
WATER AND SEWER POLICIES

2021

**KINGSTON
WATER
DEPARTMENT**



Table of Contents

Section 1	1.1 Accounts Collection Policy
Section 2	2.1 Anti-Nepotism Policy
Section 3	3.1 Automatic Bank Draft Policy
Section 4	4.1 Bad Debt Write-Off Policy
Section 5	5.1 Billing and Payment Policy
	5.2 Collecting for Other Services
Section 6	6.1 Capitalization-Fixed Asset Policy
Section 7	7.1 Cell Phone Use in City Vehicles
Section 8	8.1 Code of Ethics
Section 9	9.1 Credit Card Payment Policy
Section 10	10.1 Cross Connection Policy
Section 11	11.1 Customer Fees, Rates, and Charges
Section 12	12.1 Discontinuance of Service (Cut-Offs) Policy
Section 13	13.1 Eminent Domain
Section 14	14.1 Fire Hydrant Use Policy
	14.2 Fire Lines Policy
Section 15	15.1 Identity Theft Prevention Program
Section 16	16.1 Non-Discrimination Policy
Section 17	17.1 Public Records / Utility Records Policy
Section 18	18.1 Returned Check / Bank Draft Policy
Section 19	19.1 Subdivision and Developers Policy
Section 20	20.1 Substance Abuse Policy
Section 21	21.1 Surplus Property Disposal
Section 22	22.1 Tap and Meter Policy
Section 23	23.1 Theft of Service Policy
Section 24	24.1 Unclaimed Property Policy
Section 25	25.1 Utility Line Extension Policy
Section 26	26.1 Vehicle Use Policy
Section 27	27.1 Water / Sewer Adjustment Policy
	27.2 Waiver of Sewer Tap Fees (Adopted 9/8/26)
Section 28	28.1 Outside City Sewer Service Policy
Section 29	29.1 Fat-Oil-Grease (FOG) Reduction and Removal Policy (Adopted 5/11/21)

Table of Contents (Continued)

Appendices

- Emergency Plan (Current)
- Risk and resilience Assessments (Current)-Added May 2021
- Drug-Free Workplace Forms
- Cross Connection Survey
- Degree of Hazards
- Well User Agreement of Non-Use or Connection to the Public Water Supply
- Backflow Incident Report Form
- State Guidance
 - Backflow Prevention Assembly Performance Evaluations
 - Certificate of Competency for Testing and Evaluating Backflow Prevention Assemblies
 - Approved Backflow Prevention Assemblies
- Rates/Fee Schedule
- Customer Contract
- Standard Water Specifications (Adopted 12-8-2020)
- Standard Sewer Specifications (Adopted 12-8-2020)
- Septage Receiving Control Program Policy (Adopted 5-13-2014)
- Neighbors Helping Neighbors Program Guidelines/Applications

Title of Policy:	Accounts Collection Policy	<u>Pg 1-2</u>
Section #:	Section 1	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 1.1

POLICY STATEMENT

Accounts cut-off for non-payment or discontinued accounts shall be subject to this policy.

1. The Manager and/or designee shall place the account in one of the following categories for collection:
 - (1) KWD may continue to pursue collection by any appropriate action, including but not limited to retaining counsel to pursue possible legal remedies;
 - (2) KWD may turn the account over to an outside agent or agency for collection; or
 - (3) KWD determines that collection is not feasible and writes off the account
2. As needed the Manager will report;
 - (a) The manager shall report any accounts that are to be written off to the board.
3. The Board shall approve or disapprove any determination that an account shall be written off.
4. Until payment has been made, no further service in KWD's service area will be rendered to the person(s) whose name appears on the account or to person(s) who received service from the account.
5. In the event a complaint has been filed in accordance with the established Complaint Procedure contesting the propriety of the charges on such account, then collection of such account may not be pursued until the governing board has taken final action on the complaint.
6. Any person(s) on whose account collection procedures have been instituted who has made full restitution to KWD and/or its agents will not be refused service. However, the person(s) may be required to pay an additional special service charge before service is provided, in accordance with KWD's policy.
7. Any fees or additional costs to KWD for collection of an account shall be borne by the person(s) whose name(s) appears on the account.

8. KWD via current collection agency may report accounts covered under this policy that have not made restitution to a credit reporting agency.

Title of Policy:	Anti-Nepotism Policy	<u>Pg 1</u>
Section #:	Section 2	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 2.1

POLICY STATEMENT

No person shall be employed by the Kingston Water Department who is related to any Member of the City Council, or is related to the City Manager. No person shall work in the same department as a family member as defined below. The relationship prohibited by the nepotism rule are:

- Spouse
- Parent (step and in-law)
- Child (including step-children)
- Grandparent (step and in-law)
- Grandchild (includes step-grandchildren)
- Sibling (including in-law)
- Great-grandparent
- Great-grandchild
- Aunt / Uncle
- Niece or Nephew

Title of Policy:	Automatic Bank Draft Policy	<u>Pg 1-2</u>
Section #:	Section 3	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 3.1

POLICY STATEMENT

1. KWD will accept bank drafts at any participating banks
2. The customer must complete and sign a preauthorization form (see appendix) and attach a voided check on the bank that the draft will be drawn.
3. KWD will mail or email a bill to the customer with the message Paid by Bank Draft or other such wording printed on the bill on the date of its regular billing. This will give the customer time to examine the bill before it is deducted from their account.
4. The customer's draft will be presented to the bank for payment on the 15th of each month. If the 15th falls on a weekend or holiday, KWD will present to the bank on the next following business day.
5. If funds are not available in the customer's account at the time the draft is presented and the draft is returned unpaid, KWD will...
 - (a) Attempt to Notify the customer that the draft was returned unpaid;
 - (b) Upon return of the unpaid draft, an additional fee will be added to the customer's account; the fee will be maximum fee set by TCA 47-29-102

When any check, draft, or order is not paid by the drawee because the maker or drawer did not have an account with or sufficient funds on deposit with the financial institution, or the draft, check, or order has an incorrect or insufficient signature thereon, the payee of such check, draft, or order is authorized to assess a handling charge against such maker or drawer in an amount not to exceed thirty dollars (\$30.00).

- (c) The customer account will be subject to any penalties due and subject to KWD's Discontinuance of Service (Cut-Offs) policy.
6. Any customer whose draft is returned unpaid two (2) consecutive billing cycles will be removed from the Automatic Payment Method.

7. Customers who wish to change back to the regular payment options may do so at any time by writing KWD and requesting to be removed from the Automatic Payment Method. Upon receipt of this request, the customer will be removed at the next available billing cycle.

Title of Policy:	Bad Debt Write-Off	<u>Pg 1-2</u>
Section #:	Section 4	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 4.1

Policy

KWD will actively pursue the collection of delinquent accounts, regularly review the status of delinquent accounts, and write-off amounts determined to be uncollectible. Utility accounts which have been delinquent for more than ninety (90) days can be turned over for collection to a collection agency.

Delinquent accounts should be written off during the fiscal year the account is determined to be uncollectible.

A delinquent account will be considered uncollectible after the appropriate collection procedures have been followed and if it meets one or more of the following criteria:

- The debt is disputed, and KWD has insufficient documentation to pursue collection efforts;
- The cost of further collection efforts will exceed the estimated recovery amount;
- The amount is under \$20 and remains unpaid after one year;
- The account remains unpaid after the applicable period for commencement of a recovery action (statute of limitations);
- The delinquent account holder cannot be located or the debtor's assets cannot be located;
- The delinquent account holder has no assets or no assets can be found;
- The delinquent account holder has died and there is no known estate or guarantor;
- The debt is discharged through legal action (bankruptcy or court judgment);

At least annually, the Manager will prepare a list of the delinquent accounts which meet the criteria for designation as an uncollectible account for approval by the Kingston Water Board. The list must include account number, and account balance of the uncollectible accounts being written off. The Kingston Water Board shall approve the list of delinquent accounts as uncollectible, and the uncollectible accounts shall be written off.

If a delinquent account has been turned over for collection or has been written off as uncollectible, the delinquent account holder will not be allowed to sign up for new service by KWD at any location until all delinquent accounts in the name of the account holder and all collection costs for the delinquent accounts have been paid.

Title of Policy:	Billing and Payment Policy	<u>Pg 1-3</u>
Section #:	Section 5	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:	<u>June 9, 2026</u>	Policy 5.1

POLICY STATEMENT

1. Kingston Water Department (KWD) bills will be rendered monthly.
2. KWD bills shall include a “net” amount with a payment due date, after which date the “gross” amount shall apply.
3. Should the due date for payment of a bill fall on a weekend or a holiday (KWD is closed), the bill’s net amount will be accepted on the following business day for the following:
 - (a) USPS Mail received at 900 Waterford Place, Kingston, TN 37763
 - (b) Drop Box located at City Hall Entrance-8:00 am daily cutoff time

Should the due date for payment of a bill fall on a weekend or a holiday (KWD is closed), the bill’s net amount will be due the business day before the due date for the following:

- (a) In person will be give the due date only during office hours when KWD’s office is open
- (b) Banks that receive payments

Should the due date for payment of a bill fall on a weekend or a holiday (KWD is closed), the bill’s net amount will be given the due date only for the following:

- (a) IVR and Online Credit Card given due date by midnight EST, after midnight EST. time the gross amount will be due.

4. When a customer does not pay a bill by the final payment date for the gross amount of the bill, service shall be discontinued in accordance with KWD’s Discontinuance of Service Policy.
5. KWD bills are recognized as a routine bill owed by the customer. The customer’s failure to receive a bill does not change in any way the customer’s obligation to pay the amount due in a timely manner.
6. The following bill payment method/locations are acceptable:
 - (a) Mail-payment will be posted on date received by KWD

- (b) Drop box-payment posted on business day that box is opened
- (c) Other designated areas (bank, online payments through kingstontn.gov website)- posted on day accepted at designated area

7. When a customer receives their bill and considers the bill to be incorrect, the customer may request a review of the bill. To request a review, the customer must contact any clerical employee of KWD in person or by email within five days before the scheduled cut-off/disconnect date.

The customer may request that the disputed bill be reviewed by the governing board of KWD by serving written notice to KWD manager of the customer's desire to appear before the board.

As with other complaints, if after written notice and meeting with the governing board, the customer feels that the utility is violating its policies regarding the incident, the customer may file a written complaint with Tennessee Public Utility Commission.

8. Any check that fails to clear the bank shall be treated as non-payment. If the check is returned because of insufficient funds or any other reason that is the fault of the customer, the date of payment will be deemed to be the date of good and proper payment. If that date falls after the "net" amount date, the customer bill is subject to gross amount charges and check return charges. See "Customer Fees, Rates, and Charges Policy" for more information.
9. In the event any customer fails to pay any utility fee or charge, the customer shall pay all costs of collection including court costs and reasonable attorney's fees incurred by KWD in collecting such sums.
10. Each customer must give a minimum of twenty-four (24) hours' notice to the utility of service termination.
11. Procedure for customer notification of discontinuance of service:
 - (a) In person: customer must present acceptable identification
 - (b) Mail, Email or Fax: customer must include address, account number, and one other form of positive account identification

12. All customers shall pay sales tax (City, county, State, or Federal). On all applicable services. Any customers requesting reduction or exemption must submit a tax exemption form from the State of Tennessee. Tax exemption or reduction will not apply until the form is in KWD's office. KWD will not refund any sales tax to the customer that has been paid, unless it is KWD's error.
13. Neighbors Helping Neighbors Program. Customers are eligible to apply for the Financial Assistance and/or Catastrophic Leak Adjustment Programs. These programs are contingent on availability of funds (See appendix for program guidelines)

Title of Policy:	Billing & Collecting for Other Services	<u>Pg 1</u>
Section #:	Section 5	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 5.2

1. KWD agrees to bill and collect for the following services:
 - a. Water
 - b. Sewer (if applicable)
 - c. Garbage Collection (if applicable)
 - d. Leak Protection Insurance (if applicable)
2. The Agency that KWD will be billing and collecting on behalf of will furnish to KWD the following:
 - a. A schedule of rates and fees to be charged to the Customer;
 - b. Any required forms and/or agreements for the Customer to sign-up for the service
 - c. Any information regarding the service the Agency wishes or is required to provide to the Customer.
3. KWD will administer the accounts and those fees and charges to the Customers' bills.
4. KWD will follow its policies in dealing with billing and collection of these accounts that shall include the following:
 - a. Require the Customer to pay for the service(s) provided by the Utility as well as the other services covered under this policy. If the Customer pays only for the service(s) provided by KWD and not for the other service(s) covered by this policy, KWD will treat this account as an unpaid account and the Customer will be subject to KWD's Disconnect Policy;
 - b. Adding to the bill or account any late fees, penalties or other charges established in KWD's Fees and Charges Policy for non-payment and/or late payment of said bills;
 - c. The discontinuance of the service(s) that KWD provides as well as the service(s) that are covered under this policy;
 - d. The placement of unpaid accounts with a collection agency as covered under KWD's Accounts Collection Policy

Title of Policy:	Capitalization / Fixed Asset Policy	<u>Pg 1-3</u>
Section #:	Section 6	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 6.1

PURPOSE:

To define guidelines for the capitalization of purchases of land, buildings, land improvements, pipes, infrastructure, equipment and other materials

POLICY STATEMENT

Fixed assets consist of all capitalized assets with an estimated useful life of at least one year and cost \$2,000 or more.

Procedure:

1. **Land** includes all real property owned by, purchased or donated. When land is purchased, various incidental costs are generally incurred in addition to the purchase price. These additional costs may include commissions to real estate brokers, escrow fees, legal fees for examining and insuring the title, delinquent taxes paid by the purchaser, and fees for surveying, draining, clearing, and grading the property. All these expenditures become part of the cost of land.

From time to time land may be purchased as a building site for KWD that contains older buildings or other structures that are not suitable for KWD's use; in this case, the only useful "asset" being acquired is the land. Therefore, *the entire purchase price is charged to the Land account, along with the costs of tearing down and removing the unusable building.*

Land purchased and held as an investment should not be classified as "Land", but as "Land Held for Investment".

2. **Buildings** include all structures and buildings owned by KWD, either constructed, purchased or donated, and any building improvements costing \$10,000 or more.
3. **Land Improvements** include all improvements to land owned by KWD costing more than \$5,000. Improvements to land such as driveways, fences, parking lots, landscaping, and

sprinkler systems have limited life and are therefore subject to depreciation. For this reason, they should be recorded in a separate account entitled "Land Improvements".

4. **Infrastructure** includes all items of KWD systems improvements owned by KWD costing more than \$5,000. Infrastructure items include utilities including, sewer systems and water systems
5. **Equipment** is defined as any movable property i.e., machinery, vehicles, computers, and furniture costing at least \$2,000 and is not a replacement part. Component items that form one working equipment system are combined for capitalization purposes. The "system" definition applies to computer configurations, electronic & laboratory equipment and other portable equipment. Additions to equipment that become either component parts or permanently connected to existing equipment items are also defined as equipment and should be capitalized, regardless of cost. The cost of repairs should be capitalized if such repairs "significantly extend the life of the asset".

Each item of equipment acquired will be assigned a serially numbered tag affixed to the equipment and marked "Kingston Water Department" or "KWD"

Equipment Inventory

All equipment having KWD property numbers must be inventoried annually according to the utilities policy. Department heads are responsible for conducting an inventory of all tangible equipment regardless of acquisition method (purchase, transfer, and donation). The individual conducting the physical inventory should identify items that are missing or were sold, traded-in, discarded, or transferred to other departments. The individual conducting the inventory should not be the same individual that is responsible for the assets being inventoried.

Depreciation

All fixed assets will be depreciated at cost on a straight-line basis using estimated useful lives as follows:

- | | |
|---------------------------------|-------------|
| • Buildings, pipes | 40-50 years |
| • Land Improvements | 20-50 years |
| • Infrastructure | 20-50 years |
| • Equipment | 5-10 years |
| • Vehicles | 3-5 years |
| • Computer/electronic equipment | 3-5 years |

KWD does not capitalize items that are valued at less than \$2,000. However, certain items will be inventoried and accounted for stewardship purposes. This inventory shall include such "sensitive items" such as cellular phones, radios, pagers, laptop computers, and other items that are especially susceptible to theft. Such items should be inventoried on an annual basis.

Assets that are to be surpluses or disposed of will be accounted for in accordance with KWD's "Surplus Property Disposal Policy"

Assets that are to be surpluses or disposed of will be accounted for in accordance with the Utility's Surplus Property Disposal Policy

Title of Policy:	Cell Phone Use in City / KWD Vehicles	<u>Pg 1-4</u>
Section #:	Section 7	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 7.1

POLICY STATEMENT

Employees who operate a Kingston Water Department vehicle and or equipment are not to use a handheld cell phone or other device, either personal or business while driving or operating equipment. Cell phones shall not be used while refueling city vehicles or equipment. Texting or manipulating a hand-held electronic device of any kind is prohibited while employees are operating city vehicles and equipment (with the exception of emergency personnel)

"Hands Free Tennessee"
Effective July 1st, 2019.

Tennessee Code Annotated, Section 55-8-199, is amended by deleting the section and substituting instead the following:

(a) As used in this section:

(1) "Stand-alone electronic device" means a portable device other than a wireless telecommunications device that stores audio or video data files to be retrieved on demand by a user;

(2) "Utility services" means electric, natural gas, water, waste-water, cable, telephone, or telecommunications services or the repair, location, relocation, improvement, or maintenance of utility poles, transmission structures, pipes, wires, fibers, cables, easements, rights of way, or associated infrastructure; and

(3) "Wireless telecommunications device" means a cellular telephone, a portable telephone, a text-messaging device, a personal digital assistant, a stand-alone computer, a global positioning system receiver, or substantially similar portable wireless device that is used to initiate or receive communication, information, or data. "Wireless telecommunications device" does not include a radio, citizens band radio, citizens band radio hybrid, commercial two-way radio communication device or its functional equivalent, subscription-based emergency communication device, prescribed medical device, amateur or ham radio device, or in-vehicle security, navigation, autonomous technology, or remote diagnostics system.

(b)

(1) A person, while operating a motor vehicle on any road or highway in this state, shall not:

(A) Physically hold or support, with any part of the person's body, a:

(i) Wireless telecommunications device. This subdivision (b)(1)(A)(i) does not prohibit a person eighteen (18) years of age or older from:

(a) Using an earpiece, headphone device, or device worn on a wrist to conduct a voice-based communication; or

(b) Using only one (1) button on a wireless telecommunications device to initiate or terminate a voice communication; or

(ii) Stand-alone electronic device;

(B) Write, send, or read any text-based communication, including, but not limited to, a text message, instant message, email, or internet data on a wireless telecommunications device or stand-alone electronic device. This subdivision (b)(1)(B) does not apply to any person eighteen (18) years of age or older who uses such devices:

(i) To automatically convert a voice-based communication to be sent as a message in a written form; or

(ii) For navigation of the motor vehicle through use of a device's global positioning system;

(C) Reach for a wireless telecommunications device or stand-alone electronic device in a manner that requires the driver to no longer be:

(i) In a seated driving position; or

(ii) Properly restrained by a safety belt;

(D) Watch a video or movie on a wireless telecommunications device or stand-alone electronic device other than viewing data related to the navigation of the motor vehicle; or

(E) Record or broadcast video on a wireless telecommunications device or stand-alone electronic device. This subdivision (b)(1) does not apply to electronic devices used for the sole purpose of continuously recording or broadcasting video within or outside of the motor vehicle.

(2) Notwithstanding subdivisions (b)(1)(A) and (B), and in addition to the exceptions described in those subdivisions, a function or feature of a wireless telecommunications device or stand-alone electronic device may be activated or deactivated in a manner requiring the physical use of the driver's hand while the driver is operating a motor vehicle if:

(A) The wireless telecommunications device or stand-alone electronic device is mounted on the vehicle's windshield, dashboard, or center console in a manner that does not hinder the driver's view of the road; and

(B) The driver's hand is used to activate or deactivate a feature or function of the wireless telecommunications device or stand-alone electronic device with the motion of one (1) swipe or tap of the driver's finger, and does not activate camera, video, or gaming features or functions

for viewing, recording, amusement, or other non-navigational functions, other than features or functions related to the transportation of persons or property for compensation or payment of a fee.

(c)

(1) A violation of this section is a Class C misdemeanor, subject only to imposition of a fine not to exceed fifty dollars (\$50.00). However, if the violation is the person's third or subsequent offense or if the violation results in an accident, the fine is one hundred dollars (\$100); or if the violation occurs in a work zone when employees of the department of transportation or construction workers are present or in a marked school zone when a warning flasher or flashers are in operation, the fine is two hundred dollars (\$200). Any person violating this section is subject to the imposition of court costs not to exceed ten dollars (\$10.00), including, but not limited to, any statutory fees of officers. State and local litigation taxes are not applicable to a case prosecuted under this section.

(2) In lieu of any fine imposed under subdivision (c)(1), a person who violates this section as a first offense may attend and complete a driver education course pursuant to § 55-10-301.

(3) Each violation of this section constitutes a separate offense.

(d) This section does not apply to the following persons:

(1) Officers of this state or of any county, city, or town charged with the enforcement of the laws of this state, or federal law enforcement officers when in the actual discharge of their official duties;

(2) Campus police officers and public safety officers, as defined by § 49-7-118, when in the actual discharge of their official duties;

(3) Emergency medical technicians, emergency medical technician paramedics, and firefighters, both volunteer and career, when in the actual discharge of their official duties;

(4) Emergency management agency officers of this state or of any county, city, or town, when in the actual discharge of their official duties;

(5) Persons using a wireless telecommunications device to communicate with law enforcement agencies, medical providers, fire departments, or other emergency service agencies while driving a motor vehicle, if the use is necessitated by a bona fide emergency, including a natural or human occurrence that threatens human health, life, or property;

(6) Employees or contractors of utility services providers acting within the scope of their employment; and

(7) Persons who are lawfully stopped or parked in their motor vehicles or who lawfully leave standing their motor vehicles.

(e) A traffic citation that is based solely upon a violation of this section is considered a moving traffic violation.

(f) The department of transportation is directed to utilize the department's permanent electronic overhead informational displays located throughout this state to provide periodic messages to the motoring public as to this section.

(g) The department of safety is directed to include distracted driving as part of the instructional information used in driver education training.

SECTION 2. Tennessee Code Annotated, Section 55-8-207, is amended by deleting the section in its entirety.

SECTION 3. This act shall take effect July 1, 2019, the public welfare requiring it.

Title of Policy:	Code of Ethics	<u>Pg 1</u>
Section #:	Section 8	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 8.1

The following guidelines must be followed by Kingston Water Department Employees.

An official or employee may not accept, directly or indirectly, any money, gift, gratuity, or other consideration or favor of any kind from anyone other than the City:

1. For the performance of an act, or refraining from performance of an act, that he would be expected to perform, or refrain from performing, in the regular course of his duties; or
2. That might reasonably be interpreted as an attempt to influence his action, or reward him for past action, in executing City business;
3. May not disclose any information obtained in his official capacity or position of employment that is made confidential under state or federal law except as authorized by law, or with the intent to result in financial gain for himself or any other person or entity;
4. May not use or authorize the use of City time, facilities, equipment, or supplies for private gain or advantage to himself or to any private person or entity, except as authorized by legitimate contract or lease that is determined by the governing body to be in the best interests of the City.
5. May not make or attempt to make private purchases, for cash or otherwise, in the name of the City or use or attempt to use his position to secure any privilege or exemption for himself or others that is not authorized by the Charter, general law, ordinance or policy of the City;
6. May not continue any outside employment if the work unreasonably inhibits the performance of any affirmative duty of the City position or conflicts with any provision of the City's Charter or any ordinance or policy.

The City Attorney is designated as the ethics officer of the municipality and the interpretation that a reasonable person would make shall be used in interpreting and enforcing this code of ethics.

