: Customer Uses

There are essentially three classes of potential customer uses common to the industry. Conservation methods should adequately address each of the three classes as they apply at the various levels.

Class 1: Essential Water Use includes, but is not limited to: residential use reasonably needed for hygiene, cleanliness and sanitation; Commercial Use by Healthcare Facilities; and Other Public Use Facilities; fire fighting capacity; and industrial use for electric power, industrial process and safety, communication, wastewater and other health needs to maintain the short term economic viability of the community.

Class 2: Important Uses of Water includes use by non-critical commercial operations in order to maintain their businesses, including commercial laundromats, restaurants, etc.

Class 3: Non-Essential Uses include all outdoor sprinkling including residential watering, golf course watering, fountains, etc., and car washing activities, use of fire hydrants for testing, flushing of the system except to ensure sanitary conditions, etc.

SECTION 3: Conservation Trigger Points

Virginia American Water staff has identified several possible scenarios that could possibly require a reduction in customer load during extended peak demand periods; and determined measures to be taken to ensure that the Hopewell System maintained adequate water supply for Class 1 and 2 uses. The three scenarios examined were supply limitation, production limitation, and weather and drought conditions.

Supply Limitation

The Hopewell WTP is permitted for 36 MGD, which is based on the permitted withdrawal from the Appomattox River intake. Given that the 1Q30 flow at the Hopewell intake is 227 MGD, as well as the tidal influence of the water body, it is highly improbable that Hopewell WTP source of supply would impede Virginia American Water's ability to supply the Hopewell System with Class 1 and Class 2 water uses. No triggers or measures are suggested for this scenario.

Production Limitation

The limiting production factor, on both production trains, is filtration capacity. The reliable capacity of the domestic train is 15 MGD with a firm capacity of 18 MGD. The reliable capacity of the industrial train is 15 MGD with a firm capacity of 20 MGD. Note the there are provisions to transfer up to 6 MGD of potable water into the industrial train; however, industrial water cannot supplement the potable water system. If customer demand approaches, or exceeds, 15 MGD for either train, the ability of the Hopewell WTP to provide essential water uses could be compromised.

The following triggers are proposed for production limitation:

- I. Customer demand approaches or meets the reliable capacity of either production train in one 24 hour period.
- II. Customer demand approaches or meets the reliable capacity of both production trains in one 24 hour period.
- III. Customer demand approaches or meets the reliable capacity of both production trains for consecutive 24 hour periods.

Another possible scenario limiting production capability is raw water quality. The Virginia Department of Health has characterized the source water as highly susceptible to contamination based on land use and potential sources of contamination along the Appomattox and James Rivers.

The following triggers are proposed related to potential source water contamination events:

- I. Raw water quality reduces filtration capacity, unable to meet daily demand of either production train in one 24 hour period.
- II. Raw water quality reduces filtration capacity, unable to meet daily demand of both production trains in one 24 hour period.

- III. Raw water quality reduces filtration capacity, unable to meet daily demand of both production trains for consecutive 24 hour periods.

The associated conservation measures for each trigger are discussed in Section 4.

SECTION 4: Conservation Measures

When the regional partners of the Hopewell System's Regional Water Supply Plan announce "Voluntary Water Conservation Conditions", the Hopewell System will announce "Voluntary Water Conservation Conditions". However, if the regional partners issue a "Mandatory Water Conservation Notice", the Hopewell System may remain in "Voluntary" status, due to the consistent source of supply provided by the tidally influenced intake discussed in previous sections.

In addition, the 3 level approach discussed below lists other possible measures to reduce customer load as production capacity moves close to exceeding capacity. The level of conservation will be as directed at the discretion of local operations management based on the guidelines in Section 3.

LEVEL 1 (Voluntary Conservation):

- Request voluntary conservation via the public notice plan in Section 5.

LEVEL 2:

- Request voluntary conservation via the public notice plan in Section 5.
- Meet with Water Conservation Committee and discuss conservation of Class 1 and 2 uses.

LEVEL 3:

- Provide public notice of required conservation per the plan in Section 5. Include Water Conservation Committee and local governmental input.
- Issue notice to industrial customers that water supply may be restricted.