Title of Policy:	Credit Card Payment Policy	<u>Pg 1-2</u>
Section #:	Section 9	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 9.1

POLICY STATEMENT

1. KWD will accept credit or debit cards on the following companies:
 - (a) Master Card
 - (b) Visa
 - (c) Discover
 - (d) American Express
2. KWD will accept credit or debit cards presented in the following manner:
 - a. Presented in person, KWD may check the following:
 - Require proof of identification
 - Check expiration date of the card
 - Compare the signature on card to sales draft signature
 - b. By Phone via Contracted Vendor
 - c. By Internet via Contracted Vendor
3. KWD will accept credit or debit cards for the following:
 - a) All goods and services in person at KWD main office.
 - b) Online and IVR (Automated Payment by Phone) will be for KWD billed service payments only.
4. KWD shall collect a processing fee in the amount equal to the amount that KWD is charged by a third party for processing payment.
5. KWD shall use electronic authorization terminals approved by their credit card provider. (i.e. NEVER borrow someone else's terminal to accept a credit card payment and never allow another business to use the utility's credit card terminal for processing.)
6. KWD shall not make any cash advances or cash returns on cards presented.
7. If card is rejected by the processing company at the time it is presented, KWD will require payment by another method. (Money order, cashier's check, cash, check or another card)

8. If a payment by credit card is not honored by the credit card company issuing the card, or if a payment by debit card is not honored by the entity on which the funds are drawn, KWD will collect a service charge from the person presenting the card. The amount of the service charge shall be the maximum fee set by TCA 47-29-102.

(This section does not apply if electronic device is used to conduct the transaction, the card and card holder are present, and the person who takes the card learns of the declination of the credit card or debit card at the time the transaction is processed.)

9. KWD will not call, write, email or any other form of communication to the credit card company or processing center for authorization or verification to process or collect a customer payment of any kind. The inconvenience will be placed on the customer to correct any issues they have with their credit card.

Processing Fee Requirements:

TCA 9-1-108 (3) Requires a utility district or municipal entity to "set and collect a processing fee in an amount that is equal to the amount paid to the third-party processor for processing the payment. However, the processing fee shall not be set in an amount that exceeds five percent (5%) of the amount of the payment collected by credit card or debit card.

Title of Policy:	Cross Connection Policy	<u>Pg 1-35</u>
Section #:	Section 10	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 10.1

POLICY STATEMENT

This policy sets forth uniform requirements for the protection of the public water system for KWD from possible contamination, and enable KWD to comply with all applicable local, State and Federal Laws, regulations, standards or requirements, including the Safe Drinking Water Act of 1996, TCA 68-221-701 to 68-221-720 and the Rules and Regulations for Public Water Systems and Drinking Water Quality issued by the Tennessee Department of Environment and Conservation, Division of Water Supply.

Objectives:

The objectives of this policy are to:

- (1) To protect the public potable water system of KWD from the possibility of contamination or pollution by isolating within the customer's internal distribution system, such contaminants or pollutants that could backflow or backsiphonage into the public water system;
- (2) To promote the elimination or control of existing cross connections, actual or potential, between the customer's in-house potable water system and non-potable water systems, plumbing fixtures, and industrial piping systems;
- (3) To provide for the maintenance of a continuing program of cross connection control that will systematically and effectively prevent the contamination or pollution of all potable water systems.

Definitions:

The following words, terms and phrases shall have the meanings ascribed to them in this section, when used in the interpretation and enforcement of this article:

- (1) Air-gap shall mean a vertical, physical separation between a water supply and the overflow rim of a non-pressurized receiving vessel. An approved air-gap separation shall be at least twice the inside diameter of the water supply line, but in no case less than two (2") inches.
- (2) Atmospheric vacuum breaker shall mean a device which prevents backsiphonage by creating an atmospheric vent when there is either a negative pressure or sub-atmospheric pressure in the water system.
- (3) Auxiliary intake shall mean any water supply, on or available to a premise, other than that directly supplied by the public water system. These auxiliary waters may

include water from another purveyor's public water system; any natural source, such as a well, spring, river, stream, and so forth; used, reclaimed or recycled waters; or industrial fluids.

- (4) Backflow shall mean the undesirable reversal of the intended direction of flow in a potable water distribution system as a result of a cross connection.
- (5) Backpressure shall mean any elevation of pressure in the downstream piping system (caused by pump, elevated tank or piping, stream and/or air pressure) above the water supply pressure at the point which would cause, or tend to cause, a reversal of the normal direction of flow.
- (6) Back siphonage shall mean the flow of water or other liquids, mixtures or substances into the potable water system from any other source other than its intended source, caused by the reduction of pressure in the potable water system.
- (7) Bypass shall mean any system of piping or other arrangement whereby water from the public water system can be diverted around a backflow prevention device.
- (8) Cross connection shall mean any physical connection or potential connection whereby the public water system is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture or other waste or liquid of unknown or unsafe quality, which may be capable of imparting contamination to the public water system as a result of backflow or back siphonage. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, through which or because of which backflow could occur, are considered to be cross connections.
- (9) Double check valve assembly shall mean an assembly of two (2) independently operating, approved check valves with tightly closing resilient seated shut-off valves on each side of the check valves, fitted with properly located resilient seated test cocks for testing each check valve.
- (10) Double check detector assembly shall mean an assembly of two (2) independently operating, approved check valves with an approved water meter (protected by another double check valve assembly) connected across the check valves, with tightly closing resilient seated shut-off valves on each side of the check valves, fitted with properly located resilient seated test cocks for testing each part of the assembly.
- (11) Fire protection systems shall be classified in six different classes in accordance with *AWWA Manual M14- Second Edition 1990*. The six classes are as follows:
 - Class 1 shall be those with direct connections from public water mains only; no pumps, tanks or reservoirs; no physical connection from other water supplies; no antifreeze or other additives of any kind; all sprinkler drains discharging to the atmosphere, dry wells or other safe outlets.
 - Class 2 shall be the same as Class 1, except that booster pumps may be installed in the connections from the street mains.

- Class 3 shall be those with direct connection from public water supply mains, plus one or more of the following: elevated storage tanks, fire pumps taking suction from above ground covered reservoirs or tanks, and/or pressure tanks (all storage facilities are filled from or connected to public water only, and the water in the tanks is to be maintained in a potable condition).
- Class 4 shall be those with direct connection from the public water supply mains, similar to Class 1 and Class 2, with an auxiliary water supply dedicated to fire department use and available to the premises, such as an auxiliary supply located within 1700 ft. of the pumper connection.
- Class 5 shall be those directly supplied from public water mains and interconnected with auxiliary supplies, such as pumps taking suction from reservoirs exposed to contamination, or rivers and ponds; driven wells, mills or other industrial water systems; or where antifreeze or other additives are used.
- Class 6 shall be those with combined industrial and fire protection systems supplied from the public water mains only, with or without gravity storage or pump suction tanks.

(12) Interconnection shall mean any system of piping or other arrangements whereby the public water supply is connected directly with a sewer, drain, conduit, pool, storage reservoir, or other device which does or may contain sewage or other waste or liquid which would be capable of imparting contamination to the public water system.

(13) Person shall mean any and all persons, natural or artificial, including any individual, firm or association, and any municipal or private corporation organized or existing under the laws of this or any other state or country.

(14) Potable water shall mean water, which meets the criteria of the Tennessee Department of Environment and Conservation and the United States Environmental Protection Agency for human consumption.

(15) Pressure vacuum breaker shall mean an assembly consisting of a device containing one (1) or two (2) independently operating spring loaded check valves and an independently operating spring loaded air inlet valve located on the discharge side of the check valve(s), with tightly closing shut-off valves on each side of the check valves and properly located test cocks for the testing of the check valves and relief valve.

(16) Public water supply shall mean the KWD water system, which furnishes potable water to the public for general use and which is recognized as the public water supply by the Tennessee Department of Environment and Conservation.

(17) Reduced pressure principle backflow prevention device shall mean an assembly consisting of two (2) independently operating approved check valves with an

automatically operating differential relief valve located between the two check valves, tightly closing resilient seated shut-off valves, plus properly located resilient seated test cocks for the testing of the check valves and the relief valve.

(18) Manager shall mean the Manager of KWD or his duly authorized deputy, agent or representative.

(19) Water system shall be considered as made up of two (2) parts, the utility system and the customer system.

- a. The utility system shall consist of the facilities for the storage and distribution of water and shall include all those facilities of the water system under the complete control of the utility system, up to the point where the customer's system begins (i.e. the water meter);
- b. The customer system shall include those parts of the facilities beyond the termination of the utility system distribution system that are utilized in conveying domestic water to points of use.

Compliance with T.C.A.

KWD shall be responsible for the protection of the public water system from contamination or pollution due to the backflow of contaminants through the water service connection. KWD shall comply with Section 68-221-711 of the Tennessee Code Annotated, as well as the rules and Regulations for Public Water Systems and Drinking Water Quality legally adopted in accordance with this Code, which pertain to cross connections, auxiliary intakes, bypasses and interconnections; and shall establish an effective, on-going program to control these undesirable water uses.

Regulated

- (1) No water service connection to any premises shall be installed or maintained by KWD system unless the water supply system is protected as required by state laws and this policy. Service of water to any premises shall be discontinued by KWD system if a backflow prevention device required by this policy is not installed, tested, and/or maintained; or if it is found that a backflow prevention device has been removed, bypassed, or if an unprotected cross connection exists on the premises. Service shall not be restored until such conditions or defects are corrected.
- (2) It shall be unlawful for any person to cause a cross connection to be made or allow one to exist for any purpose whatsoever unless the construction and operation of same have been approved by the Tennessee Department of Environment and

Conservation, and the operation of such cross connection is at all times under the direction of the manager of KWD.

- (3) If, in the judgement of the manager or his designated agent, an approved backflow prevention device is required at the water service connection to a customer's premises, or at any point(s) within the premises, to protect the potable water supply, the manager shall compel the installation, testing and maintenance of the required backflow prevention device(s) at the customer's expense.
- (4) An approved backflow prevention device shall be installed on each water service line to a customer's premises at or near the property line being served; but in all cases, before the first branch line leading off the service line.
- (5) For new installations, the manager or his designated agent shall inspect the site and/or review plans in order to assess the degree of hazard and to determine the type of backflow prevention device, if any, that will be required, and to notify the owners in writing of the required device and installation criteria. All required devices shall be installed and operational prior to the initiation of water service.
Degree of Hazard, see appendix for table
- (6) For existing premises, personnel from KWD shall conduct inspections and evaluations, and shall require correction of violations in accordance with the provisions of this policy.

New Installations

No installation, alteration, or change shall be made to any backflow prevention device connected to the public water supply for water service, fire protection or any other purpose without first contacting KWD for approval and/or payment of required fee.

An Installation/Maintenance Tag shall be installed on the device following installation and testing, and shall be removed only by personnel from KWD at the time of inspection. One copy of the Cross-Connection Control Devices Test Report shall be submitted to KWD upon completion of the installation and testing.

Existing Installations

No alteration, repair, testing or change shall be made of any existing backflow prevention device connected to the public water supply for water service, fire protection or any other purpose without first securing the appropriate approval and a *Cross Connection Control Devices Test Report and an Installation/Maintenance Tag* from KWD. The *Installation/Maintenance Tag* shall be installed on the device following alteration, repair and/or testing, and shall only be removed by personnel from KWD.

Inspections

The manager or his designated agent shall inspect all properties served by the public water supply where cross connections with the public water supply are deemed possible. The frequency of inspections and re-inspection shall be based on potential health hazards involved, and shall be established by KWD in accordance with guidelines acceptable to the Tennessee Department of Environment and Conservation.

Right of Entry for Inspections

The manager or his authorized representative shall have the right to enter, at any reasonable time, any property served by a connection to KWD public water system for the purpose of inspecting the piping system therein for cross connection, auxiliary intakes, bypasses or interconnections, or for the testing of backflow prevention devices. Upon request, the owner, lessee, or occupant of any property so served shall furnish any pertinent information regarding the piping system(s) on such property. The refusal of such information or refusal of access, when requested, shall be deemed evidence of the presence of cross connections, and shall be grounds for disconnection of water service.

Correction of Violations

- (1) Any person found to have cross connections, auxiliary intakes, bypasses or interconnections in violation of the provisions of this policy shall be allowed a reasonable time within which to comply with the provisions of this policy. After a thorough investigation of the existing conditions and an appraisal of the time required to complete the work, an appropriate amount of time shall be assigned by the manager or his representative, but in no case shall the time for corrective measures exceed thirty (30) days.
- (2) Where cross connections, auxiliary intakes, bypasses or interconnections are found that constitute an extreme hazard, with the immediate possibility of contaminating the public water system, KWD shall require that immediate corrective action be taken to eliminate the threat to the public water system. Expeditious steps shall be taken to disconnect the public water system from the on-site piping system unless the imminent hazard is immediately corrected, subject to the right to a due process hearing upon timely request. The time allowed for preparation for a due process hearing shall be relative to the risk of hazard to the public health and may follow disconnection when the risk to the public health and safety, in the opinion of the manager, warrants disconnection prior to a due process hearing.
- (3) The failure to correct conditions threatening the safety of the public water system as prohibited by this policy and Tennessee Code Annotated, Section 68-221-711, within the time limits established by the manager or his representative, shall be grounds for denial of water service. If proper protection has not been provided after a reasonable time, the manager shall give the customer legal notification that water service is to be discontinued,

and shall physically separate the public water system from the customer's on-site piping in such a manner that the two systems cannot again be connected by an unauthorized person, subject to the right of a due process hearing upon timely request. The due process hearing may follow disconnection when the risk to public health and safety, in the opinion of the manager, warrants disconnection prior to a due process hearing.

Required Devices

An approved backflow prevention assembly shall be installed downstream of the meter on each service line to a customer's premises. The location of the assembly must have prior approval by KWD.

- (1) Where the nature of the use of water supplied to a premise by KWD water system is such that it is deemed:
 - a. Impractical to provide an effective air-gap separation;
 - b. The owner/occupant of the premises cannot or is not willing to demonstrate to KWD that the water use and protective features of the plumbing are such as to pose no threat to the safety or potability of the water;
 - c. The nature and mode of operation within a premise are such that frequent alterations are made to the plumbing;
 - d. There is likelihood that protective measures may be subverted, altered or disconnected;
 - e. The nature of the premises is such that the use of the structure may change to a use wherein backflow prevention is required;
 - f. The plumbing from a private well enters the premises served by the public water system, then KWD shall require the use of an approved protective device on the water service line serving the premises to assure that any contamination that may originate in the customer's premises is contained therein.
- (2) The protective devices shall be of the type approved by the Tennessee Department of Environment and Conservation, KWD, and University of Southern California; as to manufacture, model, size and application. The method of installation of backflow prevention devices shall be approved by KWD prior to installation and shall comply with the criteria set forth in this policy. The installation and maintenance of backflow prevention devices shall be at the expense of the owner or occupant of the premises.
 - a. All assemblies approved for use in KWD system must be approved by the foundation of Cross-Connection Control and Hydraulic Research at the University of Southern California.
 - b. All backflow devices on meter lines shall be a Reduce Pressure Detector Assembly.
 - c. All backflow devices on un-metered lines shall be a Reduce Pressure Detector Assembly.
 - d. The low and high hazard classifications shall be required to install a backflow prevention device.
- (3) Applications requiring backflow prevention devices shall include, but shall not be limited to, domestic water service and/or fire flow connections for all commercial and educational

buildings, construction sites, all industrial, institutional and medical facilities, all fountains, lawn irrigation systems, wells, water softeners and other treatment systems, swimming pools and on all fire hydrant connections other than those by the fire department in combating fires. ***Degree of Hazard, see appendix for table***

- A. Class 1, Class 2 and Class 3 fire protection systems shall require reduced pressure backflow prevention devices
 - B. Class 4, Class 5 and Class 6 fire protection systems shall require reduced pressure backflow prevention devices.
 - C. Wherever fire protection system piping is not an acceptable potable water system material, or chemicals such as foam concentrates or antifreeze additives are used, a reduced pressure backflow prevention device shall be required.
- (4) The manager or his representative may require additional and/or internal backflow prevention devices wherein it is deemed necessary to protect potable water supplies within the premises.
- (5) Installation Criteria The minimum acceptable criteria for the installation of reduced pressure backflow prevention devices, double check valve assemblies or other backflow prevention devices requiring regular inspection or testing shall include the following:
- (a) All required devices shall be installed in accordance with the provisions of this policy, by a person certified by the Tennessee Department of Environment and Conservation, Division of Drinking Water Supply, or its successor. Certification shall be for *completion of special training and demonstration of competency in the installation, maintenance and testing of backflow prevention devices*. Evidence of current certification shall be required at the time of permit application and installation. **Only licensed sprinkler contractors may install, repair or test backflow prevention devices on fire protection systems.**
 - (b) All devices shall be installed in accordance with the manufacturer's instructions and shall possess appropriate test cocks, fittings, and caps required for the testing of the device. All fittings shall be of brass construction, unless otherwise approved by KWD, and shall permit direct connection to the department test equipment.
 - (c) The entire device, including valves and test cocks, shall be easily accessible for testing and repair.
 - (d) All devices shall be placed in the upright position in a horizontal run of pipe.
 - (e) Device shall be protected from freezing, vandalism, mechanical abuse and from any corrosive, sticky, greasy, abrasive or other damaging environment.
 - (f) Reduced Pressure Backflow Prevention devices shall be located a minimum of twelve (12") inches plus the nominal diameter of the device above either; 1) the floor, 2) the top of opening(s) in the enclosure or 3) maximum flood level, whichever is higher. Maximum height above the floor surface shall not exceed sixty (60") inches.

- (g) Clearance from wall surfaces or other obstructions shall be at least six (6") inches. Devices located in non-removable enclosures shall have at least twenty-four (24") inches of clearance on each side of the device for testing and repairs.
- (h) Devices shall be positioned where a discharge from the relief port will not create undesirable conditions. The relief port must never be plugged, restricted or solidly piped to the drain.
- (i) An approved air-gap shall separate the relief port from any drainage system. An approved air-gap shall be at least twice the inside diameter of the supply line, but never less than one (1") inch.
- (j) An approved strainer shall be installed immediately upstream of the backflow prevention device, except in the case of a fire protection system.
- (k) Devices shall be located in an area free from submergence or flood potential, therefore never in a below grade pit or vault. All devices shall be adequately supported to prevent sagging.
- (l) Adequate drainage shall be provided for all devices. Reduced Pressure Backflow Prevention devices shall be drained to the outside whenever possible.
- (m) Fire hydrant drains shall not be connected to the sewer, nor shall fire hydrants be installed such that backflow/back siphonage through the drain may occur.
- (n) Enclosures for outside installations shall meet the following criteria:
 - 1. For backflow prevention devices up to and including two (2") inches, the enclosure shall be constructed of:

SPECIFICATION

5052-H32 aluminum, or an approved equal material, with a minimum of 1.5" factory manufactured polyisocyanurate insulation in the walls and roof. For backflow prevention devices 2-1/2" and larger, the enclosure shall be constructed of 5052-H32 aluminum, or an approved equal material, with a minimum of 1.5" factory manufactured polyisocyanurate insulation in the walls and 3" factory manufactured polyisocyanurate insulation in the roof.

The complete assembly, including valve stems and hand wheels, shall be protected by being inside the enclosure.

- 2. To provide access for backflow prevention devices up to and including two (2") inches, the enclosure shall be completely removable. Access for backflow prevention devices 2-1/2" and larger shall be provided through a minimum of two access panels. The access panels shall be of the same height as the enclosure and shall be completely removable. All access panels shall be provided with built-in locks.

3. The enclosure shall be mounted to a concrete pad as specified by the manufacturer, but in no case less than four (4") inches thick. The enclosure shall be constructed, assembled and/or mounted in such a manner that it will remain locked and secured to the pad even if any outside fasteners are removed. All hardware and fasteners shall be constructed of 300 series stainless steel.
 4. Heating equipment, if required, shall be designed and furnished by the manufacturer of the enclosure to maintain an interior temperature of +40°F with an outside temperature of -30°F and a wind velocity of 15 miles per hour
- (o) Where the use of water is critical to the continuance of normal operations or the protection of life, property or equipment, duplicate backflow prevention devices shall be provided to avoid the necessity of discontinuing water service to test or repair the protective device. Where it is found that only one device has been installed and the continuance of service is critical, the utility shall notify, in writing, the occupant of the premises of plans to interrupt water services and arrange for the mutually acceptable time to test the device. In such cases, KWD may require the installation of a duplicate device.
- (p) KWD shall require the occupant of the premises to keep any backflow prevention devices working properly, and to make all indicated repairs promptly. Repairs shall be made by qualified personnel, possessing valid certification from the Tennessee Department of Environment and Conservation, Division of Water Supply, acceptable to KWD. Expense of such repairs shall be borne by the owner or occupant of the premises. The failure to maintain a backflow prevention device in proper working condition shall be grounds for discontinuance of water service to a premise. Likewise, the removal, bypassing or alteration of a backflow prevention device or the installation thereof, so as to render a device ineffective shall constitute a violation of this policy and shall be grounds for discontinuance of water service. Water service to such premises shall not be restored until the customer has corrected or eliminated such conditions or defects to the satisfaction of KWD.
- (6) Testing of Devices- Devices shall be tested at least annually by a qualified person possessing a valid certification from the Tennessee Department of Environment and Conservation, Division of Water Supply for the testing of such devices. A copy of this certification shall be on file with KWD for any person installing, repairing or testing backflow prevention devices. Any person installing, repairing or testing backflow prevention devices shall also maintain on file with KWD a current copy of a valid Certificate of Liability Insurance in an amount of not less than \$100,000.00. Records of all installations, repairs, and testing shall be submitted to KWD upon completion but not later than 30 days. Personnel of KWD shall have the right to inspect and/or test a device during reasonable hours. Water service shall not be disrupted to test a device without the knowledge of the occupant of the premises. All testing, inspection services and repairs are to be at the expense of the owner or occupant of the premises. Testing will be done by KWD and/or a contractor under contract with KWD.

- a. The charge for annual testing: see: *Schedule of Rates and Charges.*"

Non-potable Supplies

The potable water supply made available to a premise served by the public water system shall be protected from contamination as specified in the provisions of this policy. Any water pipe or outlet which could be used for potable or domestic purposes and which is not supplied by the potable water system must be labeled in a conspicuous manner such as:

WATER UNSAFE FOR DRINKING

The minimum acceptable sign shall have black letters at least one (1") inch high located on a red background. Color coding of pipelines, in accordance with (OSHA) Occupational Safety and Health Administration guidelines, shall be required in locations where in the judgment of the utility, such coding is necessary to identify and protect the potable water supply.

Statement Required

Any person whose premises are supplied with water from the public water system, and who also has on the same premises a well or other separate source of water supply, or who stores water in an uncovered or unsanitary storage reservoir from which the water is circulated through a piping system, shall file with KWD a statement of the nonexistence of unapproved or unauthorized cross connections, auxiliary intakes, bypasses or interconnections. Such statement shall contain an agreement that no cross connections, auxiliary intakes, bypasses or interconnections will be permitted on the premises. Such statement shall also include the location of all additional water sources utilized on the premises and how they are used. Maximum backflow protection shall be required on all public water sources supplied to the premises.

Fees

A fee shall be assessed for all backflow prevention devices requiring inspection or testing. The amount of this fee shall be set and adjusted by the utility based on the recommendations of the manager to reflect the cost of providing an effective cross connection control program. The fee shall be assessed each time a device is installed, tested or inspected. Where repeated inspections are required to correct violations or deficiencies, the fee shall be assessed each time the inspection is repeated. The fees assessed shall be as follows:

- (1) All fees and/or expenses, except the annual testing fee, will be the responsibility of the customer.
- (2) The charge for annual testing see *"Schedule of Rates and Charges"*

Penalty: Discontinuance of water supply

- (1) Any person who neglects or refused to comply with any of the provisions of this policy may be deemed guilty of a misdemeanor and subject to a fine.
- (2) Independent of and in addition to any fines or penalties imposes, the manager may discontinue the public water supply service to any premises upon which this if found to be a cross connection, auxiliary intake, bypass or interconnection; and service shall not be restored until such cross connection, auxiliary intake, bypass or interconnection has been eliminated.

Provision Applicable

The requirements contained in this policy shall apply to all premises served by KWD and are hereby made part of the conditions required to be met for KWD to provide water services to any premises. The provisions of this policy shall be rigidly enforced since it is essential for the protection of the public water distribution system against the entrance of contamination. Any person aggrieved by the action of the policy is entitled to a due process hearing upon timely request.

KWD Cross-Connection Control Plan

I. Introduction

A. Goal

The goal of Kingston Water Department (KWD) is to supply safe water to each and every customer under all foreseeable circumstances. Each instance where water is used improperly so as to create the possibility of backflow due to cross connections threatens the health and safety of customers and chances of realizing this goal. The possibility of backflow due to improper use of water within the customer's premises is especially significant because such cross connections may easily result in the contamination of our water supply mains. Such situations may result in the public water system becoming a transmitter of diseased organisms, toxic materials, or other hazardous substances that may adversely affect large numbers of people. The only protection against such occurrences is the elimination of such cross connections or the isolation of such hazards from the water supply lines by properly installed approved backflow prevention assemblies. KWD must continue maintenance of a continuing program of cross connection control to systematically and effectively prevent the contamination or pollution of all potable water systems.

B. Plan of Action

KWD is determined to take every reasonable precaution to ensure that cross connections are not allowed to contaminate the water being distributed to its customers. This cross-connection plan outlines a course of action designed to control cross connection within the area served by KWD. This plan is intended to be a practical guide for safeguarding the quality of water distributed from becoming contaminated or polluted through backflow. By following the plan of action, the water provider will ensure that all aspects of the policy on Cross Connection Control are being followed by customer.

II. Authority for Cross Connection Control

A copy of the policy, adopted date, Water Board Members is attached to this plan as Appendix 1. This policy prohibits cross connections within water systems, authorizes the water system to make inspections of the customer's premises, requires that cross-connection hazards be corrected and provides for enforcement. This policy expresses clear determination on the part of the Water Board that the water system

is to be operated free of cross-connections that endanger the health and safety of those depending upon the public water supply. This policy is considered to be a sound basis for control of cross-connection hazards by operating staff and management of KWD. The provisions, contained within this policy are in keeping with the requirements set forth in Section 68-221-711 (6) of Tennessee Code Annotated and Section 1200-5-1-17(6) of Tennessee Department of Environment and Conservation Rules governing Public Water Systems.

III. Program to be Pursued

KWD will establish an active on-going cross-connection control program. This program is to be a continuing effort to locate and correct all existing cross-connection hazards and to discourage the creation of new problems. Safeguarding the quality of water being distributed to our customers is a high priority concern of the management of KWD.

A. Staffing

KWD has designated staffing to ensure that the program to control cross-connections is pursued in an aggressive and effective manner. It is proposed that a minimum of one man at adequate time per month be allotted to the cross-connection control program initially. Depending on customer preference in scheduling, work related to the testing of devices may occur after hours or on weekends. A cross-connection control coordinator or manager and successor will be named. The Cross-Connection Control Coordinator will ensure that all aspects of the plan and policy are followed.

B. Cross-Connection Control Surveys/Inspections

A representative of the water system will survey the distribution for all customers, both residential and nonresidential, for possible cross-connections. If it is determined from the surveys that possible cross-connection may exist, the premise will be inspected. The need for backflow protection will be determined based on the results from the inspection. Notification of the type of backflow prevention assembly required and a date of compliance will be sent to the customer.

Non-Residential/Commercial

All nonresidential and commercial establishments are required to have an approved backflow preventer installed that is in agreement to the hazard present. The inspections will be performed on all new establishments before water service is established or within 30 days of connection. If there are existing establishments that have not been inspected, a list agreed upon by State (based

on risk and public safety) and time line for inspection by the water provider will be generated. All non-residential establishments not requiring an assembly will be inspected (every 5 years maximum). If establishment changes ownership (name listed on water bill), irrigation systems installed, or a well is drilled within the water provider's system, then an inspection will need to be performed (no later than 30 days). The need for backflow protection will be determined based on the results from the inspection. Notification of the type of backflow prevention assembly required and a date of compliance will be sent to the customer. (Attach a list of criteria for requiring assemblies)

Residential:

For new residential customers, a written questionnaire will be given upon request for water service. If the survey reveals that a potential cross-connection may be present, an inspection is to be performed. The need for backflow protection will be determined based on the results from the inspection. Notification of the type of backflow prevention assembly required and a date of compliance will be sent to the customer. Each new residential customer will agree to not create cross-connections and a brochure is given to each new customer describing cross-connections and the responsibility of the customer in not creating one.

If the written questionnaire reveals that the new customer may have any of the following, an inspection will be required:

1. Lawn irrigation systems
2. Residential fire protection systems (closed loop systems will require a double check valve minimum)
3. Pools, Saunas, Hot Tubs, Fountains (Hard Pipe-no air gap)
4. Auxiliary Intakes and Supplies-wells, cistern, ponds, streams, etc.
5. Home water treatment systems (Backwashes)
6. Hobbies that require extensive amounts of toxic chemicals (taxidermy, metal plating, biodiesel, ethanol production, etc.)
7. Any other situations or conditions listed in the manual or conditions deemed a threat by the water system.

Written questionnaires will be sent to existing residential customers to determine if potential cross-connections exist. Each year, the Cross-Connection Control Coordinator will be responsible for sending out a questionnaire to approximately 5% of KWD's customers. This questionnaire will contain some educational material and will also ask the customer to answer some questions relating to the potential for cross connections from

their private system to the public system. If results from the questionnaire show that an on-site inspection is warranted, then one will be scheduled at Owner's convenience. The distribution system will continue to be surveyed in this manner. Questionnaires that reveal potential cross-connections based on the criteria above will be inspected and a determination if backflow prevention assemblies are needed.

The system will be surveyed for residential lawn irrigation systems through questionnaires received and by secondary meters. All residential lawn irrigation systems will require a reduced pressure principle assembly. Residential customers with pools, saunas, hot tubs not filled by a hard pipe directly or indirectly connected may be allowed to use an air gap (and maybe requested to use an atmospheric vacuum breaker at the hose bibb). However, if the pool or vessels is connected directly or indirectly by a hard line, an RP is required at minimum.

Residential customers required to have backflow prevention assemblies will be informed of possible thermal expansion problems within the establishment and correction of the condition.

Well System Inspections:

Wells drilled on properties that are supplied by a public water system, particularly those designated for chemigation and fertigation, will need to be inspected to ensure separation or the premises will require an approved assembly.

C. Public Education and Awareness Efforts

KWD recognizes that it is important to inform its customers of the health hazards associated with cross-connections and to acquaint them with the program being pursued to safeguard the quality of water being distributed. The water system will seek to use every practical means available to acquaint the customers with the health hazards associated with cross-connections in an effort to get cooperation. Use of customer notification letters, annual customer confidence report and local video and print media will be incorporated into the notification plan. Efforts will be made to have an employee, or employees, of KWD to appear before the civic clubs, PTA's, school groups, and other appropriate forums to discuss the problem of cross-connections and the program that is being pursued for their control.

Information will be provided to all customers about cross-connection control and backflow prevention by individual pamphlets or through an article in the Consumer Confidence Report (CCR) at least once per year. A brochure will be given to all new customers requesting water service describing cross-connections and prevention of backflow.

The following measures may also be used to inform customers about the need to control cross-connections.

1. Reminders with water bills
2. Posters at the counter where the water bills are paid displayed one month out of the year.
3. Annual Consumer Confidence Report.
4. Personal visits to commercial, industrial, institutional, and agricultural customers to explain the need for controlling cross-connections.
5. Whenever possible, any such potential customer will be informed of needed cross-connection measures in the design or construction stage.

D. Customer's Responsibility

Cross-Connections, created and maintained by the customer for his convenience endanger the health and safety of all who depend upon the public water supply. Therefore, the customer who creates a cross-connection problem shall bear the expense of providing necessary backflow protection and for keeping the protective measures in good working order. This includes repair, testing, installation, etc.

- E. Where cross-connections are found to exist, KWD will require the problem to be eliminated or isolated by a properly installed, approved backflow prevention assembly to prevent the possibility of backflow into the distribution system. Such protective measures will include a backflow prevention assembly on the customer's water service line ahead of any water outlets. Every effort will be made to secure the voluntary cooperation of the customer in correcting cross-connection hazards. If voluntary action cannot be obtained within the time set forth by written notice (30 days maximum for high and low hazard, 14 days maximum for high risk high hazards) to the customer, water service will be discontinued until conditions are in line with KWD's policy for the protection of the health and safety of the water distribution system.

After surveys or inspections have been completed, the establishments will be contacted by written correspondence outlining any correction (adding or repairing backflow prevention devices) needed and the time scheduled allowed for correction of conditions. If the conditions have not been corrected by the

time allotment (30 days maximum for high and low hazard, 14 days maximum for high risk high hazards), the water service will be discontinued to the establishment, along with any fines or other penalties deemed necessary by KWD.

KWD may give additional warning of discontinuance and/or bring about penalties before the water service is discontinued. The time period for correction will be determined by KWD, based on the seriousness of the hazard and risk of contamination, ranging from immediate correction or time period of up to 30 days. The maximum allowable time for correction will be no more than 30 days. Those sites deemed high risk high hazard are corrected within a maximum limit of 14 business days, preferable immediate correction. If the conditions do not satisfy the policy within 30 days, water service will be discontinued. In the case of backflow prevention devices on fire systems, it is recommended that the fire marshal be contacted before water service is discontinued, to prevent harm to anyone in case a fire occurred in a public building. The fire marshal can condemn the building, thus not allowing anyone to enter.

Water service will not be allowed to the establishment until all corrections have been made and all conditions of the policy have been satisfied.

IV. Procedures for Inspections:

KWD hopes that its efforts to acquaint its customers with the hazards of cross-connections will be successful to the point that the customer will try to maintain their internal water delivery system free of cross-connections. It is recognized that many customers may not recognize that they have a situation that would permit backflow into the water supply lines. Therefore, a thorough investigation will be made of all premises considered likely to have cross-connections. Such inspections will involve the customer's entire water using equipment, and other system components in an effort to locate all actual and potential cross-connections. The findings will be reported to the owner or occupant in writing along with a request for needed corrective action necessary to properly protect the public water system.

A. Field Visit Procedures:

During the inspection, a field sheet will be completed showing details of significant findings. The hazards which cross-connections pose will be explained fully to the person assisting the inspection. The customer will be informed that the information gathered during the survey will be reviewed by the KWD's

management or engineering staff and that a written report containing any recommendations and requirements will be mailed to them as soon as possible.

B. Reports to Customers:

The findings of the investigation will be summarized and a written report will be sent to the person assisting in the investigation, or the ranking management official of the establishment. Cross-connections found will be described briefly along with recommended method of correction. An effort will be made to keep the description of the findings and recommendations clear, concise and as brief as possible. The correspondence will indicate a willingness to assist with questions. The customer will be given a time limit for making the needed corrections depending (maximum of 30 days) upon the seriousness of the cross-connections involved and upon the complexity and difficulty of correcting the problems.

C. Follow-up Visits and Re-inspections:

Follow-up visits will be made as needed to assist the customer and to assure that satisfactory progress has been made such visits will continue until all corrective action has been completed to the satisfaction of KWD.

D. Installation of Backflow Prevention Devices:

Where the customer is asked to install a backflow prevention assembly, the customer will be supplied with a list of acceptable and approved assemblies. In addition, minimum acceptable installation criteria will be supplied. It will be pointed out that a unit cannot be accepted until KWD has verified that the assembly has a status of Passed. Such backflow prevention assemblies must be a make, model, and orientation currently listed as acceptable by both KWD and Tennessee Department of Environment and Conservation.

E. Technical Assistance:

The customer will be urged to notify KWD when they are ready to begin installing either a reduced pressure or double check valve type backflow preventer assembly. The KWD cross-connections representative will visit the site to detail how the units must be installed to achieve the desired protection and to minimize maintenance and testing problems.

V. Premises Requiring Reduced Pressure Principle Assemblies or Air Gap Separation.

A. High Risk High Hazards

Establishments which pose significant risk of contamination or may create conditions which pose an extreme hazard of immediate concern (High Risk High Hazards), the cross-connection control inspector shall require immediate or a short amount of time (14 days maximum), depending on conditions, for corrective action to be taken. In such cases, if corrections have not been made within the time limits set forth, water service will be discontinued.

High Risk High Hazards require a reduced pressure principle (or detector) assembly. The following list is establishments deemed high risk high hazard:

1. Mortuaries, morgues, autopsy facilities
2. Hospitals, medical buildings, animal hospitals and control centers, doctor and dental offices
3. Sewage treatment facilities, water treatment, sewage and water treatment pump stations.
4. Premises with auxiliary water supplies or industrial piping systems.
5. Chemical plants (manufacturing, processing, compounding, or treatment)
6. Laboratories (industrial, commercial, medical research, school)
7. Packing and rendering houses
8. Manufacturing plants
9. Food and beverage processing plants
10. Automated car wash facilities
11. Extermination companies
12. Airports, railroads, bus terminals, piers, boat docks
13. Bulk distributors and users of pesticides, herbicides, liquid fertilizer, etc.
14. Metal plating, pickling, and anodizing operations
15. Greenhouses and nurseries
16. Commercial laundries and dry cleaners
17. Film Laboratories
18. Petroleum processes and storage plants
19. Restricted establishments
20. Schools and Educational Facilities
21. Animal feedlots, chicken houses, and CAFO's
22. Taxidermy facilities
23. Establishments which handle, process, or have extremely toxic or large amounts of toxic chemicals or use water of unknown or unsafe quality extensively.

B. High Hazard

In cases where there is less risk of contamination, or less likelihood of cross-connections contaminating the system, a time period of (30 days maximum) will

be allowed for corrections. High Hazard is a cross-connection or potential cross-connection involving any substance that could, if introduced in the public water supply, cause death, illness, and spread disease.

VI. Premises Allowing Double Check Valve Assemblies

Low Hazard

Low hazard is a cross-connection or potential cross-connection involving any substance that would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the public water supply. Low Hazards are protected by double check valve assemblies at minimum. Double check valve (and detector) assemblies used for main line protection are allowed only on Classes 1-3 fire protection systems.

VII. Inspection and Testing of Backflow Prevention Assemblies

A. Approval of New Installations

The Water System will not consider the installation of assemblies to be complete until:

1. The installation has been inspected, and approved by KWD based installation criteria; and
2. Assembly is tested initially and has a status of Passed.

B. Routine Inspection and Testing of Assemblies

To assure that all assemblies are functioning properly, assemblies will be tested within a 12-month period (no more than 365 days from last test) by backflow prevention assembly testers with a valid Certificate of competency. If assembly is not tested within the 12-month period, enforcement action will be started. In conjunction with testing the assembly, the KWD representative or approved tester will investigate to determine:

1. That cross-connections, actual or potential, have not been added ahead of the protective assemblies,
2. The assembly meets all installation criteria; and
3. The assembly has not been bypassed or altered in some other way to compromise the backflow protection.

All reduced pressure and double check valve backflow prevention assemblies, including detector assemblies, utilized for the protection of the water system will

be tested by a person possession a valid Certificate of Competency from the State and approved by KWD in keeping with the following criteria:

1. Immediately following installation;
2. At least every 12 months;
3. Any time assemblies have been partially disassembled for cleaning and/or repair and;
4. Where there is indication that the unit may not be functioning properly (i.e. excessive or continuous discharges from relief valve, chatter, or vibration of internal parts).

C. Accepted Test Procedure

Tests of assemblies will be made using a 3 or 5 valve test kit that has valid annual certification in accordance to the latest approved testing procedure from the Division of Water Supply.

D. Official Tests

Only tests performed by persons possession a valid Certificate of Competency will be considered official tests by KWD. All test reports submitted must be of the type approved by the Division of Water Supply. All parts of testing procedure are recorded accurately on the test report with a determination of status (Passed or Failed). Certificates of Competency are not transferrable.

E. Prior Arrangements for Testing

Prior arrangements will be made for a mutually agreeable time for testing the assemblies prior to performing the test. In call cases, the time which water services are interrupted will be held to a minimum in order to minimize the inconvenience to the customer. The customer, upon notification by KWD, has an obligation to work out a mutually agreeable time for testing assemblies within time allotted by KWD.

F. Repairs

Should a protective assembly not be tested within the 12 month time frame be found defective or have a status of Failed, the water system will require the assembly to be repaired promptly with manufacturer's specified parts, in accordance to manufacturer's suggested procedure, and placed in proper operating condition within a (specified) time limit (maximum 30 days, 14 days for high risk high hazards). Following repairs, the assembly is to be tested again to verify that it is meeting performance standards and have a status of Passed. The owner will be held responsible for maintaining protective measures in a good state of repairs. The owner of an assembly needing repairs or maintenance will

be permitted to do the work, if such owner is properly qualified or the owner may elect to secure the services of someone else experienced in the repair of assemblies.

VIII. Parallel Units

KWD may require the installation of parallel assemblies if the customer cannot readily accommodate interruptions of water service for periodic testing and repairs of the assemblies or is unwilling to cooperate in scheduling a shut-down promptly for testing during normal hours worked by KWD personnel.

IX. Records

Good records are invaluable in KWD's efforts to safeguard the quality of water being distributed against degradation from backflow through cross-connections.

Adequate records will be maintained as a part of KWD's permanent files to:

- A. Document the overall effort of KWD to properly discharge its responsibility to see that each customer receives a safe water under all foreseeable circumstances;
- B. Give a complete picture as to the current status and history of the individual premises regarding the potential for backflow, corrections made, etc.;
- C. To support enforcement action, whenever necessary, to obtain backflow protection; and
- D. Document that assemblies have been properly installed, maintained, and tested routinely.

Records to be maintained by KWD will include, but not necessarily be limited to the following:

- A. Master List of all Establishments with assemblies used for premise isolation, including location, assembly used, make, model, size, serial number etc.;
- B. Correspondence between KWD and its customers
- C. Copy of Approved Plan
- D. Copy of Approved Policy
- E. Test reports for each assembly
- F. Copies of Certificates of Competency for each tester
- G. Copies of test kit certifications
- H. Site Inspection Reports
- I. Residential written surveys
- J. Backflow incident reports
- K. Records on initial surveys, recommendations, follow-up, corrective action, routine re-inspections, etc.
- L. A file system designed to call to the attention of the cross-connection control personnel when testing and re-inspections of premises are needed.

M. Public education pamphlets and information.

X. Backflow Contamination Procedures:

If contamination is caused by backflow, KWD will take the following actions to protect the health of the customer:

- A. Isolate the lines containing any contaminant from the distribution system/
- B. Inform customers with contaminated lines not to consume or use the water;
- C. Report contamination to the Local Field Office;
- D. Determine and separate the cross-connection allowing the backflow and contamination;
- E. Remove contamination from lines;
- F. Test and ensure that lines meet Division of Water Supply regulation for safe water;
- G. Return service to customers affected once water is safe;
- H. Document the details of the incident including cause, isolation, and correction, and send report to Local Field Office;
- I. Continue to survey and inspect system for similar situations that may allow backflow.

XI. Modifications to Plan

This plan may be modified from time to time to meet the needs of KWD and to meet the states requirements. The plan and policy will be reviewed by KWD every five (5) years to determine if the existing plan meets requirements set forth by the Division of Water Supply and that it promotes an ongoing program. The manager shall be authorized to modify, as needed this plan without the approval of KWD's governing body. The manager shall report any modifications to this plan to the board for their information, in a timely manner. The manager shall also advise the Local Field Office of any changes to this plan for their review and comments.

INSTALLATION CRITERIA
FOR
REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLIES

MINIMUM INSTALLATION REQUIREMENTS ARE UNDERLINED, ALL OTHER ARE SUGGESTIONS OR ITEMS TO CONSIDER:

- A. The RP assemblies should never be subject to flooding; therefore should:
1. Never be located in a pit or other area subject to flooding.
 2. Avoid piped drains for enclosures housing the units. Provision should be made for discharging water (maximum design discharge) directly through the wall of the enclosure housing the unit at a slightly higher elevation than surrounding ground level or maximum flood level.
 3. The lowest part of the relief valve discharge port should be a minimum of 12 inches above either;
 1. The ground
 2. Top of the opening(s) in enclosure wall
 3. Maximum flood level

Whichever is highest, in order to prevent any part of the assembly from becoming submerged.

- B. All new backflow prevention assemblies being installed in Tennessee for the protection of a public water system should be included on the latest listing of "Approved Backflow Prevention Assemblies" maintained by the Division of Water Supply.
- C. The assemblies should be installed where the units can be easily tested and repaired.
1. Installation of assemblies 2" and less there must be a minimum of six-inch clearance from all walls. Assemblies over 2" must be a minimum of twelve inches from all walls.
 2. Assemblies installed in stationary enclosures should have at least a 2 ft. clearance on each side of the assembly to facilitate testing and servicing. Adequate drainage must be provided.
 3. Assemblies should not be installed higher than 5 ft. from the floor/ground to the center line of the assembly unless safe permanent access is provided for testing and servicing.
- D. The pipeline should be thoroughly flushed to remove foreign material and debris.
A strainer should be added on the inlet side of the assembly before installation except for fire protection service lines.
- E. Installation of backflow prevention assemblies will not allow any unprotected or uninspected connections in front of the backflow prevention assembly.

- F. Backflow preventers should be installed with unions and isolation valves on both ends of the assembly to allow removal of the assembly for repair or replacement.
- G. Provisions should be made to protect the assemblies from freezing. Insulating materials should not restrict the relief valve discharge or accessibility to test cocks or name plate of the unit. All enclosures should be designed to provide for adequate draining for the relief valve.
- H. The relief valve of an RP should never be plugged, restricted, or solidly piped to a drain, ditch or pump. Rigidly secured air-gap funnels may be used to direct discharges away from the unit provided an approved air-gap separation is provided at the relief valve discharge and again at the discharge end of the drainpipe. An adequate area drain is recommended to handle the maximum relief valve flow to prevent flooding.
- I. The test cocks, valve stems, or name plates should not be painted and their accessibility, operation of legibility should not be hampered nor the relief valve discharge passage be restricted by insulation or other coverings.
- J. The assemblies should be installed in an approved position as listed in the Latest Approved List and special supports added if needed.
- K. For applications where water temperatures exceed 110* F (43*C) only approved hot water devices are to be used.
- L. Prior to completing the installation, temperature pressure relief valves on heating vessels should be properly installed and in good working condition. If needed, thermal expansion tanks should be installed.
- M. No unprotected bypasses or connections are made between the assembly and meter.
Existing assemblies not meeting the minimum requirements above, with the exception of being installed in an area that may allow flooding of the assembly, may be allowed variances by KWD. However, no variance may be allowed that will compromise the protection of the assembly or that will allow contaminants in the distribution system. All variances should be documented and kept on file for the life of the assembly. Please review the document entitled: Approved Backflow Prevention Assemblies.

TYPICAL CROSS CONNECTION HAZARDS

Actual or potential cross connection hazards may be present within almost every water using premises. To better understand and become aware of these hazards, the following examples are provided.

A. Common Facilities and Systems Likely to have Cross Connection Hazards:

1. Auxiliary Water Systems

Any premises or facility with an alternate water supply on or available to the premises. Water stored in reservoirs that are not properly protected or circulated is considered an auxiliary supply.

2. Food Processing

Pressure cookers, autoclaves, retorts, and other steam connected facilities.