SECTION 5: Public Awareness/Public Relations Activities

Objective

To effectively communicate this issue to four primary audiences:

- Local officials (mayors, city administrators, fire chiefs) and community leaders (CAC's) the *possibility* of voluntary water conservation
- Voluntary conservation measures to be implemented by residential customers through mass media vehicles
- Internally communicate the issues to our own employees to prepare them to handle questions/concerns from customers within each operation
- Communication of *possible* water shortage to our industrial customers. Discussion of alternatives to reduce industrial water usage from the Hopewell Treatment Plant in order to ensure production capacity is not exceeded.

Key Messages

The following are messages that have been assembled to assist in the communication process with internal and external stakeholders. PLEASE NOTE: Virginia American Water maintains the contact list for the stakeholders.

- ❑ Increased demand coupled with a drought could place pressure on water reserves.
- ❑ These two factors combined could create the need for voluntary water restrictions to be suggested to residential customers such as outdoor watering on even/odd days and suggested specific times for such activities.
- ❑ This request would not affect businesses such as restaurants, car washes, laundries and other industries dependent on water for production and revenue.
- ❑ Voluntary conservation methods would be introduced via various media outlets and would be rescinded immediately upon relief provided by changing weather and/or demand conditions.
- ❑ The request for voluntary usage reduction affects nonessential watering only and does not pertain to essential water use by residents.
- ❑ Virginia American Water is continuing to develop various options to maximize our resources and increase capacity for the future peak seasons.
- ❑ This is not a situation unique to Virginia American Water. Communities throughout the United States have been forced to issue conservation measures to ensure the protection of one of our most precious natural resources.
- ❑ These measures will in no way impede our ability to maintain fire protection.

Tactics

- ❑ Face-to-face meetings with local officials and community leaders
- ❑ Localized press releases and potentially press conferences
- ❑ Public Service Announcements where applicable
- ❑ Letter to community leaders

Media Contacts

Print: Hopewell News

Radio: Most news radio feed taken from local TV News Stations

WRVA

WHAP

TV: WTVR

WRIC

Section 6: Key Stakeholders

A. Key Government and Regulatory Stakeholders:

1. City of Hopewell, Director of Public Works
2. Virginia Department of Health, District Engineer

B. Major Industrial Customers

1. Honeywell
2. Smurfit-Stone
3. James River Cogeneration
4. Hopewell Cogeneration
5. Aqualon
6. Dominion Hopewell

Water Users with Critical Needs for Water

- John Randolph Medical Center
- Hopewell Dialysis Center

❖ The above listed entities should comprise the Water Conservation Committee. This committee should be in place to be called to order in case conservation measures are needed.

C. Hopewell Public Official Listing

- **City of Hopewell Officials**
 - Mayor
 - City Clerk
 - Fire Chief
 - Police Chief
 - City Manager
 - Risk Management Coordinator
- **Hopewell City Council**

APPENDIX 1

RELEASE

(Month, Day, Year)

Contact: Doug Woodhouse

Office: 804-240-9876

After Business Hours: 1-800-452-6863

WATER USAGE PEAK ALERT

*VIRGINIA AMERICAN SENDS NOTIFICATION OF WATER USAGE PEAK:
WEATHER AND DEMAND INVOKING VOLUNTARY RESIDENTIAL
WATER CONSERVATION REQUEST*

Virginia American Water's Hopewell Water Treatment production plant set a particularly high production yesterday signaling seasonal high usage. If demand continues at this rate without a break in the weather, demand may approach the production limits of our Water Treatment Facility.

Virginia American Water asks residents to voluntarily reduce their non-essential water usage, such as lawn sprinkling, to alternating days. These voluntary conservation measures would not involve businesses or industries, only residential non-essential usage and only during the period the drought continues.

To learn more about wise water use, please visit our website at the link below for a valuable list of water saving tips.

<http://www.amwater.com/vaaw/learning-center/wise-water-use.html>

APPENDIX 2

RELEASE

(Month, Day, Year)

Contact: Doug Woodhouse

Office: 804-240-9876

After Business Hours: 1-800-452-6863

WATER USAGE PEAK ALERT

*VIRGINIA AMERICAN SENDS NOTIFICATION OF WATER USAGE PEAK:
CUSTOMER DEMAND **MAY** REDUCE WATER SUPPLY TO SELECT
FACILITIES*

Virginia American Water's Hopewell Water Treatment production plant set a particularly high production yesterday signaling exceptionally high usage. If demand continues at this rate, the production limits of our Water Treatment Facility may be exceeded.

Virginia American Water **may** be forced to reduce water supply to select facilities if it appears that the plant production cannot meet customer demand. For questions, comments, or concerns, please contact Doug Woodhouse at the number listed above.