3. Cooling systems Single Pass

Compressors, heat exchangers, air-conditioning equipment, and other water-cooled equipment that may be sewer connected.

4. Farming Operations

Poultry houses, chicken houses with automatic proportioning pumps or feeder barrels for supplying water with live virus or other medication, livestock watering troughs with below the rim filling outlet, diluting and mixing of pesticides and insecticides, mixing and spray equipment, greenhouses, dilution of liquid fertilizers, dairies, unprotected hose bibbs.

5. Fire Protection Systems

- Piping systems and storage reservoirs that may be treated for prevention of scale formation, corrosion, algae, or slime.
- Piping systems that contain non-potable plumbing materials.
- Booster pumps without suction pressure sustaining valves or low suction pressure cutoff switches.
- Sprinkler systems filled with antifreeze solutions. Piping systems filled with chemical compounds used in fighting fires.
- Fire systems with an auxiliary source of supply or which are located within 1700 ft. of streams, lakes, ponds, reservoirs, or other non-potable waters that could be utilized in emergencies.

6. Film Processing

Automatic film processing machines, tanks, vats, and other facilities used in processing film.

7. Hydraulic Test Facilities

Hydraulic test equipment using pumps, rams, pressure cylinders, or other hydraulic principles, which may force liquids back into the public water system.

Piping systems, tanks, and other equipment where the public water system pressure is used directly and which may be subject to backpressure.

8. Industrial Piping Systems

Industrial piping systems containing chemicals, gases, cutting or hydraulic fluids, coolants, antifreeze, hydrocarbon products, glycerin, paraffin, caustic or acid solutions and other substances.

9. Industrial Systems-Chemical Contamination

Tanks, can and bottle washing machines, and piping systems where caustics, acids, detergents, and other compounds are used in cleaning, sterilizing and flushing

10. Residential or Commercial lawn irrigation systems.

Irrigation systems equipped with pumps, injectors, pressurized tanks, or other facilities for injecting agricultural chemicals, such as fungicides, pesticides, herbicides, and other toxic or objectionable substances, require immediate protection.

11. Laundry and Dyeing Facilities

- Laundry machines having under rim or bottom inlets, dry cleaning equipment, solvent reclaim facilities.
- Wash water storage tanks equipped with re-circulating pumps
- Dye vats in which toxic chemicals and dyes are used.
- Shrinking, bluing, and dyeing machines directly connected to re-circulating systems.
- Boilers, steam lines, and heat exchangers.

12. Paper Processing

Pulp, bleaching, dyeing, and processing facilities that may be contaminated with toxic chemicals.

13. Petroleum Processing

Steam boilers, steam lines, mud pumps and mud tanks, oil well casing used for dampening gas pressures, dehydration tanks, oil and gas tanks in which hydraulic pressures are used to raise oil and gas levels, gas and oil lines used for testing, excavating, and slugging.

14. Plating Facilities

- Plating facilities using highly toxic cyanides, heavy metals, such as copper, cadmium, chrome, acids and caustic solutions.
- Plating solution filtering equipment with pumps and circulating lines.
- Tanks, vats, or other vessels used in painting, descaling, anodizing, cleaning, stripping, oxidizing, etching, pickling, dipping, and rinsing operations and lines used for transferring fluids.

15. Storage Tanks, Cooling Towers, and Circulating Systems

Storage tanks, cooling towers, reservoirs, and circulatory systems contaminated with bird droppings, algae, slimes, or with water treatment compounds, such as copper, chromate, phenols, and mercury.

16. Sewerage Systems

- Cross connections to sewage pumps for priming, water seal lubrication, cleaning, flushing, or unclogging.
- Water-operated sewage pump ejectors.
- Sewer lines used for disposing of filter or softener backwash, water from cooling systems, or for providing a quick drain for building lines and lines used for flushing or blowing out obstructions in sewer lines.

17. Steam Generation Facilities

Steam generating facilities and lines which may be contaminated with boiler compounds, heat exchangers, single wall steam heated water heating equipment.

18. Hospital-Medical Facilities

- Unprotected connections to bedpan washers, hydrotherapy tubs, toilets, urinals, autopsy and mortuary equipment, aspirators, x-ray and photo processing equipment, vacuum pump seals.
- Unprotected connections to laboratory equipment which may be chemically or bacteriologically contaminated, such as steam sterilizers, autoclaves, specimen tanks, and pipette washers.

B. Equipment posing significant risk of creating cross-connections.

Establishments with equipment list will normally require premise isolation with a Reduced Pressure Principle Assembly or Double check Valve Assembly depending on hazard unless otherwise found to have an appropriate air gap.

Many devices or equipment below may be designed and constructed with approved air gaps that would adequately protect the water system. However, the cross-connection control inspector should consider and make judgments on the amount risk that the establishment poses to the distribution and not solely on the presence or absence of the devices, situations, or equipment listed below.

The following is an incomplete list of equipment normally requiring backflow prevention assemblies, it is to be noted that any connection with piping, equipment, or devices that contain or may contain substances that are pollutants or contaminants will require premises isolation.

Air conditioning systems (using water for processing)
Aspirators
Air lines
Autoclaves and sterilizers
Auxiliary systems
Baptismal tanks
Bathtubs (Hard Piped)
Bedpan washers
Bidets
Booster pumps
Brine tanks, softeners
Boilers
Car wash equipment
Chemical feeders
Chillers
Chlorination equipment
Coffee urns
Commercial cookers
Condensers
Compressors
Cooling systems
Cooling towers
Culture vats
Cuspidor, dental
Developing equipment
Dishwashers
Display fountains
Drinking fountains
Ejectors, steam or water
Extractors
Fire Protection systems, standpipes, sprinkler systems and drain lines
Fish tanks, ponds
Floor drains
Food missing tanks
Frost-free toilets, hydrants, and fountains
Garbage grinders
Garbage can washers
Garden sprayers
Heat exchangers
Humidity controls
Hydraulic equipment

Hydraulic insecticide or fertilizer applicators
Hydraulic lifts
Ice makers
Irrigation systems, lawn sprinklers
Kitchen equipment
Laboratory equipment
Laundry equipment
Lavatories
Lawn sprinklers
Liquid handling systems
Lubrication, pump bearings
Medical equipment
Pest control equipment
Photo laboratory sinks
Potato peelers
Pressure cookers
Process water circulation systems
Pump, priming systems
Sewer flush tanks
Shampoo sinks, basins
Showers, telephone type shower heads
Sinks, slop sings
Soda fountains
Solar water and space heating equipment
Steam boilers
Steam tables
Stop and waste vales
Swimming pools, ponds, fountains
Tank and vats
Therapeutic tanks, spas, and hot tubs
Threaded hose bibbs
Toilets, flushometer, flush tank, ballcock, flush valve siphon jet
Vegetable peelers
Vacuum systems
Urinals (siphon set blowout)
Vacuum systems (water operated with water seals)
Water treatment devices
Water troughs
Water-using mechanical equipment
Water Jacketed tanks, vats, cookers

C. Premises, facilities or establishments that pose a significant risk of cross-connection.

Reduced Pressure Backflow Prevention Assemblies required for premises isolation

Agricultural processing facilities
 Aircraft and missile plants
 Amusement parks
 Animal hospitals and clinics
 Automotive plants
 Auxiliary water systems
 Autopsy facilities
 Beverage bottling plants
 Breweries
 Buildings (multistory)-hotels, apartment houses, public and private buildings, or structures having unprotected cross connections
 Campgrounds
 Canneries
 Car washes
 Chemical plants-manufacturing, processing, compounding, treatment, packing, storage
 Chemically contaminated water systems
 Civil works
 Clinics
 Cold storage plants
 Dairies, creameries
 Dry cleaners
 Dental buildings
 Dye works
 Extermination Companies
 Fertilizer plants
 Fertilizer (liquid) and spray distributors
 Film laboratories
 Fire sprinkler systems
 Funeral homes
 Hospitals
 Laboratories
 Laundries and dye works
 Lawn irrigation systems
 Medical buildings
 Metal manufacturing, cleaning, processing, and fabricating plant
 Mortuaries

Morgues
 Motion picture studio
 Nursing home or convalescent homes
 Greenhouses, plant nurseries
 Oil and gas production, storage, or transmission facilities
 Oil refineries
 Packing houses
 Paper and paper product plants
 Plating plants
 Power plants
 Private wells
 Radioactive materials or substances-plants or facilities that process or use radioactive materials
 Reduction plants
 Restricted, classified, or other closed facilities
 Rubber plants
 Sand and gravel plants
 Schools and colleges
 Sewage pumping stations
 Storm water pumping stations
 Hard plumbed swimming pools, ponds, and fountains
 Tanneries of all kinds
 Therapeutic tanks, spas, and hot tubs
 Vegetable and food processing facilities
 Waterfront facilities and industries
 Water treatment plants
 Wastewater treatment plants
 Water using recreational facilities (swimming pools, water slides)

- D. Other situations or conditions that pose a significant risk of contamination:
1. The degree of hazard involved
 2. The likelihood of frequent and/or unapproved plumbing changes
 3. The probability of frequent modification of water using equipment
 4. The complexity of the internal piping system
 5. The difficulty in making frequent inspections to verify that the internal protection provided is being adequately maintained.
 6. The likelihood of protective assemblies being rendered ineffective
 7. The ease of access to premises
 8. The time necessary to inspect all water outlets not protected by a backflow prevention assembly.

9. The time needed to inspect the facility at least annually to determine if new cross connections have been created.

WELL USER AGREEMENT
OF NON-USE OR CONNECTION TO THE PUBLIC WATER
SUPPLY

In accordance with KWD's Cross-Connection Control program and state law, a private well or auxiliary water source may not be connected in any manner to the public water supply unless proper protection against cross connection is provided. Only a Reduced Pressure Backflow Preventer or an approved air gap (complete separation from public water supply) may be used for protection. These devices must have prior approval by KWD. Customers using the public water supply and not in compliance with this rule will have their water service disconnected.

Check appropriate box:

☐ This serves as notification that a well is located on the property at the following address:

☐ This serves as notification that a well is not located on the property at the following address:

Complete Address:

I (we) understand and agree that this system is, and shall remain totally segregated from the public water supply, and no unapproved or unauthorized cross connections, auxiliary intakes, bypasses, or interconnections with any type of irrigation systems or otherwise will be permitted without the proper cross connection control device and approval of KWD.

I (we) further understand and agree that should an auxiliary water supply be connected to the public water system at the above address, maximum cross connection control equipment in the form of an approved air gap or reduced pressure backflow prevention device shall be installed to protect the public water supply.

Date:

Name:

Notary:

Signature:

Commission Expires:

Title of Policy:	Customer Fees, Rates, and Charges	<u>Pg 1-3</u>
Section #:	Section 11	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 11.1

****SEE APPENDIX FOR RATE/FEE SCHEDULE****

POLICY STATEMENT

Charges for New Service

A "New Customer" is defined as an owner or tenant who has not had KWD service in their name since 2000

1...Any customer or potential customer desiring utility service from KWD shall fill out a CUSTOMER APPLICATION FORM. The fee associated with the application is NOT a security deposit and is NOT refundable unless KWD cannot, within a reasonable period of time, provide service.

2...The landlord and/or Realty Company shall fill out a CUSTOMER APPLICATION FORM, have a valid photo ID on file, have the property ownership documentation on file or Realty Company is to have the contract to sale or manage the property on file in the office.

- The fee associated with the application is NOT a security deposit and is NOT refundable unless KWD cannot, within a reasonable period of time, provide service.
- The Landlord and/or Realty Company will pay the "Landlord Service Charge" fee to have the water turned on and will be handled as a regular customer.
- Failure to comply with this policy will make this policy null and void in the future to the Landlord and/or Realty Company that did not comply.

3...A tap fee is a charge made when utility service is initially run from the main line to the customer's property line and/or close proximity. The exact location will be at the discretion of KWD. The ownership of the tap is conveyed along with the property.

4...Multiple dwellings on one (1) property on one (1) water meter will be on a case by case basis, examples include but not limited to, trailers, apartments, RV's, etc

5...A residential or commercial/industrial tap shall entitle a customer to utility service to one and only one dwelling or business. If a second residential dwelling or business is to receive service on the same or neighboring tract, a second tap must be obtained.

6...If any customer fails to disconnect any additional dwellings during the allotted time period, the customer's service shall be disconnected for violation of the rules and regulations of KWD at the convenience of KWD.

Temporary or Seasonal Charges

7...Customers requiring temporary service shall pay all costs of connecting and disconnecting service, in addition to the regular charge for water used, provided such temporary service can be feasibly provided at the discretion of KWD.

8...The customer shall pay all costs for the discontinuance and reinstatement of service for temporary repairs and for any other purposes for the customer's exclusive benefit. This fee will be at least "Representative Service Charge."

9...If a customer wishes service to be temporarily turned off, he/she must contact KWD in person or in writing. Depending on the duration of the cut-off, KWD will valve off or remove the meter, at its discretion. In either case there is a service fee for the reinstatement of service (see Schedule of Rates and Charges)

10...As long as the account is active, a minimum bill will be assessed at each billing period. (The minimum bill reflects each customer's share of the overhead to operate the system). By keeping the account active, the customer can demand service at any time and therefore must share in the costs.

Miscellaneous Charges

11...If full payment is not received in accordance with KWD's policies on the date noted on the bill, the customer must pay the gross amount shown on the bill. *See Billing and Payment Policy paragraph #3 for details.*

12... *See Billing/Leak Adjustments Policy* for testing of meters and charges.

13... If a customer check is returned to KWD by a financial institution for any reason, an additional fee will be added to the amount due; the fee will be the maximum that the state allows:

- a) If for insufficient funds current bills, the customer will be notified that the check is being held, and the customer may be required to pay the amount by money order, cashier's check, cash, credit card, at the discretion of KWD staff, and must be paid to KWD's office.
- b) If for Closed Account or Frozen Account, the water service will be cut off immediately without notice.
- c) If customer pays past due bill with a check and it is returned for any reason, KWD will cut-off customers water service immediately without notice. Customer will then be required to pay all fees in accordance with KWD's "Discontinuance of Service (Cut-offs) Policy."

When KWD has discontinued service for Insufficient Funds, Closed Account or Frozen Account, KWD will follow the "Discontinuance of Service (Cut off) Policy.

14...If a customer who writes two (2) bad checks within a six (6) month period, the customer must pay their bills by money order, cashier's check, cash, or credit card only. This is to be mailed to or paid at KWD's office.

15...If KWD receives any return checks in the future from the customer who abuses this policy, the customer's water service can be discontinued without notice. A service charge, plus return check charge, and the amount of the return check will have to be paid, see paragraph fourteen (14) for the payment options, only during regular office hours at KWD office, Monday through Friday. See *"Discontinuance of Service (Cut-offs) Policy reconnections of service.*

16...When a customer requests KWD to come back after the water meter has been unlocked and turned on, because they do not have water at no fault of the KWD, such as the customer's shutoff valve being turned off, customer gives the wrong service address, the customer has tampered with the meter, etc., KWD has the right to charge an additional service charge of, "Representative Service Charge". See "Schedule of Rates and Charges".

17...KWD will allow a name change on all residential active accounts at no charge to the customer, under certain conditions, must provide proof for the following:

- a) In the case that a customer dies, his/her surviving spouse may have the account put in his/her name by signing a new application for service.
- b) In the case of a divorce the remaining wife/husband may have the account put in his/her name by signing a new application for service.
- c) In the case of marriage, the customer(s) may sign a new application for service.

Title of Policy:	Discontinuance of Service (Cut-Offs)	<u>Pg 1-3</u>
Section #:	Section 12	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 12.1

POLICY STATEMENT

1. Reasons for Discontinuance of Service:
 - (a) Nonpayment of bill or other charges;
 - (b) Partial payment of bill or other charges;
 - (c) Failure to comply with utility rules, regulations or policies;
 - (d) Any threat to public health on the customer's premises which may endanger other customers;
 - (e) Tampering with utility equipment or stealing service;

2. A "final notice" **will not** be mailed if payment is not received by the due date

3. Service cut-offs for non-payment or partial payment of bills, amounts that are at fifteen (15) dollars or more, will begin the first working day after the 20th day of the month. Service cut-offs will be handled in accordance with Kingston Water Department's (KWD's) workload.

4. When a customer receives a bill and considers the bill to be incorrect, the customer may request a review of the bill. To request a review, the customer must contact any clerical employee of KWD in person or by telephone within ten days prior to the due date. The customer's service will not be discontinued for failure to pay a disputed bill until after the customer has the opportunity to meet with a KWD employee.

For the benefit of the customer, normal service cut-offs will not be made on a Friday or on the day immediately preceding a holiday that KWD observes.

5. In the following situations KWD reserves the right to discontinue service without customer notice:
 - (a) When in the opinion of the Manager a situation exists that may endanger public health;
 - (b) Where there is evidence of tampering with KWD equipment or stealing of service;
 - (c) Where it is discovered that a misrepresentation of identity was made in obtaining service.

6. Service will be reinstated on the day of cutoffs if payment is made by 4:00 pm. After cutoff day, service will be reinstated only during regular working hours, Monday through Friday.
7. KWD bills are recurring charges. Failure by the customer to receive a utility bill will not entitle the customer to be relieved of payment.
8. The customer shall pay all costs for the discontinuance of service and any reconnection. The charges for these services are shown in the Schedule of Rates and Charges.
9. Discontinuance of service by KWD shall not release the customer from liability for payment for service already received or from liability from payments that thereafter become due under the minimum bill provisions or other provisions of the customer's contract.
10. KWD shall not be liable for any loss or damage resulting from the discontinuance of service.
11. KWD shall not disconnect the service to any Customer on a life support system or dialysis machine in accordance with this Policy. It is the responsibility of the Customer to notify and provide documentation to KWD if service discontinuance would be life threatening. After notification, KWD will flag the Customer's account and meter as an "Emergency Medical Service" to ensure that the service is not cut off by KWD or others in accordance with this Policy.

If an emergency medical service customer cannot pay a bill or other charge, it shall be the customer's responsibility to find a social service agency or charitable group to assist the customer to prevent the eventual discontinuance of service for nonpayment. Qualifying customers may apply for KWD's "Neighbors helping Neighbors" Program contingent on available funds.

12. The customer(s) whose name appears on the application for service is (are) the customer(s) responsible for payment of all charges. That customer is also responsible for any rules or policy violations that occur regarding the utility service to that property. Personal participation by the customer in any such violation shall not be necessary to impose personal responsibility on the customer.
13. In the event any customer fails to pay any utility fee or charge, the customer shall pay all costs of collection including court costs and reasonable attorney's fees incurred by KWD in collecting such sums.
14. KWD shall have the right to refuse to render service to an applicant or to any member of an applicant's household who is living at the same address whenever such person(s) is (are)

delinquent on any payment to KWD or had his/her service discontinued because of a violation of the regulations or policies of KWD.

15. The customer in whose name the service is furnished may request termination of service by mail or in person at the office of KWD.
16. Each customer must give a minimum of a one (1) day written notice to KWD of service termination. The customer will be responsible for all charges which accrue to the end of the period including the minimum charge.
17. Where KWD service is being furnished to an occupant of premises under a contract not in the occupant's name, KWD reserves the right to impose the following conditions on the right of the customer to discontinue service under such a contract.
 - (a) Written notice of the customer's desire for such service to be continued may be required.
 - (b) KWD shall have the right to continue such service for a period not to exceed two (2) business days after receipt of such written notice, during which time the customer will be responsible to KWD for all charges for such service.
18. When KWD has discontinued service for nonpayment, KWD may collect all due and past due amounts, plus a service charge before service is reconnected. See "Schedule of Rates and Charges."

Title of Policy:	Eminent Domain	<u>Pg 1-3</u>
Section #:	Section 13	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 13.1

BACKGROUND AND PURPOSE

Utility districts, counties and municipalities with the power to provide utility services have the power to condemn property needed to provide utility services. This power to condemn property is called the Power of Eminent Domain.

When a Utility must acquire an easement, personal property, or real property to provide service to its Customers, condemnation should be a last resort to acquire such property. Tennessee law provides more than one procedure which can be followed to condemn an easement or a piece of property. After the Utility determines that a condemnation petition must be filed, the Utility should consult with its attorney about the best procedure to following each individual case.

RECORD RETENTION

When an easement or piece of real property is acquired by condemnation, the Utility shall make a certified copy of the order condemning the easement or property as a permanent record. The condemnation order is the instrument which vests the Utility with the easement or property condemned and should be placed with the Utility's other deeds and easements.

POLICY

1. Normally, the City Manager will determine that KWD must acquire an easement or property.
2. Unless the City Manager has already been given specific authority to negotiate for the acquisition of the easement or property, the City Manager should advise KWD's Governing Board of the need for the easement or property.
3. The Board should give the City Manager or some other designee the power to negotiate for the acquisition of the easement or property setting forth the purchase price and other parameters which the City Manager or his designee shall use to negotiate for the acquisition.
4. If possible, the City Manager or the Board's designee shall communicate personally with the property owner to describe KWD's need for the easement or property.
5. The City Manager or the Board's designee should have the written easement or contract to purchase the read property ready to present to the property owner for execution before the first communication with the property owner.

6. The City Manager or the Board's designee shall negotiate for the easement or property within the parameters set by the Board.
7. In the event the City Manager or the Board's designee successfully negotiates the acquisition of an easement, the City Manager or the Board's designee shall have the property owner sign the easement. In the event the City Manager or the Board's designee successfully negotiates the purchase of property, the City Manager shall have the owner execute the agreement and shall deliver to the Board the original contract for its execution.
8. The Board may delegate to one of its members, the City Manager, or other designee the power to execute any instruments to convey the property to the utility.
9. In the event the City Manager or the Board's designee is not able to negotiate for the easement or property within the parameters set by the Board, the City Manager or the Board's designee shall report to the Board on the progress of the negotiations.
10. The Board may establish new parameters for the acquisition of the easement or property and permit the City Manager or its designee to negotiate within these new parameters or determine that the easement or property be condemned.
11. Before the condemnation petition is filed, the City Manager or the Board's designee shall write the property owner to advise him/her that the easement or property must be condemned and to encourage the property owner to accept KWD's final offer to avoid the expense of litigation.
12. In the event the Board determines that the easement or property should be condemned, the Board shall pass a resolution authorizing the condemnation.
13. The Board, The City Manager, or the Board's designee shall contact KWD's attorney and advise him or her to file the condemnation petition and shall provide the attorney all the information needed to file the petition.
14. When time is of the essence and circumstances do not permit KWD to follow these procedures to condemn an easement or piece of property, KWD should consult its attorney to determine the appropriate course of action when expedited procedures are necessary.

Sample Letter to Property Owner

Date:

Property Owner

Address:

Re: condemnation of Easement (or property)

Dear Property Owner:

I have previously communicated with you regarding Kingston Water Department's need to acquire an easement (or Real Property) from you. The City of Kingston Water Board has authorized me to make a final offer of \$_____ to acquire this easement (or Property) from you.

In the event you decide not to accept this final offer, the Kingston Water Department will have no alternative except to file a petition to condemn the easement across your property (or the Property). Under Tennessee law, the Kingston Water Department has the power to condemn the easement (or Property) and the only question in dispute would be the value of the easement (or Property) being taken. The filing of the condemnation petition will require both you and the Kingston Water Department to hire legal counsel to file the petition and defend the petition. In addition, both parties will be required to hire expert appraisers to support their valuation of the property. Therefore, litigation of the taking of the easement (or Property) will be expensive for both parties and seems unnecessary.

Sincerely yours,

Kingston City Manager

Enclosure

Title of Policy:	Fire Hydrant Use Policy	<u>Pg 1-4</u>
Section #:	Section 14	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 14.1

POLICY STATEMENT

Use of Kingston Water Department (KWD) fire hydrants by any one other than authorized fire departments and utility personnel is prohibited.

1. KWD reserves the right to install and approve the installation of all fire hydrants at any place within its system as it deems necessary and appropriate and to refuse to allow hydrants on all or any part of the system if it is determined that the system cannot adequately support such hydrants.
2. KWD reserves the right to approve the location and specifications of fire hydrants and appurtenances on all lines furnished by others in subdivisions, commercial or industrial areas or other such locations.
3. Any fire department wishing to use the district fire hydrants for any reason other than fires or emergencies must make the request in writing and must receive district conditions and approval in writing before using any fire hydrants. This includes any fire department connecting to any fire hydrant for training.
4. All fire departments will submit a monthly water report whether water is used or not used. This report will state which fire hydrant was used, the time and date, and amount of water used. This report is due by the end of the first week of the month following the reporting period. The report should run by calendar month. (i.e....January 1st through January 31st). Fire departments must use KWD's form for reporting, KWD will approve an alternate form submitted by the Fire Department for reporting. *See appendix for form.*
5. All fire hydrants and appurtenances shall be installed either by KWD or by an approved contractor, with installation meeting KWD specifications.
6. All main fire hydrants of size 4 ½ inch or greater, will be installed on water main sizes of 6 inch or greater.
7. For Fire Hydrants being installed on KWD water system, the following must be issued in writing to KWD:
 - A) Request for the installation of fire hydrant
 - B) Location where hydrant is to be installed
 - C) Confirmation that the area has been marked at physical address of hydrant to be installed.
 - D) Purchase Order for hydrant

8. Customers must pay for all labor and materials necessary to properly install fire hydrants that are not normally supplied by the utility.
9. No fire hydrant shall be operated by anyone other than authorized fire department or KWD personnel, without the written consent of KWD.
10. Fire hydrants shall be operated only with a wrench that is approved by KWD.
11. The user will be provided with the following equipment for use while obtaining water from the hydrant permitted.
 - A fire hydrant meter assembly; and/or
 - backflow preventer assembly

The user will provide support for the meter assembly when attached to the hydrant. The user must NOT allow the weight of the unit to be borne by the hydrant nozzle.

After setting up the hydrant meter assembly, the user will open the hydrant completely to avoid damage to hydrant setting. The user will NOT use the hydrant main valve to control flows.

12. Fire hydrant Pumper Nozzle Cap and Hose Nozzle Caps are to be put back on after each use.
13. Fire hydrants shall be color coded by either painting the entire hydrant, painting the nozzle caps or attaching weather resistant color-coded tags to the nozzles according to the following standard, at 20 psi residual pressure:
 - (a) All fire hydrant Bonnets within the KWD district shall be color coded for flow in GPM as follows:
 - Class AA: Hydrants that on individual test usually have a flow capacity of 1,500 gpm or greater shall be painted light blue
 - Class A: Hydrants that on individual tests usually have a flow capacity of 1,000 to 1,499 gpm shall be painted green
 - Class B: Hydrants that on individual test usually have a flow capacity of 500 to 999 gpm shall be painted orange
 - Class C: Hydrants that on individual test usually have a flow capacity of less than 500 gpm shall be painted red.
14. KWD prohibits the connection of fire department pumper trucks to those hydrants with red bonnets due to the fact that these hydrants do not produce the minimum 500 gmp

to 20 psi residual pressure. Connection of pumper trucks to red coded hydrants could result in back-siphonage of contaminated water into the KWD water mains and could result in collapsed mains and major damage to the water system.

15. KWD prohibits the connection and use through the pumper nozzle of the hydrant. KWD hydrants shall only be used by firefighters to refill equipment tanks. No pumper truck shall be allowed to pump directly from the utility's lines through any hydrant.
16. KWD does not in any way guarantee any on-demand pressure or flow minimums with regard to fire hydrants or sprinkler systems.
17. KWD prohibits the use of fire departments or anyone else to use hydrants to fill swimming pools, washing down parking lots, etc.
18. KWD prohibits the use of hydrants for building construction, road construction, or any other use, unless approved by KWD. A Fire Hydrant Meter and Wrench will be provided if the sale of water from a hydrant is approved by KWD. The purchaser shall pay fees for the use of the meter and water. See "Schedule of Rates and Charges" for appropriate fees.
19. Any unauthorized person operating a hydrant without the consent of KWD shall be liable for water usage as estimated by KWD, any damage to equipment, and KWD may assess a "Tampering Fee".
20. Hydrant damage caused by vehicle accidents or any other circumstances shall be reimbursed by the responsible party.
21. Hydrant damage or hydrant not working properly need to be reported in writing to KWD.
22. Failure of fire departments to comply with this policy, could result in loss of privileges to use the fire hydrants in non-emergency situations.
23. KWD reserves the right to install locks on hydrants to prevent theft or unauthorized use.
24. This policy makes all prior agreements with fire departments null and void

Fire Department Agreement, Receipt, and Acknowledgment

I acknowledge receipt of KWD Fire Hydrant Use Policy/Agreement. I understand that I am responsible for reading it. I agree to accept and abide by KWD policies.

Fire Department Name: _____

Fire Chief Name (Printed): _____

Fire Chief Signature: _____

Date: _____

Title of Policy:	Fire Lines Policy	<u>Pg 1-2</u>
Section #:	Section 14	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 14.2

POLICY STATEMENT

1. All fire sprinkler systems shall be subject to the approval of the KWD in conjunction with the State Fire Marshalls Office. By furnishing water service to a customer, KWD assumes no responsibility for seeing that the customer's installation complies with any codes, regulations or standards other than those of KWD.
2. Customers are not permitted to use the water from sprinkler systems for any purpose other than fire protection.
3. No cross-connection is allowed between the sprinkler system and potable water lines.
4. KWD shall have right of access during business hours to customers' premises for the purpose of inspecting fire protection systems.
5. Facilities installed for providing water to automatic sprinkler systems for fire protection shall be owned and maintained by the customer.
6. By furnishing water service to a customer, KWD assumes no responsibility for seeing that the customer's installation complies with any codes, regulations or standards other than those of KWD.
7. Kingston Water Department does not guarantee fire protection or water flows 100% of the time.
8. All fire lines that are un-metered will only be used for fire sprinkler systems. Any un-metered fire lines used for any other purposes is prohibited. Unauthorized uses of un-metered fire lines will result in discontinue of service and estimated charges will apply.
9. Un-metered fire lines that have been discontinued for unauthorized use will have to install a fire meter and all necessary equipment required for metered fire lines by KWD,

State Fire Marshall, NFPA, and any other code requirements that apply. Each violation will be based on a case-by-case basis. The cost will be paid for by the customer.

10. Fire line taps on water lines smaller than six (6) inch may only have tap sizes no greater than those listed as follows:
 - (a) Four (4) inch line may have a two (2) inch tap.
 - (b) Two (2) inch and three (3) inch lines may have a one (1) inch tap.
11. Fire lines will be billed monthly at rates established by KWD. These rates are subject to change. See "Schedule of Rates and Charges"
12. Fire lines shall be equipped with backflow prevention. See "Cross Connection Policy" for backflow devices approved by KWD.
13. Fire lines that have fire hydrants installed on the system must meet KWD's specifications for fire hydrants. See "Specifications for KWD."
14. All fire hydrants installed on un-metered fire lines shall have a hydrant defender installed on the fire hydrant after install. The lock will be provided by KWD.

Title of Policy:	Identity Theft Prevention Program	<u>Pg 1-6</u>
Section #:	Section 15	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 15.1

POLICY STATEMENT

Kingston Water Department (KWD) maintains accounts for its customers to pay for utility service where bills are sent and payments are due monthly. These accounts are covered accounts under the Red Flag Rules adopted by the Federal Trade Commission (FTC) in 16 C.F.R 681.2. KWD adopts this identity theft Prevention Program (the Program) to comply with 16 C.F.R 681.2 which is designed to detect, prevent and mitigate identity theft in connection with these customer accounts. The accounts covered by this Program shall be referred to as customer accounts.

Section I. IDENTIFICATION OF RELEVANT RED FLAGS

- A. **Risk Factors.** In identifying relevant Red Flags associated with customer accounts, KWD's Water Board and management have considered the following identity theft risk factors:
1. Types of Covered Accounts – KWD opens and maintains customer accounts for persons to pay for utility service rendered where bills are sent and payments are due monthly which are covered accounts.
 2. Methods for Opening Accounts – KWD requires that persons or businesses which wish to receive utility service submit an application for utility service with the following information but not limited to:
 - A) Name of adult household members on the account;
 - B) Applicant's date of birth;
 - C) Address location where service shall be provided;
 - D) Mailing address if different than service address;
 - E) Contact and billing information;
 - F) Social Security Number or Tax Identification Number;
 - G) Driver's license number; and
 - H) Employment information.

The applicant for service may be required to present to the customer service employee a valid government-issued photo identification as proof of identity.
 3. Methods for Accessing Accounts. KWD allows customers to access information related to their accounts using the following methods:
 - a. In person at KWD's office with proper identification

- b. Over the telephone after providing the customer service employee with certain identifying information such as any of the following: the caller's date of birth, the address and telephone number of the service location, the last four digits of the member's Social Security Number, Tax Identification Number, a password, or by answering a predetermined challenge question;
 - c. Over the Internet using a secure password.
 - 4. Previous Experience with Identity Theft. KWD is not aware of any security breach of or unauthorized access to its system used to store customers' identifying information. The historical absence of identity theft of its customers' information is due to (1) the limited services and credit provided to its customers, both of which are tied to the immovable physical location; (2) the minimal size of the population it serves; (3) the relatively low rate of change in customer base; and (4) KWD's procedures for securing customers' personal information.
- B. Sources of Red Flags.** In identifying relevant Red Flags associated with customer accounts, KWD's Water Board and management have considered the following sources of Red Flags for identity theft:
- 1. Past Incidents of Identity Theft. As described in Section I.A.4. above, KWD is not aware of any security breach of or unauthorized access to its system used to store customers' personal identifying information collected by KWD. In the event of incidents of identity theft in the future, such incidents shall be used to identify additional Red Flags, and this Program will be amended accordingly.
 - 2. Identified Changes in Methods of Identity Theft. KWD will review methods of identity theft it has identified to access changes in identity theft risks.
 - 3. Applicable Supervisory Guidance. As a part of its annual review, KWD will review additional regulatory guidance from the FTC and other consumer protection authorities on new identity theft risks and recommended practices for identifying, detecting, and preventing identity theft.
- C. Categories of Red Flags.** In identifying relevant Red Flags associated with customer accounts, KWD Water Board and management have considered the following categories of Red Flags for identity theft.
- 1. Suspicious Documents. The presentation of suspicious documents can be a Red Flag for identity theft. Presentation of suspicious documents includes:
 - a. Documents provided for identification that appear to have been altered or forged;
 - b. The photograph or physical description on the identification is not consistent with the appearance of the applicant or customer presenting the identification;

- c. Other information on the identification is not consistent with information provided by the person opening a new account or the customer presenting the identification;
 - d. Other information on the identification is not consistent with readily accessible information that is on file with KWD such as the customer's application for service; and
 - e. An application for service appears to have been altered or forged or gives the appearance of having been destroyed and reassembled.
2. Suspicious Personal Identifying Information. The presentation of suspicious personal identifying information can be a Red Flag for identity theft. Presentation of suspicious personal identifying information occurs when:
- a. Personal identifying information provided is inconsistent when compared against external information sources used by KWD;
 - b. Personal identifying information provided by the customer is not consistent with other personal identifying information provided by the customer;
 - c. Personal identifying information provided is associated with known fraudulent activity as indicated by internal or third-party sources used by KWD, for example:
 - 1. The address on an application for service is the same as the address provided on a fraudulent application; or
 - 2. The phone number on an application is the same as the number provided on a fraudulent application.
 - d. Personal identifying information provided is of a type commonly associated with fraudulent activity as indicated by internal or third-party sources used by KWD. For example:
 - 1. The address on an application is fictitious, a mail drop, or a prison; or
 - 2. The phone number is invalid or is associated with a pager or answering service.
 - e. The Social Security Number provided is the same as that submitted by other persons opening an account or other customers.
 - f. The address or telephone number provided is the same as or similar to the account number or telephone number submitted by an unusually large number of other persons opening accounts or other customers.
 - g. The person opening the covered account or the customer fails to provide all required personal identifying information on an application for service or in response to notification that the application is incomplete.
 - h. Personal identifying information provided is not consistent with personal identifying information that is on file with KWD.

- i. The person opening the account or the customer cannot provide authenticating information beyond that which generally would be available from a wallet or consumer report.

3. Suspicious Activity. The unusual use of or other suspicious activity related to a customer account can be a Red Flag for identity theft. Suspicious activities include:

- a. Shortly following the notice of a change of address for a customer account, KWD receives a request for the addition of other persons to be served at the address on the account.
- b. A customer fails to make the first payment or makes an initial payment but no subsequent payments on the account.
- c. A customer account is used in a manner which is not consistent with established patterns of use on the account such as:
 - a. Nonpayment when there is no history of late or missed payments; or
 - b. A material change in the amount of utility service purchased;
- d. Mail sent to the customer is returned repeatedly as undeliverable although utility purchases continue to be made on the customer account.
- e. KWD is notified that the customer is not receiving paper account statements.
- f. A customer requests that KWD provide the customer with personal identifying information from KWD's records.

4. Notices. Notices of potential identity theft are serious Red Flags which notices shall include:

- a. Notice from customers, law enforcement authorities or other persons indicating that a customer may have been a victim of identity theft;
- b. Notice to KWD that a customer has provided information to someone fraudulently claiming to represent KWD;
- c. Notice to KWD that a fraudulent website which appears similar to KWD's website is being used to solicit customer personal identifying information;
- d. KWD's mail servers are receiving returned e-mails that KWD did not send indicating that a customer may have received fraudulent e-mail soliciting customer personal identifying information.

Section II. DETECTING RED FLAGS

A. KWD shall obtain identifying information about a person opening a customer account and shall verify the identity of the person opening a customer account. KWD will obtain the following information to open a customer account but not limited to:

- 1. Name of adult household members on the account

2. Applicant's date of birth;
3. Address location where service shall be provided;
4. Mailing address if different than service address;
5. Contact and billing information
6. Social Security Number or Tax Identification Number
7. Driver's license number; and
8. Employment information.

The applicant for service may be required to present to KWD customer service employees a valid government-issued photo identification as proof of identity.

- B. KWD shall not provide identifying information to its customers, either verbally or in writing, even when a customer is asking for the customer's own information.
- C. For existing customer accounts KWD shall authenticate customers, monitor transactions and verify the validity of change of address requests.

SECTION III. PREVENTING AND MITIGATING IDENTITY THEFT

- A. If a KWD employee detects a Red Flag on a customer account, KWD employee shall notify the employee's supervisor or the City Manager that the employee has detected a Red Flag. The City Manager may take the following steps to prevent identity theft:
 1. Monitoring a customer account for evidence of identity theft;
 2. Changing any passwords, security codes, or other security devices that permit access to a customer account;
 3. Reopening a customer account with a new account number;
 4. Closing an existing customer account;
 5. Not attempting to collect on a customer account;
 6. Notifying the customer;
 7. Notifying law enforcement; or
 8. Determining that no response is warranted under the particular circumstances.
- B. If KWD discovers that any of its customers have become victims of identity theft, KWD shall notify the customer and local law enforcement.

SECTION IV. PROGRAM UPDATES AND ADMINISTRATION

KWD shall update the Program at least annually to reflect changes in risks to customers of identity theft. In updating the Program, KWD shall consider the following:

- A. KWD's experiences with identity theft;
- B. Changes in methods of identity theft;

- C. Changes in methods to detect, prevent, and mitigate identify theft;
- D. Changes in KWD's types of customer accounts; and
- E. Changes in business arrangements involving mergers, acquisitions, alliances, joint ventures and third-party service providers.

SECTION V. PROGRAM ADMINISTRATION

- A. The Program shall be approved by the Water Board. The City Manager shall oversee the administration of the Program. The City Manager may assign specific responsibility for the implementation of the Program to KWD's employees. The City Manager shall review reports prepared by KWD's employees under subsection V.B.
- B. The City Manager shall prepare and present a written report to the Water Board at least annually on KWD's compliance with 16 C.F.R. 681.2. The report to the Water Board shall include a discussion of the following:
 - 1. The effectiveness of the Program in addressing the risk of identity theft;
 - 2. Third party service provider arrangements;
 - 3. Significant incidents of identity theft and management's response; and
 - 4. Recommendations for changes to the Program.

The City Manager's annual report shall be incorporated into the minutes of the Water Board meeting at which the report is given.

- C. KWD has or may have business relationships with third party service providers for agreement, billing services, meter reading, backflow prevention, collection of delinquent accounts and other services. Under these business relationships, the third-party service providers have access to customer identifying information covered under this Program. The City Manager shall ensure that a third-party service providers' work for KWD is consistent with this Program by:
 - 1. Amending contracts with the third-party service providers to incorporate these requirements; or
 - 2. Determining that the third party service providers have reasonable alternative safeguards that provide the same or a greater level of protection for customer information as provided by KWD.

Title of Policy:	Non-Discrimination Policy	<u>Pg 1</u>
Section #:	Section 16	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 16.1

POLICY STATEMENT

Title VI of the Civil Rights Act of 1964 requires that no person shall on the basis of race, color, national origin, physical disability, religion, age or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance (i.e., grant funds). The City of Kingston and Kingston Water Department complies with all local, state and federal laws that protect employees from discrimination.

In providing its services to all persons within the service area who can feasibly and legally be served, KWD will not discriminate against any individual on the basis of his or her race, color, national origin, physical disability, religion, age or sex

Title of Policy:	Public Records / Utility Records Policy	<u>Pg 1-7</u>
Section #:	Section 17	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 17.1

PUBLIC RECORDS POLICY

for the City of Kingston / KWD

It shall be the policy of the City of Kingston to use the current recommendation of the Comptroller of the State of Tennessee and the University of Tennessee Municipal Technical Advisory Service (MTAS) for record retention guidelines. Records will also include any requirements specified by the Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC).

Overview. Pursuant to Tenn. Code Ann. 10-7-503(g), every governmental entity subject to the Tennessee Public Records Act ("TPRA") (Tenn. Code Ann. 10-7-501 et seq.), must establish a written public records policy properly adopted by the appropriate governing authority by July 1, 2017. The policy adopted shall not impose requirements on those requesting records that are more burdensome than state law and shall include:

- A. The process for requesting access to public records and any required form(s);
- B. The process for responding to requests, including redaction practices;
- C. A statement of any fees charged for copies of public records and the procedures for billing and payment; and
- D. The name or title and contact information of the individual or individuals designated as the Public Records Request Coordinator(s).

Pursuant to Tenn. Code Ann. 8-4-604(a)(1)(4), the Office of Open Records Counsel ("OORC") is required to establish a model best practices and public records policy for use by a records custodian in compliance with Tenn. Code Ann. 10-7-503.

The OORC encourages and will provide assistance for governmental associations and groups to develop model public records policies tailored to their specific governmental entity subgroup.

The TPRA provides that all state, county and municipal records shall, at all times during business hours, which for public hospitals shall be during the business hours of their administrative offices, be open for personal inspection by any citizen of this state, and those in charge of the records shall not refuse such right of inspection to any citizen, unless otherwise provided by state law. See Tenn. Code Ann. 10-7-503(a)(2)(A). Accordingly, the public records of the City of Kingston are presumed to be open for inspection unless otherwise provided by law.

Personnel of the City of Kingston shall timely and efficiently provide access and assistance to persons requesting to view or receive copies of public records. No provisions of this Policy shall be used

to hinder access to open public records. However, the integrity and organization of public records, as well as the efficient and safe operation of the City of Kingston, shall be protected as provided by current law. Concerns about this Policy should be addressed to the Public Records Request Coordinator for the City of Kingston or to the Tennessee Office of Open Records Counsel. This Policy is available for inspection and duplication in the office of Public Records Request Coordinator. This Policy shall be reviewed every two years.

This Policy shall be applied consistently throughout the various offices, departments, and/or divisions of the City of Kingston.

I. Definitions:

- A. Records Custodian: The office, official or employee lawfully responsible for the direct custody and care of a public record. See Tenn. Code Ann. 10-7-503(a)(1)(C). The records custodian is not necessarily the original preparer or receiver of the record.
- B. Public Records: All documents, papers, letters, maps, books, photographs, microfilms, electronic data processing files and output, films, sound recordings, or other material, regardless of physical form or characteristics, made or received pursuant to law or ordinance or in connection with the transaction of official business by any governmental agency. See Tenn. Code Ann. 10-7-503(a)(1)(A).
- C. Public Records Request Coordinator: The individual, or individuals, designated in Section III A(3) of this Policy who has, or have, the responsibility to ensure public record requests are routed to the appropriate records custodian and are fulfilled in accordance with the TPRA. See Tenn. Code Ann. 10-7-503(a)(1)(B). The Public Records Request Coordinator may also be a records custodian.
- D. Requestor: A person seeking access to a public record, whether it is for inspection or duplication.

II. Requesting Access to Public Records:

- A. Public record requests shall be made to the Public Records Request Coordinator or his/her designee in order to ensure public record requests are routed to the appropriate records custodian and fulfilled in a timely manner.
- B. Requests for inspection only cannot be required to be made in writing. The PRRC should request a mailing address from the requestor for providing any written communication required under the TPRA.
- C. Requests for inspection may be made orally or in writing using the attached Public Record Request Form at Kingston City Hall, 900 Waterford Place, Kingston, TN 37763 or by phone at 865-376-6584.

- D. Requests for copies, or requests for inspection and copies, shall be made in writing using the attached form at Kingston City Hall, 900 Waterford Place, Kingston, TN 37763.
- E. Proof of Tennessee citizenship by presentation of a valid Tennessee driver's license (or alternative acceptable form of ID) is required as a condition to inspect or receive copies of public records.

III. Responding to Public Records Requests:

A. Public Record Request Coordinator (PPRC)

- (1) The PPRC shall review public record requests and make an initial determination of the following:
 - a. If the requestor provided evidence of Tennessee citizenship;
 - b. If the records requested are described with sufficient specificity to identify them; and
 - c. If the Governmental Entity is the custodian of the records.
- (2) The PPRC shall acknowledge receipt of the request and take any of the following appropriate action(s):
 - a. Advise the requestor of this Policy and the elections made regarding:
 - i. Proof of Tennessee citizenship;
 - ii. Form(s) required for copies;
 - iii. Fees (and labor threshold and waivers, if applicable); and
 - iv. Aggregation of multiple or frequent requests.
 - b. If appropriate, deny the request in writing, providing the appropriate ground such as one of the following:
 - i. The requestor is not, or has not presented evidence of being, a Tennessee citizen
 - ii. The request lacks specificity;
 - iii. An exemption makes the record not subject to disclosure under the TPRA;
 - iv. The City of Kingston is not the custodian of the requested records;
 - v. The records do not exist.

- c. If appropriate, contact the requestor to see if the request can be narrowed.
- d. Forward the records request to the appropriate records custodian in the City of Kingston.
- e. If requested records are in the custody of a different governmental entity, and the PRRC knows the correct governmental entity, advise the requestor of the correct governmental entity and PRRC for that entity if known.

(3) The designated PRRC(s) is:

- a. Name or title: City Clerk
- b. Contact information: Kingston City Hall, 900 Waterford Place, Kingston, TN 37763
Phone - (865) 376-6584 Facsimile - (865) 376-1425.

B. Records Custodian Actions

- (1) Upon receiving a public records request, a records custodian shall promptly make requested public records available in accordance with Tenn. Code Ann. 10-7-503. If the records custodian is uncertain that an applicable exemption applies, the custodian may consult with the PRRC, counsel, or the OORC.
- (2) If not practicable to promptly provide requested records because additional time is necessary to determine whether the requested records exist; to search for, retrieve, or otherwise gain access to records; to determine whether the records are open; to redact records; or for other similar reasons, then a records custodian shall, within seven (7) business days from the records custodian's receipt of the request, send the requestor a completed Public Records Request Response Form, based on the form developed by the OORC.
- (3) If a records custodian denies a public record request, he or she shall deny the request in writing as provided in Section 3.A.2.b using the Public Records Request Response Form.
- (4) If a records custodian reasonably determines production of records should be segmented because the records request is for a large volume of records, or additional time is necessary to prepare the records for access, the records custodian shall use the Public Records Request Response Form to notify the requestor that production of the records will be in segments and that a records production schedule will be provided as expeditiously as practicable. If appropriate, the records custodian should contact the requestor to see if the request can be narrowed.
- (5) If a records custodian discovers records responsive to a records request were omitted, the records custodian should contact the requestor concerning the omission and produce the records as quickly as practicable.

C. Redaction:

- (1) If a record contains confidential information or information that is not open for public inspection, the records custodian shall prepare a redacted copy prior to providing access. If questions arise concerning redaction, the records custodian should coordinate with counsel or other appropriate parties regarding review and redaction of records. The records custodian and the PRRC may also consult with the OORC.
- (2) Whenever a redacted record is provided, a records custodian should provide the requestor with the basis for redaction. The basis given for redaction shall be general in nature and not disclose confidential information.

IV. Inspection of Records:

- A. There shall be no charge for inspection of open public records.
- B. The location for inspection of records within the offices of the City of Kingston should be determined by either the PRRC or the records custodian.
- C. Under reasonable circumstances, the PRRC or a records custodian may require an appointment for inspection or may require inspection of records at an alternate location.

V. Copies of Records:

- A. A records custodian shall promptly respond to a public record request for copies in the most economic and efficient manner practicable.
- B. Copies will be available for pickup at a location specified by the records custodian.
- C. Upon payment for postage, copies will be delivered to the requestor's home address by the United States Postal Service.
- D. A requestor will be allowed to make copies of records with personal equipment.

VI. Fees and Charges and Procedures for Billing and Payment:

Fees and charges for copies of public records should not be used to hinder access to public records.

A. Records custodians shall provide requestors with an itemized estimate of the charges using the Public Records Request Form prior to producing copies of records and may require pre-payment of such charges before producing requested records.

- B. When fees for copies and labor do not exceed \$1.00, the fees may be waived. [Requests for waivers for fees must be presented to the City Manager, who is authorized to

determine if such waiver is in the best interest of the City of Kingston and for the public good. Fees associated with aggregated records requests will not be waived.

- C. Fees and charges for copies are as follows (if higher than the amounts authorized by the OORC Schedule of Reasonable Charges, documentation should be attached):
 - (1) \$0.15 per page for letter- and legal-size black and white copies.
 - (2) \$0.50 per page for letter- and legal-size color copies.
 - (3) Other:
 - (4) Labor when time exceeds 1 hour.
 - (5) If an outside vendor is used, the actual costs assessed by the vendor.
- D. [No duplication costs will be charged for requests for less than \$1.00]
- E. Payment is to be made in cash or by personal check made payable to City of Kingston and presented to the Records Custodian
- F. Payment in advance will be required when costs are estimated to exceed \$50.00.
- G. Aggregation of Frequent and Multiple Requests:
 - (1) The City of Kingston will aggregate record requests in accordance with the Frequent and Multiple Request Policy promulgated by the OORC when more than (4) requests are received within a calendar month (either from a single individual or a group of individuals deemed working in concert). The level at which records requests will be aggregated is (whether by agency, entity, department, office or otherwise).
 - (2) The PRRC is responsible for making the determination that a group of individuals are working in concert. The PRRC or the records custodian must inform the individuals that they have been deemed to be working in concert and that they have the right to appeal the decision to the OORC.
 - (3) Routinely released and readily accessible records excluded from aggregation include, but are not limited to: Agendas, approved meeting minutes.

PUBLIC RECORDS REQUEST FORM

The Tennessee Public Records Act (TPRA) grants Tennessee citizens the right to access open public records that exist at the time of the request. The TPRA does not require records custodians to compile information or create or recreate records that do not exist.

To: Kingston City Hall, 900 Waterford Place, Kingston, TN 37763 Phone - (865) 376-6584
Facsimile - (865) 376-1425. Attn: City Clerk.

From:

Is the Requestor a Tennessee citizen? Yes ___ No ___

Request: _____ Inspection. Copy/Duplicate: _____

The TPRA does not permit fees or require a written request for inspection only. Tenn. Code Ann. 10-7-504(a)(20)(C) permits charging for redaction of private records of a utility.

Copy/Duplicate: If costs for copies are assessed, the Requestor has a right to receive an estimate. Do you wish to waive your right to an estimate and agree to pay copying and duplication costs in an amount not to exceed \$ _____? If so, initial here: _____.

Delivery preference: _____ On-Site _____ Pick-Up _____ USPS First-Class Mail
_____ Electronic _____ Other: _____

Records Requested: Provide a detailed description of the record(s) requested, including: (1) type of record; (2) time frame or dates for the records sought; and (3) subject matter or key words related to the records. Under the TPRA, record requests must be sufficiently detailed to enable a governmental entity to identify the specific records sought. As such, your record request must provide enough detail to enable the records custodian responding to the request to identify the specific records you are seeking.

Signature of Requestor

Date Submitted: _____

Signature of Public Records Request Coordinator

Date Received: _____

Title of Policy:	Returned Check / Bank Draft Policy	<u>Pg 1</u>
Section #:	Section 18	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 18.1

Policy Statement

If a Customer check/draft is returned to KWD by a financial institution for any reason, the maximum fee set by T.C.A 47-29-102 will be added to the amount due. KWD will make an effort to notify the Customer that the check/draft was returned unpaid and is being held.

The customer may be required to make payment by cashier's check, money order or cash at the discretion of KWD. Payment must be within two (2) days of such notice. If no response is received from the Customer or KWD is unable to contact the Customer within two (2) days, the Customer's account will be subject to any penalties due and be subject to KWD's cut-off policy if payment is not received.

When any check, draft, or order is not paid by the drawee because the maker or drawer did not have an account with or sufficient funds on deposit with the financial institution, or the draft, check, or order has an incorrect or insufficient signature thereon, the payee of such check, draft, or order is authorized to assess a handling charge against such maker or drawer in an amount not to exceed thirty dollars (\$30.00).

Any customer whose check/draft is returned unpaid two (2) consecutive billing cycles will be removed from the Automatic Payment Method and/or KWD will no longer accept a check presented for payment of any Utility bill, fee or charge, and payment must be made by money order, cashier's check or by cash. It will be the discretion of KWD to determine if or when a customer may be eligible for Automatic Payment Method and/or allowed to remit a check as payment.

Title of Policy:	Subdivisions and Developers Policy	<u>Pg 1-4</u>
Section #:	Section 19	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 19.1

POLICY STATEMENT

1. The costs and expenses incidental to the installation, connection, and inspection Kingston Water Department (KWD) service facilities for residential subdivisions and commercial developments shall be borne by the DEVELOPER. In addition, the DEVELOPER shall indemnify KWD from any loss or damage that may directly or indirectly result from the installation of utility lines and other facilities by the DEVELOPER for a period of one year after KWD acceptance of the facilities.
2. A DEVELOPER seeking to obtain service from KWD will submit to KWD a preliminary plat, which shall include the number, size and estimated cost of each unit and any other information that will assist KWD in making a determination of availability of service. Each plat shall show the number of units and size (single family, duplex, etc.) to be served in the development. The DEVELOPER or his/her assignee will be responsible for obtaining all easements.
3. Upon receipt of the documents required by Paragraph 2 herein, and the determination that the development is to be pursued, KWD may select to submit the documents to its engineer for the preparation of plans and specifications or may select to accept plans and specifications submitted by the DEVELOPER for review and approval by KWD's engineer.
4. In the event a planned development includes a fire protection system, the DEVELOPER shall submit total fire protection plans including the number and location of sprinkler heads and hydrants.
5. KWD may confer with its attorney during any of these procedures. Upon KWD's approval of the plans, specifications and other necessary information, the same will be

referred to KWD's attorney for the drafting of a contract between KWD and the DEVELOPER.

6. Before any work is begun on any project, the appropriate contract shall have been signed by KWD and the DEVELOPER. The DEVELOPER shall notify KWD of the proposed starting date of construction and all progress thereon shall be reported weekly KWD.
7. The DEVELOPER shall obtain all permits (building, plumbing, electrical, etc.) to serve these facilities and shall comply with the requirements of all other governmental agencies having jurisdiction. When the plan calls for the installation of mains under streets to be opened and dedicated within the development, the DEVELOPER shall execute a Deed of Dedication to KWD of 15-foot easements within which such lines are to be installed or shall execute a Deed conveying in fee simple the property within which such lines are to be installed. The Deeds are to be executed before trenching for the installation of such lines. These Deeds shall describe the easements and property of reference in the book and page of the recorded plat.
8. KWD's policies regarding the requirements of easements are as follows:
 - (a) All system improvements including storage tanks, access roads, booster or pumping stations and other facilities shall be constructed on easements approved by KWD or on property conveyed in fee simple to KWD.
 - (b) All easements shall be obtained by the DEVELOPER or his agent.
 - (c) All easements shall be shown on all final subdivision plats before the plat will be approved by KWD.
 - (d) Any easements that are required outside a proposed development shall be obtained by the DEVELOPER or his agent prior to the initiation of system construction, except those covered in (e) below.
 - (e) If a line within a public right-of-way must be extended to bring service to a new development, KWD may make application to obtain the necessary permission to use such public right-of-way from the state, county, or other governmental authority having jurisdiction over the particular right-of-way.
9. The DEVELOPER will pay KWD for plans and review fees related to water and wastewater plans. After KWD's engineer has either prepared the plans and specifications or reviewed and approved the DEVELOPER'S plans and specifications, or KWD has accepted said plans and specifications, KWD will send the plans and review fee to the Tennessee Department of Environment and Conservation for approval.

10. KWD will approve a final plat provided:

- (a) All system improvements have been constructed and the plat constitutes an “as-built” condition; or
- (b) The DEVELOPER gives KWD a bond or letter of credit for 100% of the construction costs of proposed improvements as estimated by KWD or KWD’s engineer. KWD shall hold the bond until all improvements are constructed in full adherence to the plan or until a corrected and amended plat is recorded noting all differences from the original plan. No service shall be initiated within a plated subdivision or development of any kind until either (a) or (b) above are completed to the satisfaction of KWD. KWD, in writing, may waive the bond for contractions under \$25,000.

11. Prior to the execution of a contract for over \$25,000, KWD shall require the DEVELOPER to post a bond with corporate surety authorized to do business in the State of Tennessee or obtain an irrevocable letter of credit issued by a national bank or a bank authorized to do business in the State of Tennessee for the costs to construct the system improvements to serve the development. KWD’s manager may authorize reduction of the bond or letter of credit on the basis of certification by KWD’s engineer as to percentage of completion of the project as designed by such engineer, with the bond to be reduced to 50% after the project shall be certified as 65% complete, reduced to 25% upon certification that the construction is 90% complete and to 10% upon certification that the construction is 100% complete, subject only to acceptance by KWD.

12. No utility lines or other facilities shall be covered prior to inspection and approval by KWD.

13. Where private lines are permitted by KWD and are not to be dedicated to KWD, KWD’s engineer shall check and approve these lines.

14. Prior to the execution of the contract, the DEVELOPER must pay all fees and charges currently established by KWD for the DEVELOPER which may include but are not limited to the following:

- (a) All infrastructure required by KWD;
- (b) Connections Fees;
- (c) Storage Fees;
- (d) A Security Deposit or Non-Refundable Service Charge;
- (e) Plan Review Fees;
- (f) Other: _____

15. Upon execution of the contract, the DEVELOPER will make a non-refundable payment to KWD of up to 5% for water and 8% for wastewater, of the estimated costs of utility construction covered under this contract for engineering, inspection, legal, and administrative expenses.
16. The DEVELOPER will be permitted to connect to KWD's existing lines provided the lines extended to and throughout the development shall become the property of KWD free and clear of the claims of any persons or entities, except as provided otherwise herein.
17. All meter settings and services will be installed and purchased by the DEVELOPER. The DEVELOPER will furnish KWD an approved meter for installation by KWD.
18. Each family residence, duplex, apartment complexes or other types of dwellings and businesses shall be served with a separate meter of a size approved by KWD.
19. All water services will be installed in a manner to comply with KWD's cross connection program.
20. The DEVELOPER when developing a subdivision that requires a pumping system for wastewater disposal will be required to use a device approved by KWD.
21. The DEVELOPER will pay a minimum sewer bill after a period of one year from the date the wastewater collection system has passed all certified tests. When the lots are sold the minimum bill will be transferred to the new owner. The new property owner shall start paying the minimum bill upon transfer of ownership, even if the one-year test certification has not expired. This will be disclosed to the lot buyer in the "Point of Sale Contract".
22. The DEVELOPER will disclose the type of Wastewater System that is required to be installed. The disclosure statement will give a brief description of the wastewater system and the approximate cost of the User Fee. The installation of this system will be installed by KWD or its representative.
23. The DEVELOPER will return a signed copy with address of the new lot owner of the "Point of Sale Contract" to KWD upon sale of a lot by the buyer of the lot.
24. The contract entered between the parties shall operate as a conveyance of the facilities when the same are installed and accepted without necessity of any further writing, contract of deed; however, KWD may also require a deed of exchange thereof.

Title of Policy:	Substance Abuse Policy Statement	<u>Pg 1-5</u>
Section #:	Section 20	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 20.1

The KWD is committed to providing a safe work environment and to fostering the well-being and health of its employees. That commitment is jeopardized when any KWD employee illegally uses drugs on or off the job, comes to work under their influence, possesses, distributes or sells drugs in the workplace, or abuses alcohol on the job. Therefore, The KWD has established the following policy, pursuant to T.C.A. Section 50-9-100 et. seq.:

- (1) It is a violation of KWD policy for any employee to use, possess, sell, trade, offer for sale, or offer to buy illegal drugs or otherwise engage in the illegal use of drugs on or off the job,**
- (2) It is a violation of KWD policy for any employee to report to work under the influence of or while possessing in his or her body, blood or urine, illegal drugs in any detectable amount.**
- (3) It is a violation of KWD policy for any employee to report to work under the influence of or impaired by alcohol and or drugs.**
- (4) It is a violation of the KWD policy for any employee to use prescription drugs illegally, i.e., to use prescription drugs that have not been legally obtained or in a manner or for a purpose other than as prescribed. However, nothing in this policy precludes the appropriate use of legally prescribed medications unless those medications cause impairment.**
- (5) Violations of this policy are subject to disciplinary action up to and including termination.**

It is the responsibility of the Department Head to counsel employees whenever they see changes in performance or behavior that suggest an employee has a drug problem. Although it is not the Department Head's job to diagnose personal problems, the Department Head should encourage such employees to seek help and advise them about valuable resources for getting help. Everyone shares responsibility for maintaining a safe work environment, and co-workers should encourage anyone who has a drug problem to seek help.

The goal of this policy is to balance our respect for individuals with the need to maintain a safe, productive and drug- free environment. The intent of this policy is to offer a helping hand to those who need it, while sending a clear message that the illegal use of drugs and the abuse of alcohol are incompatible with employment at the KWD.

As a condition of employment, employees must abide by the terms of this policy and must notify The KWD in writing of any conviction of a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction.

KWD offers an Employee Assistance (EAP) benefit for employees and their dependents. This program is open only to employees enrolled in our health benefit plan. The EAP provides confidential assessment, referral and short-term counseling for employees who need or request it. If an EAP referral to a treatment provider outside the EAP is necessary, costs may be covered by the employee's medical insurance; but the cost of such outside services are the employees' responsibility. Confidentiality is assured. NO information regarding the nature of the personal problem will be made available to supervisors, nor will it be included in the permanent personnel file. Participation in the EAP will not affect an employee's career advancement or employment, nor will it protect an employee from disciplinary action if substandard job performance continues. The EAP is a process used in conjunction with discipline, not a substitute for discipline. The EAP can be accessed by an employee through self-referral or through referral by a supervisor. We will also distribute information about other EAP resources to employees not enrolled in our health benefits for their confidential use.

General Procedures

Any employee reporting to work visibly impaired will be deemed unable to perform required duties and will not be allowed to work. If possible, the employee's supervisor will first seek another supervisor's opinion to confirm the employee's status. Next, the supervisor will consult privately with the employee to determine the cause of the observation, including whether substance abuse has occurred. If, in the opinion of the supervisor, the employee is considered impaired, the employee will be sent home or to a medical facility by taxi or other safe transportation alternative - depending on the determination of the observed impairment - and accompanied by the supervisor or another employee if necessary. A drug or alcohol test may be in order. An impaired employee will not be allowed to drive.

Opportunity to Contest or Explain Test Results

Employees and job applicants who have a positive confirmed drug or alcohol test result may explain or contest the result to the medical review officer within five (5) working days after receiving written notification of the test result from the medical review officer; if an employee's or job applicant's explanation or challenge is unsatisfactory to the medical review officer, the medical review officer shall report a positive test result back to the City of Kingston/KWD; a person may contest the drug test result pursuant to rules adopted by the Bureau of Workers' Compensation.

Confidentiality

The confidentiality of any information received by the employer through a substance abuse testing program shall be maintained, except as otherwise provided by law.

Job Applicant Drug Testing

All job applicants at the KWD will undergo testing for substance abuse as a condition of employment. Any applicant with a confirmed positive test result will be denied employment. Applicants will be required to submit voluntarily to a urinalysis test at a laboratory chosen by The KWD, and by signing a consent agreement will release the KWD from liability. If the physician, official or lab personnel have reasonable suspicion to believe that the job-applicant has tampered with the specimen, the applicant will not be considered for employment. Kingston will not discriminate against applicants for employment because of a past history of drug or alcohol abuse. It is the current illegal use of drugs and/or abuse of alcohol, preventing employees from performing their jobs properly, that the KWD will not tolerate.

Employee Drug Testing

The KWD has adopted testing practices to identify employees who use illegally use drugs on or off the job or who abuse alcohol on the job. It shall be a condition of employment for all employees to submit to substance abuse testing under the following circumstances:

1. When there is reasonable suspicion to believe that an employee is illegally using drugs or abusing alcohol. 'Reasonable suspicion' is based on a belief that an employee is using or has used drugs or alcohol in violation of the employer's policy drawn from specific objective and articulable facts and reasonable inferences drawn from those facts in light of experience. Among other things, such facts and inferences may be based upon, but not limited to, the following:
 - (A) Observable phenomena while at work such as direct observation of substance abuse or of the physical symptoms or manifestations of being impaired due to substance abuse;
 - (B) Abnormal conduct or erratic behavior while at work or a significant deterioration in work performance;
 - (C) A report of substance abuse provided by a reliable and credible source;
 - (D) Evidence that an individual has tampered with any substance abuse test during his or her employment with the current employer;
 - (E) Information that an employee has caused or contributed to an accident while at work; or
 - (F) Evidence that an employee has used, possessed, sold, solicited, or transferred drugs while working or while on the employer's premises or while operating the employer's vehicle, machinery, or equipment.
2. When employees have caused or contributed to an on-the-job injury that resulted in a loss of work-time, which means any period of time during which an employee stops performing the normal duties of employment and leaves the place of employment to seek care from a licensed medical provider. An employer may send employees for a substance abuse test if they are involved in on-the-job accidents where personal injury or damage to company property occurs.
3. As part of a follow-up program to treatment for drug abuse.
4. Routine fitness-for-duty drug or alcohol testing. A covered employer must require an employee to submit to a drug or alcohol test if the test is conducted as part of a routinely scheduled employee fitness-for-duty medical examination where the examinations are required

by; law, regulation, are part of the covered employer's established policy, or one that is scheduled routinely for all members of an employment classification group.

Alcohol Testing

The consumption or possession of alcoholic beverages on the KWD premises is prohibited. An employee whose normal faculties are impaired due to alcoholic beverages while on duty/City business shall be guilty of misconduct, and shall be subject to discipline up to and including termination.

Refusal to Submit

Failure to submit to a required substance abuse test also is misconduct and also shall be subject to discipline up to and including termination. If an employee attempts to falsify test results through tampering, contamination, adulteration, or substitution shall not be allowed to report for duty and his or her employment will be terminated. Refusal can include the inability to provide a specimen or breath sample without a valid medical explanation, as well as a verbal declaration, obstructive behavior, or physical absence resulting in the inability to conduct the test.

Disciplinary

Violation of this policy can lead to disciplinary action up to and including termination. The KWD shall withdraw any conditional offer of employment to an applicant who receives a verified positive drug test or confirmed alcohol presence test.

If the employee has a positive confirmed test result a medical review officer will attempt to contact the individual in order to privately discuss the findings with that person. The employee can declare and prove any prescriptions that could alter the outcome of the screening. The medical review officer will take this information into account when interpreting any positive confirmed test results. The information provided shall be treated as confidential and will not be given to the employer. Employees and job applicants have the right to consult with a medical review officer for technical information regarding prescription and non-prescription medicine.

In the event that the City Manager determines not to terminate an employee for a violation of this policy, the KWD may subject the employee to unannounced follow-up alcohol and/or controlled substances testing.

Return-to-Duty Testing

In the event that an employee is not terminated for a violation of this Policy, the employee shall undergo return-to-duty testing as set forth in this paragraph.

- The KWD shall ensure that before an employee returns to duty after engaging in prohibited conduct regarding controlled substances, the employee shall undergo a return-to-duty controlled substances test with a result indicating a verified negative result for controlled substances use.
- The KWD shall ensure that before an employee returns to duty after engaging in prohibited conduct regarding alcohol misuse, the employee shall undergo a return-to-duty alcohol test indicating a verified breath alcohol of a negative result.

It is the responsibility of every employee or job applicant to notify the testing laboratory of any administrative or civil action brought pursuant to TCA Section 50-9-100 et. seq., Drug-Free Workplace Programs.

The provisions of this policy are subject to any applicable collective bargaining agreement or contract and include the right of appeal to the applicable court.

Employee Initials

Title of Policy:	Surplus Property Disposal	<u>Pg 1-2</u>
Section #:	Section 21	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 21.1

Policy Statement

1. All real and personal property no longer used or needed by the Utility must be declared surplus property and disposed of in accordance with this Policy.
2. The Manager will submit to the KWD Water Board a list of each item of property or group of items of property which the Manager recommends the Board declare surplus property. This list should contain for the following information for each item or group of items:
 - (a) A Brief description of the property;
 - (b) Location of the property;
 - (c) Property identification number (if any); and
 - (d) Estimated value if it exceeds \$500.00.
3. The KWD Water Board must declare the property on the list as surplus property at a regular Board meeting before its disposal. If the Board desires to receive a minimum amount on the sale of the property declared surplus, the Board will approve this minimum amount at the time the property is declared surplus. A list of all property declared surplus in a Board meeting will be incorporated in the minutes of that Board meeting.
4. After the Board declares property surplus, the Manager will dispose of the property using the following procedures.
 - (a) The Manager will dispose of property with an estimated value of \$500.00 or less by using any of the following methods:
 - (1) Soliciting proposals for the purchase of the property from one or more persons and accepting the most favorable proposal;
 - (2) Selling the property as scrap where the cost any other means of disposal will likely exceed the value of the property;
 - (3) Destroying the property where the cost of any other means of disposal will likely exceed the value of the property;
 - (b) The Manager will dispose of property with an estimated value over \$500.00 by using any of the following methods:
 - (1) Selling the property at a public auction;

- (2) Advertising for the submission of bids for the purchase of the property in newspapers of general circulation in the areas served by the Utility;
- (3) Listing the property on any website where potential buyers may submit bids to purchase government surplus property;
- (4) Listing the property in any publication where potential buyers of the property may submit bids to purchase government surplus property; or
- (5) Soliciting bids from at least three (3) persons who would have an interest in purchasing the surplus property.

(C) Any advertising, listing or solicitation of bids for the purchase of surplus property will include the following:

- (1) Description of the surplus property;
- (2) Location and inspection period of surplus property before bid deadline;
- (3) Method of bidding (sealed bids, written quotes or oral bids with written confirmation);
- (4) Anticipated date for acceptance of most favorable bid; and
- (5) Any other information deemed appropriate by the Manager.

5. The Manager will prepare and keep written record of the disposal of each item or group of items of declared surplus property which record must include:
 - (1) The method of disposal;
 - (2) Payment received, if any;
 - (3) Who purchased or received the property;
 - (4) A receipt from the person or entity who purchased or received the property which includes the amount received, the person's or the entity's name, address and telephone number and the signature of the person receiving the property; and
 - (5) Any other information the Manager feels appropriate.

Title of Policy:	Tap and Meter Policy	<u>Pg 1-4</u>
Section #:	Section 22	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 22.1

POLICY STATEMENT

1. KWD reserves the right to install the tap where it benefits KWD. The customer will be given the opportunity to choose where the tap goes.
2. The tap must be marked with a wooden stake. The wooden stake must have the word, "Water" wrote on the stake. The wooden stake must be placed approximately five (5) to ten (10) feet off the edge of the road.
3. All flowers, bushes, trees, landscaping, etc....that are in the way of installing or maintaining service are not the responsibility of KWD and therefore KWD will not pay for damages. Driveway materials will be replaced with standard material such as concrete, asphalt and/or gravel. Any additional and/or decorative materials will be the responsibility of the customer.
4. the Customer **MUST** install a shut-off valve/hand valve on their side of the meter. The valve must be located at or near the meter, but in all cases, no further than five (5) feet from the meter and must meet paragraph 5 of this policy.
5. KWD will install the tap, meter, and box. Only KWD equipment shall be installed inside the box. All equipment that belongs to the customer shall be installed outside of KWD's box. Customer's equipment may include, but not be limited to the following:
 1. Pressure Reducers
 2. Shut-off Valves (Customer Provided)
 3. Backflow Devices
 4. Other equipment that does not belong to KWD

Taps made after approval of this policy will have a shut-off valve installed on the customer's side.

6. If KWD's box is removed by anyone other than KWD, the box is to be placed back over the meter, with the meter centered in the box.
7. If additional equipment is required by KWD and to be installed by the customer, that must be installed and meet KWD policy, State Regs, AWWA, USC, NFPA, local plumbing codes and any other codes required.
8. KWD will inspect KWD's box and plumbing and the customer side of the box/meter to make sure it meets paragraph 4, 5, 6, and 7 of this policy.
9. The line setter/meter will be locked by KWD after install to ensure the customer follows KWD policy. After the inspection and it meets KWD policy, KWD will then unlock the line setter/meter and activate the service to the premises.
10. The customer will notify KWD two (2) to three (3) working days prior to the customer needing inspection. KWD will only inspect a maximum of two (2) times, before a re-inspection fee will apply. See *"Schedule of Rates and Charges"*
11. Taps are defined by the following:
 - a) Regular Taps (3/4" and 1")
 - a. The timeline will be from three (3) to four (4) weeks after customer has paid, completed paper work, and put wooden stake out.
 - b) Emergency Taps (3/4" and 1")
 - a. The timeline will be from three (3) to five (5) days after customer has paid, completed paper work, and put wooden stake out.
 - b. An emergency tap will be a customer without water may include, but are not limited to:
 - i. Muddy Water
 - ii. No Water
 - iii. Extenuating condition or circumstance
 - c) Drought and Water Shortage Taps (3/4" and 1")
 - a. KWD has the right to limit where taps can be installed and the time frame
 - b. This will be a case by case decision
 - d) Material Shortage (3/4" and 1")

- a. Not in stock or due to ration by the manufacturers
 - b. Will be made at the earliest convenience of KWD
 - e) Taps 2" and greater
 - a. The timeline will be on a case by case basis. It could take up to three (3) to four (4) months, depending on meter size, availability, meter pit size and availability, and other materials to install tap.
 - a. Taps on State Highways that require a State Permit may take up to eight (8) weeks or longer, depending on the State of TN DOT.
12. Customers must install a shut-off valve on their side of the meter. This valve must be installed at the water meter, meeting the requirements of this policy.

When a customer calls during regular business hours to have the water shut-off for any reason, KWD will turn off the valve at the meter on KWD's side and lock out the meter. Water will not be reinstated to the premises until the customer has installed a shut-off valve on their side of the meter, see paragraph five (5) of this policy for placement of valve. Water service will only be reinstated during regular business hours only.

When a customer calls after hours, weekends, holidays, etc.... to have the water shut-off for any reason, KWD will turn off the valve at the meter on KWD's side and lock out the meter. Water will not be reinstated to the premises until the customer has installed a shut-off valve on their side of the meter, see paragraph five (5) of this policy for placement of the valve. Water service will only be reinstated during regular business hours only.

When a customer signs up for water service on an inactive account, the customer will have to install a shut-off valve on their side of the meter, see paragraph five (5) of this policy for placement, before water is turned on.

13. KWD has the authority to request the following when a "Customer" signs up for service, but not limited to the following:
- a) Rental Agreement
 - b) Deed
 - c) Property Tax
 - d) Proof of Ownership
14. KWD has the authority to size all water meters 1 inch or greater. For water meters greater than 1 inch, the customer or future customer must show the flow requirements in gallons per minute needed for proper water meter sizing. Calculations may be required to be certified by an Engineer or an Architect.

15. Water Taps or services installed by “Developers” are considered unpaid water taps. The initial customer must pay a “Water User Fee” to get service with KWD, See “*Schedule of Rates and Charges.*” The process for water service will be treated as a new water tap.
16. KWD will have up to four (4) business days to turn on a water service on subsequent Customers after the “initial customer” and the subsequent customer has completed all required documentation (paper work) and paid all fees (See Schedule of Rates and Charges)
17. Customer wanting to sign up for service at KWD’s office during regular business hours must arrive by 3:00 p.m. EST to allow enough time to complete the process of signing up for service. KWD may deviate from this policy when signing up customers for new projects.

Title of Policy:	Theft of Service Policy	<u>Pg 1-5</u>
Section #:	Section 23	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		

POLICY STATEMENT

1. Tampering with KWD equipment or stealing service will be grounds for discontinuance of utility service. Theft of service shall include, but not be limited to the following:
 - a) Opening valves at the curb or meter that have been turned off by utility personnel;
 - b) Breaking, picking or damaging cut-off locks;
 - c) By-passing meters in any way;
 - d) Taking un-metered water from hydrants by anyone other than an authorized official of a recognized fire department; fire insurance company or KWD for any purpose other than fire-fighting, testing or flushing of hydrants;
 - e) Use of sprinkler system water service for any purpose other than fire protection;
 - f) Removing, disabling or adjusting meter registers;
 - g) Connecting to or intentionally damaging water lines, valves or other appurtenances for the purpose of stealing or damaging KWD equipment;
 - h) Moving the meter or extending service without permission of KWD
 - i) Any other intentional act of defacement, destruction or vandalism to KWD property or act that affects KWD property;
 - j) Any intentional blockage or obstruction of KWD equipment.
2. No “notice of violation” will be mailed or delivered and customer service is subject to immediate cut-off in any of the following situations:
 - a) In the opinion of KWD manager, theft of service is evident on the customer’s premises;
 - b) When in the opinion of the manager a situation exists that may endanger public health;
3. In addition, the customer will be subject to a “Tampering Fee” violation payment as well as service call charges, labor and replacement parts as detailed by KWD, per incident.
4. If KWD determines theft of service has occurred, it reserves the right to adjust the customer’s current bill and the bills for the past twelve (12) months usage. If the approximate amount of service that was stolen cannot be reasonably determined, the customer’s usage will be set at four times the minimum bill.

5. Service will not be restored until all payments for the following are received by KWD:
 - a) Adjusted payment for utility service;
 - b) Violation payment (see section 4 above);
 - c) All service call charges;
 - d) Labor;
 - e) Replacement parts;
 - f) Reinstatement of service charge.
6. Service will be reinstated only during regular working hours, Monday through Friday.
7. Discontinuance of service by KWD shall not release the customer from liability for payment for service already received or from liability from payments that thereafter become due under the minimum bill provisions or other provisions of the customer's contract.
8. KWD shall not be liable for any loss or damage resulting from the discontinuance of service.
9. The customer(s) whose name(s) appear(s) on the application for service is (are) the customer(s) responsible for payment of all charges. That customer is also responsible for any rules or policy violations that occur regarding the utility service to that property. Personal participation by the customer in any such violation shall not be necessary to impose personal responsibility on the customer.
10. In the event any customer fails to pay any utility fee or charge, the customer shall pay all costs of collection including court costs and reasonable attorney's fees incurred by the utility in collecting such sums.
11. KWD shall have the right to refuse to render service to an applicant or to any member of an applicant's household who is living at the same address whenever such person(s) is (are) delinquent on any payment to KWD or had his/her service discontinued because of a violation of the regulations or policies of KWD.
12. KWD may notify the appropriate authorities immediately upon discover of theft when a person has stolen from KWD in any manner. Theft of service shall include, but not be limited to the following;
 - a) Jumpers on water meters,
 - b) Bypasses around water meters,
 - c) Taps made by anyone not authorized by KWD
 - d) Unauthorized connections to hydrants

13. KWD will additionally charge the following for theft of service by the act of:

- Removing the lock or breaking the shut-off valve.
 - See Schedule of Rates and Charges-
 - Tampering Fee Level 1
- Installing a jumper in the place of the meter
 - See Schedule of Rates and Charges-
 - Tampering Fee Level 2
- Bypasses around water meters
 - See Schedule of Rates and Charges-
 - Tampering Fee Level 3
- Taps made by anyone not authorized by KWD
 - See Schedule of Rates and Charges-
 - Tampering Fee Level 4

14. If a person continues to steal water from the utility, the fees above will double exponentially, i.e. First offense is \$100, Second offense is \$200, and subsequent offenses may result in loss of service privileges

Other charges will apply, water usage, locks, damaged equipment, etc....

Failure to pay may result in the water tap being removed from the premises until all fees, water bills and a Tap Fee is paid in full.

65-35-102 Prohibited acts.

It is unlawful for a person to:

- (1) (A) *Knowingly tap, cut, burn, break down, injure, destroy or otherwise interrupt or interfere with the current, lines, cables, poles, towers, fixtures or appliances utilized to furnish service to the general public by any telephone or telegraph company, or electric light or power company engaged in furnishing communication, light, heat or power by electricity; or*
 (B) *In any way injure, remove, destroy or interfere with any gas, sanitary sewer, or water fixtures or appliances;*
- (2) *Obtain or attempt to obtain, by the use of any fraudulent scheme, device, means or method, telephone or telegraph service or the transmission of a message, signal or other communication by telephone or telegraph, or over telephone or telegraph facilities with intent to avoid payment of the lawful price, charge or toll therefore, or for any person to cause another to avoid such payment for such service, or for any*

person for the purpose of avoiding payment, to conceal or to assist another to conceal from any supplier of telecommunication service or from any lawful authority the existence or place of origin or of destination of any telecommunication, or for any person to assist another in avoiding payment for such service, either through the making of multiple applications for service at one (1) address, or otherwise;

- (3) **Obtain or attempt to obtain by use of any fraudulent scheme, device, means or method, electric, sanitary sewer, water, or gas service, with intent to avoid payment of the lawful price, charge or toll therefor, or for any person to cause another to avoid such payment for such service, or for any person to assist another in avoiding payment for electric, sanitary sewer, water, or gas service, either through the making of multiple applications for service at one (1) address, or otherwise;**
- (4) **Divert or use electrical power with the intent to defraud or deprive any public or private electric power supplier from receiving proper charges or payment for such electrical power; or**
- (5) **Commit any of the following acts which would make gas, electricity, telephone, sanitary sewer service, or water available to tenant or occupant by committing any of the following acts:**
 - (a) **Connect any tube, pipe, wire or other instrument with any meter, device or other instrument used for conducting telephone, gas, electricity, sanitary sewer service, or water in such a manner as to permit the use of the telephone, gas, electricity, sanitary sewer service, or water without same passing through a meter or other instrument recording the usage for billing;**
 - (b) **Alter, injure or prevent the action of a meter, valve, stopcock, or other instrument used for measuring quantities of telephone, gas, electricity, sanitary sewer service, or water;**
 - (c) **Break, deface or cause to be broken or defaced any seal, locking device or other parts that make up a metering device for recording usage of telephone, gas electricity, sanitary sewer service, or water or a security system for such recording device;**
 - (d) **Remove a metering device for measuring quantities of telephone, gas, electricity, sanitary sewer service, or water;**
 - (e) **Transfer from one (1) location to another a metering device for measuring utilities of telephone, gas, electricity, sanitary sewer service, or water;**
 - (f) **Use a metering device belonging to the Utility that has not been assigned to the location and installed by the Utility;**
 - (g) **Adjust the indicated consumption, jam the measuring device, bypass the meter or measuring device with a jumper so that it does not indicate use or registers incorrectly or otherwise obtain quantities of telephone, gas, electricity, sanitary sewer service, or water from the Utility without same passing through a metering device for measuring quantities of consumption for billing; or**
 - (h) **Fabricate or use a device to pick or otherwise tamper with the locks used to deter electric current diversion, telephone diversion, gas diversion, water diversion, sanitary sewer service diversion, meter tampering and meter thefts.**

65-35-103 Evidence of violation

- (a) Any property on which it is found to have telephone, electric, gas, sanitary sewer, or water utilities tampered with in violation of 65-35-102, and capable of receiving telephone, electricity, gas, sanitary sewer, or water service as a result of the use of any method of diversion prohibited in that section, is prima facie evidence and creates against the tenant or occupant a presumption of intent to tamper or diver in violation of the provisions of 65-35-102.
- (b) The presence upon property served by a Utility of a metering device altered to improperly monitor the amount of Utility service used on or by such property is presumptive evidence that the Utility Customer has diverted or used Utility service with the intent to deprive or defraud the Utility from receiving proper charges or payment for such Utility service in violation of the provisions of this chapter.

65-35-104 Civil liability-Damages-Liens-Perfection of liens.

- (a) Any person violating the provisions of 65-35-102 is liable civilly for damages resulting from such violation, including actual, compensatory, incidental and punitive damages.
- (b) The damages shall be three (3) times the Utilities estimated loss of revenue, plus reasonable attorneys' fees and costs associated with such loss.
- (c) A finding of guilt in violation of 65-35-102, as part of an action brought to impose the penalties under 39-14-104, is conclusive evidence of liability for civil damages recoverable under this chapter in any court of appropriate jurisdiction in a proceeding to assess civil damages against the guilty party.
- (d) Regardless of any criminal charge or lack thereof, any Utility may nevertheless bring a civil action in any court of appropriate jurisdiction against the owner, occupant or tenant and allege the violation of any of the acts prohibited by 65-35-102; and upon a finding that the person has violated 35-35-102, the court shall likewise determine the estimated loss of revenues and award judgment for sums specified in subsections (a) and (b)
- (e) (1) Any Utility that can properly establish the amount of Utility service fraudulently taken on or by any premise occupied by the owner thereof shall have the right to declare a lien for the value of such Utility service against the property on which the Utility service was taken.
 - (2) The lien shall be filed within one (1) year of the date of the Utility's first actual knowledge of the fraudulently diverted Utility service.
 - (3) (A) The lien shall be perfected upon the filing of a notice with the office of the register of deeds of the county in which the property upon which the lien is claimed is located, and such lien shall be second only to liens of the state, county, or municipality for taxes and special assessments, and any valid lien, right, or interest in such property duly recorded or duly perfected by filing, prior to the filing of such notice. Such notice shall contain the name of the titleholder(s) of the property upon which the lien is claimed, the property address, a description of the property sufficient to identify it, the signature and address of the entity claiming the lien, and the amount claimed by such entity.
 - (B) The priority of liens established by the subdivision shall apply to all liens filed pursuant to this subsection on or after April 10, 1990
 - (4) If the Utility has not registered the notice as provided in subdivision (e)(3), such lien shall not be effective against a bona fide purchaser for value without actual or constructive knowledge of the fraudulently diverted Utility service.
- (f) Civil actions pursuant to the provisions of this section shall be commenced within the time required by Tennessee law in an action to recover damages for the loss of property.

Title of Policy:	Unclaimed Property	<u>Pg 1-2</u>
Section #:	Section 24	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 24.1

Background and Purpose:

Any Customer seeking utility service shall be treated courteously and fairly by the Water Board, Manager and Staff.

It is accepted utility practice in the United States that money and other property that utilities hold for Customer, employees, and other entities be returned to the owner of that property within a reasonable period of time after termination of the Utility's relationship with the owner. If a good faith effort to locate the owner of such property is not successful, the money or other property must be reported to and turned over to the State Treasurer.

Tennessee's unclaimed property law (TCA 66-29-100/153) requires that money or other property that has not been claimed by the owner within a specified dormancy period must be reported to the State Treasurer. The state will then attempt to notify the owner. There is no limit to the amount of time an owner of the property has to reclaim it.

Unclaimed funds turned over to the state may be claimed by the owner at any time. Funds which are not returned to the owners are used by the state to offer financial assistance to medical practitioners who agree to set up practice in a rural Tennessee area where medical care is not currently available.

Under (TCA 66-29-108), state law declares the following: "The following funds held or owing by any...Utility are presumed abandoned:

- (1) Any deposit made by a subscriber with a utility to secure payment, any sum overpaid, or any sum paid in advance for utility services to be furnished, less any lawful deductions, that has remained unclaimed by the person appearing on the records of the Utility entitled thereto for more than two (2) years after the termination of the services for which the deposit, overpayment, or advance payment was made;*
- (2) Any sum that a Utility...has been ordered to refund by a court of administrative agency, together with any interest thereon, less any lawful deductions, which has remained unclaimed by the owner for more than two (2) years after it became payable in accordance with the final determination or order providing for the refund, whether or not the final determination or order requires any person entitled to a refund to make a claim for it; and*
- (3) Property described above, without regard to any activity or inactivity within specified abandonment periods, whose owner is known to the holder to have died and left no one to take the property by will and no one to take the property by intestate succession.*

Record Keeping Duration:

KWD adopts the current MTAS Record Retention Policy.

Under TCA 68-29-113, Utilities shall maintain a record of the name and last known address of the owner of unclaimed property for ten (10) years after the property becomes reportable.

Omissions:

In the absence of specific rules or policies, the disposition of unclaimed property disputes shall be made by the Board of Commissioners in accordance with its usual and customary practices.

POLICY STATEMENT

1. All unclaimed property is required by law to be reported and turned over to the state treasurer, based on the following timetable:
 - a. Utility deposits-Two (2) years after termination of service
 - b. Wage checks-One (1) year
 - c. All other property-Five (5) years
2. ALL unclaimed property must be reported on and turned over to the state treasurer's office by May 1 OF EACH YEAR, reporting property held as of the previous December 31. The report shall be filed in accordance with the State Treasurer rules and regulations:

State Treasurer
Division of Unclaimed Property
Andrew Jackson Building, 15th Floor
Nashville, TN 37243-0203
(615) 741-6499
3. If KWD holds a customer's unclaimed property in the amount of fifty (\$50) or more, KWD is required to attempt to contact the owner by first class mail between January 1 and May 1 of the year property is to be remitted to the state treasurer. KWD is NOT obligated to publish or advertise a list of unclaimed property owners.
4. Any customer's unclaimed property in an amount less than fifty (\$50) does NOT require a first-class mailing. The amount is simply reported and remitted on May 1 to the State Treasurer.

Title of Policy:	Utility Line Extensions	<u>Pg 1-2</u>
Section #:	Section 25	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 25.1

POLICY STATEMENT

This policy does not apply to extensions which are part of a new subdivision or development; nor does it apply to projects funded by grants.

1. Applicants seeking the extension of utility lines shall present to KWD a petition for extension of such lines. The petition shall include the following information:
 - (a) Name, address ("911" address or street address), and phone number of each applicant requesting service.
 - (b) Name and address of nearest person that KWD now serves;
 - (c) Type of service(s) requested (residential, commercial, fire protection, etc.);
 - (d) A rough map with the approximate location of the applicant(s) to be served;
 - (e) Date service is desired;
 - (f) Payment of any required petition fees.
2. Within 60 days of receipt of the petition, the manager or his designee will make a preliminary estimate of the cost of the extension.
3. Line extensions may be considered for construction when the Water Board or its designee determines an extension meets the following criteria:
 - (a) Adequate capacity of the system or the line(s) to be connected to is available;
 - (b) The extension is judged to be operationally and financially feasible;
 - (c) Applicant must have a dwelling or have a completed foundation that is under construction.
 - (d) Adequate funds for construction of the extension are available to KWD.
4. If the proposed extension does not meet the requirements of paragraph 3, the applicant(s) may be presented with the following options at the discretion of the Water Board or its designee;
 - (a) Applicants may make an additional contribution in a specified amount per applicant for construction;
 - (b) Applicants may contribute labor, equipment and/or material to offset the cost;
 - (c) Construction may be delayed pending availability of a grant;

- (d) The customer may enter into an agreement with KWD to install the extension to KWD's specifications and then on completion and upon acceptance by KWD, the customer(s) will give the extension to KWD.
- 5. When the criteria in paragraph 3 are met or when the applicants comply with the option or options selected by the Board in paragraph 4, the applicant(s) shall;
 - (a) Complete KWD's customer application or contract for service;
 - (b) Grant KWD the necessary easement(s) on their property;
 - (c) Pay all fees and charges (tap fees, service charges, etc.);
- 6. After the above is completed, KWD will then have the extension designed and installed in a timely manner.
- 7. If for any reason not caused by the applicant(s) the project is not constructed, all fees and payments will be refunded to the applicant(s)
- 8. KWD shall install all line extensions along public roads only, unless it benefits KWD to install on private roads, access roads, easements, etc.... The cost for public roads will be determined by the paragraph directly before this one. This cost should be used on private roads, access roads, easements, etc....when it benefits KWD. If it does not benefit KWD running lines on private roads, access roads, easements, etc...., the customer(s) shall pay all expenses for the line extension.
 - (a) Public road is defined as a City, County, State or Federal owned Road.

Title of Policy:	Vehicle Use Policy	<u>Pg 1-5</u>
Section #:	Section 26	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 26.1

Part A

Insurability of Operators Policy

Operators of Kingston Water Department (KWD) vehicles must meet KWD's guidelines for operators of KWD vehicles and the underwriting guidelines set by KWD's vehicle liability insurance carrier set forth in Part A of this policy. Operators of KWD vehicles must be insurable under KWD's vehicle liability insurance policy. The term "KWD vehicle" as used in this Policy includes any type of motor vehicle owned or leased by KWD.

KWD's guidelines for operators of KWD vehicles include the following:

- a. KWD will order a Moving Violation Report (MVR) at least annually on each operator;
- b. Operators must report any moving violation to KWD within 10 days of violation, and the failure to report such moving violation may result in disciplinary action up to and including termination; and
- c. Each operator shall furnish annually upon renewal his or her motor vehicle operator's license for KWD to copy and place in its files.

KWD reserves the right to adopt additional guidelines or to revise these guidelines in the future.

KWD refers to "employee", which also means an authorized representative of the City of Kingston.

When a KWD employee's job duties require the operation of a KWD vehicle, only persons who are insurable by KWD's vehicle liability insurance carrier shall be eligible for employment by KWD.

All current and future operators of KWD vehicles must be insurable under KWD's vehicle liability insurance policy without any additional premiums being required for a higher risk operator by KWD.

Any operator or applicant for employment with KWD with a "serious" violation of three (3) or more "moving violations" within the last three years as set forth in the table below are consider uninsurable.

Serious Violations	Moving Violations
Driving under the influence of alcohol or drugs, and/or refusal to submit to a blood alcohol test	Speeding Violations
Any felony involving the use of a vehicle	Improper or excessive lane changes
Vehicular Homicide	Following the vehicle ahead too closely
Fleeing or attempting to elude police, failure to stop and report an accident in which the driver was involved	At fault accident
Reckless driving/Racing	Running a red light or stop sign
A violation arising in connection with a fatal accident	Failure to yield
Driving under a suspended or revoked license	

Any operator who is considered uninsurable under this policy will be subject to a reduction in position and/or pay, placed on non-driving status or termination of employment at KWD's discretion.

Part B

Operators of KWD vehicles shall comply with Part B of this Policy to help ensure the safety of KWD employees and the public.

KWD vehicles shall be used only for KWD business and are not for personal use unless authorized by the Utility Director. "De minimus" or occasional use by an employee during the normal commute to and from work and/or to an assigned jobsite shall not be considered personal use. De minimus use may include "stops" in KWD vehicle at a grocery store, bank, dropping-off or picking-up your child(ren) at school and similar stops when performed during the normal commute to and from work and/or to an assigned jobsite.

If an employee uses a KWD vehicle for non-Utility business in an emergency, the employee shall report such use in writing to the Supervisor within five (5) days of such use.

Employees permitted to take a KWD vehicle home because the employee uses the KWD vehicle for commuting purposes shall not use KWD vehicle to run personal errands or attend personal functions after taking the vehicle home. Employees who use a KWD vehicle only for commuting purposes must comply with certain IRS requirements to have such personal use valued at \$1.50 each way. These requirements are covered in Part D of this Policy. This paragraph shall not

apply to employees permitted to take a KWD vehicle home when such employees are utilizing the vehicle for call-out purposes.

OPERATOR SAFETY REGULATIONS

To properly carry out the mission of KWD, KWD adopts certain regulations and requirements for the operators of KWD vehicles that will ensure uniformity and safety. Many of these regulations and requirements are based on both Federal and State Laws, but are also designed to protect our operators and other users of the roadway, as well as KWD's equipment, and property of others.

- The operator will comply with all traffic and safety regulations in the location the operator is traveling. Seat belts are required for the operators of KWD vehicles and for passengers in accordance with Tennessee State Law. (exception: meter readers while reading meters, locating utility lines, etc.) TCA 55-9-603
- The operator shall report for work timely to enable the operator to have adequate time to check the vehicle and its equipment.
- The operator must be physically able to efficiently perform his/her duties. An operator who is ill or fatigued will not be permitted to work. Operators must comply with the City of Kingston's Substance Abuse Policy.
- The operator is responsible for the proper maintenance of his or her vehicle while traveling, including oil, water, and tires. The abuse of vehicles will not be tolerated.
- The operator shall be responsible for cleaning all glass, including windshield, side windows, and mirrors, and the interior of the vehicle.
- The operator will complete assigned trips without undue delay in keeping with public safety.
- Any operator who finds it necessary to use any safety equipment, with special regard to fire extinguishers or first aid kits either on equipment or in KWD office, will report such to his/her supervisor.
- If at any time the vehicle should become unsafe, the operator will properly park the vehicle and notify his/her supervisor keeping in mind the safety and security of the vehicle and cargo.
- The operator of any vehicle that is stopped or disabled upon the highway must immediately put out available emergency signals such as flags, reflectors, and/or flares
- The operator must report immediately any damage to the vehicle or any instance of property damage or personal injury caused by use of the vehicle.
- The operator will advise his/her supervisor in the event he/she is arrested or charged for an alleged violation of motor vehicle laws.
- Each operator must have a valid operator's license in his/her possession at all times.
- The operator will not pick up hitchhikers or carry unauthorized persons in KWD vehicles.
- The operator must remain insurable as set forth in Part A of this Policy.

- Vehicles may not be loaned to anyone not authorized by KWD.

Part C

Employees who are provided KWD vehicles as a part of the employee's compensation and/or benefit package must comply with Part C of this Policy. Such employees shall use KWD vehicle primarily in the day-to-day operation of KWD business but may also use KWD vehicle for personal use at the employee's discretion.

KWD will ensure that proper vehicle liability insurance is provided to protect both KWD, the employee and the passengers of these vehicles.

The employee to whom the vehicle is assigned is responsible for the proper operation of the vehicle. Under normal conditions the employee shall be the only operator of the vehicle. However, occasional use by other persons is allowed as long as they meet the conditions for operations set forth in this Policy.

Part D

Reporting Personal Use of KWD-Owned Vehicle

IRS Requirements

When a KWD employee uses a KWD vehicle for personal use, the value of the personal use of that vehicle must be included as taxable income to the employee and is to be reported on the employee's W-2 Form. The value of such personal use is subject to the FICA tax and federal income tax withholding. KWD may elect not to withhold federal income tax provided KWD gives the employee advance written notice of its election not to withhold.

Personal use of certain vehicles unlikely to be used for personal reasons is exempt from being treated as wages. These exempt vehicles include buses, ambulances, police and fire vehicles, construction vehicles, and any vehicle designed to carry cargo with a loaded gross weight of over 14,000 pounds. Pickup trucks may also be exempt when they are marked with permanent decals or painting and are equipped with a hydraulic lift gate, permanently installed tanks or drums, permanently installed side boards or panels materially raising the sides of the bed, or heavy equipment such as an electric generator, welder, boom, or crane used to tow automobiles and other vehicles which make them unlikely to be used for personal use.

Personal Use-Commuting. When KWD permits an employee to take a KWD vehicle to and from work for commuting purposes, the personal use of the vehicle used in commuting must be included in the employee's wages. The IRS will permit an employer to include \$1.50 as the value of the commuting use per one-way commute. When KWD vehicle is used to commute to and from work, \$3.00 a day for commuting use may be used to include in an employee's wages for such personal use.

This rule for valuing commuting use can only be used when the following conditions are met: (1) KWD owns or leases the vehicle for its employees to use for KWD business, (2) KWD requires the employee to commute in the vehicle for bona fide non-compensatory reasons, (3) KWD establishes a written policy which does not allow the employee to use the vehicle for personal reasons other than commuting and de minimus personal use (such as a stop for a personal errand on the way between work and home), (4) the employee does not use the vehicle for personal purposes other than commuting or de minimus personal use, and (5) the employee must not be a control employee.

Personal Use-Non-Commuting. When an employee's personal use of a KWD vehicle is not eligible for the commuting value rule, the employee's personal use of a KWD vehicle must be valued by KWD for IRS reporting purposes using one of three rules; (1) the fair market value rule; (2) the annual lease method rule; or (3) the cents-per-mile valuation rule. Each rule of valuation has very specific regulations which govern when the particular rule can be used and how such rule is to be applied. A detailed description of these valuation rules is beyond the scope of this policy. KWD, the employee, KWD's accountant and the employee's tax advisors should determine the most appropriate valuation method which should be used by the employee to report his/her personal use of a KWD vehicle.

Title of Policy:	Water / Sewer Adjustment Policy	<u>Pg 1-3</u>
Section #:	Section 27	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:	June 13, 2023, June 9, 2026	Policy 27.1

***Water Leak Relief Program effective August 11, 2023. Claims prior to this date serviced through Servline Leak Protection*

Active Residential / Commercial Customers

All residential/commercial customers will be automatically enrolled with the Water Leak Relief Program. The automatic enrollment ensures that the customer will have water loss protection or water/sewer loss protection dependent on the services available to the customer. This protection is billed to the customer monthly. Terms and conditions of the Water Leak Relief Program are administered by Water Leak Relief Program's current insurance provider. If the customer determines that they do not wish to participate in the program, they must contact Water Leak Relief Program directly to opt-out. If the customer opts-out of the program and suffers a leak then it will be the responsibility of the customer to pay the bill in full.

If the customer suffers a leak and Water Leak Relief Program pays the maximum benefit; the customer may be eligible for an adjustment through the "Neighbors Helping Neighbors" Catastrophic Leak Adjustment Program (*contingent on available funds*) or have the option to set up a payment plan with KWD.

***Line protection policies are also available to the customer through Water Leak Relief Program. The customer must initiate the addition of this policy by contacting Water Leak Relief Program directly. The line protection policies will also be billed through KWD after KWD has been notified by Water Leak Relief Program.*

Meter Testing

If a customer receives a high bill and believes that it is due to malfunction in the meter then the following will occur:

- If an investigation of the meter and meter record establishes that the meter was properly read and that there was no failure of utility equipment, the bill will remain valid and payable.
- If the customer questions the accuracy of the meter, the customer may pay the utility bill in question plus a meter testing fee of *See Schedule of Rates and Charges* for residential meters and commercial and industrial meters. KWD will remove the meter and ship it to the manufacturer or have a recognized meter testing company test the meter on site. KWD will pay all costs associated with the testing of the meter

If the meter proves to be accurate within guidelines established for used meters by the American Water Works Association (AWWA) the customer forfeits the meter testing fee. If the meter does not meet AWWA accuracy standards, KWD shall refund the meter testing fee to the customer and repair or replace the meter.

1. It is the policy of many water utilities, and it shall be the policy of KWD to have the customers of KWD subsidize the bill of any one customer only when there is an inaccurate meter or utility equipment failure. KWD may make adjustments to bills under certain conditions. Examples include, but are not limited to the following:
 - a) Damaged meters;
 - b) Damaged AMR devices;
 - c) Frozen meters
 - d) Leakage on the customer's side of the meter that is caused by the utility.
2. If an adjustment of the customer's bill is warranted due to an inaccurate meter or due to the failure of equipment that is the responsibility of KWD, the amount of the bill will be determined based on the average for the billing period for the last six (6) months. Businesses must have at least 6 months of consumption.
3. Leak protection for residential customers will cover two (2) claims per year at the service limit of \$5,000. Amounts greater than \$5,000, the customer is responsible for 100% of the remaining bill. **Customer may*

be eligible to apply for the “Neighbors Helping Neighbors” Catastrophic Leak Adjustment Program

4. Only the account holder can request leak adjustments and enroll or opt-out of Leak Protection or Line protection services.
5. A thirty (30) day waiting period is required when enrolling into leak protection if the customer opted out.
6. A thirty (30) day waiting period is required when enrolling into line protection.
7. If the claim is denied by Water Leak Relief Program or KWD, then the customer is 100% responsible for the entire bill.
8. If a customer pays a bill that has excess charges due to a leak and then the customer receives an adjustment from the leak protection program, the customer can request a refund if the customer has a credit balance. The customer can only receive the maximum amount the leak protection program paid KWD, less the amount owed to KWD at the time of refund. The customer must request the refund in writing to KWD

Wastewater Leak Adjustments

KWD will NOT give adjustments on the following: Examples include, but are not limited to: Adjustments on wastewater bills will NOT be made on the following:

- (1) Routine dripping faucets, or any type of faulty customer plumbing, examples include but not limited to:
 - a. Fire sprinkler system,
 - b. Lawn irrigation system,
- (2) Premises left or abandoned without reasonable care for plumbing system;
- (3) Filling of swimming pools; and
- (4) Watering of lawns or gardens.
- (5) Filling of ponds,
- (6) Watering cattle

****Customers may be eligible to apply for the “Neighbors Helping Neighbors” Catastrophic Leak Adjustment Program”**

Title of Policy:	Waiver of Sewer Tap Fees	<u>Pg 1-2</u>
Section #:	Section 27	
Approval Date:	<u>September 8, 2026</u>	
Revision Date:		Policy 27.2

POLICY STATEMENT

Establish a fair and consistent process for waiving sanitary sewer tap fees for eligible customers who have paid sewer usage charges despite not being physically connected to the City's sanitary sewer system.

The Kingston Water Department may waive the applicable sewer tap fee for qualifying properties meeting this policy. The waiver applies only to the sewer tap fee and does not waive any other connection costs.

Eligibility Requirements

1. The property has been billed for and has paid monthly sewer service charges by KWD despite not being physically connected to the KWD sanitary sewer collection system.
2. The cumulative amount of sewer usage charges previously paid by the customer for the subject property must be equal to or greater than the sewer tap fee in effect at the time the customer requests connection to the KWD sanitary sewer system. If the total sewer usage charges previously paid are less than the current sewer tap fee, the property is not eligible for a waiver.
3. KWD verifies that the property was not physically connected to the KWD sanitary sewer collection system during the period sewer service charges were assessed.
4. The customer requests connection to the KWD sanitary sewer system
5. All outstanding utility balances have been paid in full or satisfactory payment arrangements have been approved by KWD
6. KWD verifies eligibility and recommends approval

Costs not waived

The property owner remains responsible for all costs other than the sewer tap fee, including service line installation, excavation, plumbing modifications, permits, inspections, grinder pumps if required, easements, contractor costs, engineering, and regulatory compliance.

Verification

Documentation supporting eligibility shall be maintained in the customer's utility account file.

Limitations

This policy does not authorize refunds of previously paid sewer suage charges, waive water tap fees, waive construction or permit costs, or require KWD to extend infrastructure where service is unavailable.

Administration

KWD Utility Director shall review requests and determine eligibility. The City Manager may approve or deny requests or refer unusual circumstances to the Kingston Water Board

Title of Policy:	Outside City Sewer Service	<u>Pg 1</u>
Section #:	Section 28	
Approval Date:	<u>February 9, 2021</u>	
Revision Date:		Policy 28.1

Policy:

This policy applies to areas located outside the corporate city limits of the City of Kingston where sewer infrastructure already exists.

1. Current KWD customers will be allowed to connect to KWD sewer infrastructure according to the guidelines set forth in the "City of Kingston Standard Sewer Specifications".
2. Customers requesting to connect are required to request an estimate from KWD for the connection.
3. Customers will be responsible for all costs associated with the connection including:
 - Sewer User Fee
 - Materials (i.e., Grinder Pump, Sewer saddle, service line, road bore, sewer box, shut-off valves and check valves)
4. Customers will be responsible for the installation and maintenance of infrastructure from the point of the sewer box to their residence and/or business.
5. Once connected the Customer will be responsible for monthly billing rates according to the published Sewer Rates.
 - The customer will also be automatically enrolled in the Servline Sewer Loss Protection coverage and will be billed accordingly.
(Customer can opt-out of this coverage-See Water/Sewer Adjustment Policy)
 - Servline Sewer Line coverage will be available to the Customer by contacting Servline directly. Once KWD is notified of addition of this coverage the customer will be billed accordingly through KWD

KWD will be responsible for obtaining any required permits associated with the road bore if applicable.

KWD will be responsible for ensuring that the "City of Kingston Standard Sewer Specifications" guidelines are met by the customer.

Title of Policy:	Fat-Oil-Grease (FOG) Reduction and Removal Policy	<u>Pg 1-9</u>
Section #:	Section 29	
Approval Date:	<u>May 11, 2021</u>	
Revision Date:		Policy 29.1

POLICY STATEMENT

SECTION 1. Removal of fat, oil, and grease. The Kingston Water Department encourages all users of the sanitary sewer system to take voluntary steps to reduce the amount of fats, oils, and grease that is poured, drained or washed down drains into the sanitary sewer system.

SECTION 2. Definitions. In the interpretation and application of this Policy the following words and phrases shall have the indicated meanings:

- (a) Best Management Practices (BMP's) means actions or schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the requirements of this Policy.
- (b) Fats, Oils, and Grease (FOG). Organic polar compounds derived from animal and/or plant sources. If lab testing is required to quantify the amount of FOG, the Hexane Extractable Material test is to be used or an equivalent 40 CFR 136 approved method.
- (c) Food Service Establishment (FSE). Any establishment, business or facility engaged in preparing, serving or making food available for consumption. Single family residences are not a FSE, however, multi-residential facilities may be considered a FSE at the discretion of the Superintendent. FSEs are classified as follows:

Class 1: Deli- engaged in the sale of cold-cut and microwaved sandwiches/subs with no frying or grilling on site, ice cream shops and beverage bars as defined by

North American Industrial Classification System (NAICS) 722515 or mobile food vendors as defined by NACIS 722330. Bed and breakfast establishments as defined by NACIS 72119.

Class 2: Limited-service restaurants (a.k.a. fast-food facilities) as defined by NACIS 722513 except fast food with a food line that is heavily fried and a history of FOG discharges that interfere with the sanitary sewer system, and catering as defined by NACIS 722320.

Class 3: Full-service restaurants as defined by NACIS 722110.

Class 4: Buffet and cafeteria facilities as defined by NACIS 72212.

Class 5: Institutions (schools, hospitals, prisons, etc.) as defined by NACIS 722310 but not to exclude self-run operations.

- (d) Grease, Brown. Fats, oils, and grease that are discharged to the grease control equipment.
- (e) Grease, Yellow. Fats, oils, and grease that have not been in contact with or contaminated from other sources such as water, wastewater, solid waste and can be readily recycled.
- (f) Grease Control Equipment (GCE). A device for separating and retaining wastewater FOG prior to the wastewater exiting the FSE property and entering into the sanitary sewer system. GCE includes grease traps and grease interceptors or other devices approved by the Superintendent.
- (g) Grease Interceptor. An interceptor whose rated flow exceeds 50 gallons per minute (g.p.m.) and is located outside the building.
- (h) Grease Trap. An interceptor whose rated flow is 50 g.p.m. or less and is typically located inside the building.
- (i) Grease Recycle Container. A container used for the storage of yellow grease for recycling.
- (j) Interceptor. A device designed and installed to separate and retain for removal, by automatic or manual means, deleterious, hazardous or undesirable matter from normal wastes, while permitting normal sewage or waste to discharge into the drainage system by gravity flow.
- (k) Interference. A discharge that, alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the sanitary sewer collection operation, the treatment processes or operations, or the sludge processes, use or disposal, or exceeds the design capacity City of the treatment works or collection system.
- (l) Tee (influent & effluent). A T-shaped pipe attached to the horizontal influent and effluent pipes of a grease interceptor and extending downward into the trap to depths specified by design which on the influent side forces influent flow into the center of the trap and prevents floating FOG from escaping the effluent pipe.
- (m) Black water. Wastewater containing human waste from sanitary fixtures such as toilets and urinals.
- (n) Gray water. Refers to all other wastewater other than black water.

SECTION 3. Discharge of FOG. Kingston Municipal Code § 18-207,

“No user shall contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater which will interfere with the operation and performance of the POTW:”. Prohibited discharges include: “Solid or viscous substances which may cause obstruction to the flow in a sewer or other interference with the operation of the wastewater treatment facilities but not limited to: grease...” and “Any waters or wastes containing fats, wax, grease, or oil, whether emulsified or not”.

SECTION 4. Interference with the sanitary sewer system operations. Any user who discharges animal and vegetable fat, oil, and grease in the volume or form which interferes with the operation of the sanitary sewer system may be subject to enforcement actions as specified in Section 13 of this Policy and may be billed for cleanup charges incurred by the City when that user's discharge causes operation and maintenance problems in the sanitary sewer system such as blockages, backups, overflows, interruption of service, excessive FOG accumulation in lift stations and pipes, and other FOG related problems that are tracked to that user's discharge.

SECTION 5. Control of FOG.

(a) All existing and new FSEs shall effectively control the discharge of FOG into the sanitary sewer system. A Class 1 FSE may do this through the use of Restaurant Industry best management practices such as those published by the National Restaurant Association. See: [NRA - Fats Oils Greases \(restaurant.org\)](http://NRA-FatsOilsGreases.restaurant.org). If best management practices fail to prevent sanitary sewer system interferences Class 1 FSEs shall install grease control equipment (GCE) as specified in Section 5, or by the superintendent.

(b) All new Class 2-5 FSEs shall install grease control equipment in sizes specified in Section 5 or by the Superintendent and properly maintain that equipment in such a way to prevent interference with the sanitary sewer system.

(c) Existing FSEs that do not meet these minimum sizes may continue to use existing GCE and/or best management practices if the discharge from the FSE is not interfering with the sanitary sewer system and the KWD gives written permission stating that the current GCE and practices are preventing interference with the sanitary sewer system. Upon written notice from the superintendent that the existing GCE or BMP's are inadequate to protect the sanitary sewer system from interference, the FSE shall have 60 days to install additional GCE to prevent FOG interference with the sanitary sewer system.

(d) All FSEs with GCE shall maintain records of cleaning and maintenance of that equipment. Records include at a minimum the date of cleaning or maintenance, company or person conducting the cleaning or maintenance, and the amount of grease and water removed from the equipment. A grease waste hauler completed manifest will meet this requirement.

(e) Yellow grease such as fryer oil, shall not be discharged into the GCE or into stormwater conveyances. The use of yellow grease recycling containers is encouraged.

(f) Owners of commercial property will be held responsible for wastewater discharges from FSE leaseholders on their property.

(g) All FSEs shall provide access to KWD personnel (after proper identification) for the purpose of inspection of GCE, kitchen equipment and practices, and any cleaning and drain remediation products which relate to the wastewater and FOG discharge.

SECTION 6. Grease Control Equipment (GCE).

(a) Minimum acceptable size of GCE is as follows. Larger sizes may be required by the Superintendent.

- a. Class 1: 20 gpm/40 lbs. grease trap.
- b. Class 2: 500-gallon grease interceptor.
- c. Class 3 1,000-gallon grease interceptor.
- d. Class 4: 1,500-gallon grease interceptor.
- e. Class 5 2,000-gallon grease interceptor.

(b) Any FSE either new or existing that is found by the superintendent to be interfering with the sanitary sewer system may be asked to install GCE that is larger than the minimum size and take other steps to stop that interference.

(c) Existing FSEs that do not meet these minimum sizes may continue to use existing GCE and/or best management practices if the discharge from the FSE is not interfering with the sanitary sewer system and the Superintendent gives written permission stating that the current GCE and practices are preventing interference with the sanitary sewer system. Upon written notice from the Superintendent that the existing GCE or BMP's are inadequate to protect the sanitary sewer system from interference, the FSE shall have 60 days to install additional GCE to prevent FOG interference with the sanitary sewer system.

(d) Additionally, FSEs that discharge the water from dishwashing machines through a grease interceptor shall install a GCE which is larger than the minimum to allow for cooling of the discharge and thereby prevent discharge of FOG into the sanitary sewer system.

(e) Grease Traps. These small, under-the-counter units shall be installed according to drawings provided by the superintendent and shall include vented flow restrictor prior to the trap. Dishwashing machines shall not be installed onto these units. Failure to follow this requirement will render the trap ineffective and the FSE shall be instructed to install a large external grease interceptor.

SECTION 7. Installation of GCE.

(a) Owners/users are responsible for installation of the GCE.

(b) Grease traps shall be installed according to the requirements in Section 5.

(c) Grease interceptors shall be substantially similar to sample drawings available from the Superintendent.

(d) Tanks must be water-tight and protected from rainwater inflow and infiltration.

(e) Two access manholes with a minimum of 24" diameter shall be provided, one directly over the influent pipe and Tee and one directly over the effluent pipe and Tee.

(f) Influent and effluent pipes shall be 4" or larger PVC Schedule 40 or stronger.

(g) Influent and effluent pipes shall be equipped with Tee fittings properly positioned as follows. Influent flow shall be directed downward and the Tee shall terminate 24 inches below the water surface. Effluent Tee shall block all surface grease and terminate 12" above the bottom of the unit.

(h) The tank shall be constructed to have two compartments. Two thirds of the volume shall be in the influent side and one third on the effluent side. A solid baffle wall shall extend from the bottom to within 6" of the top and shall be equipped with a 6" elbow installed in the baffle wall with drawing flow from the influent side of the unit at a depth of 12" from the bottom.

(i) Manhole covers shall be of materials and strength to withstand expected surface loads, and secured to prevent accidental entry.

(j) Interceptors shall be located for effective cleaning and not blocked by structures or landscaping.

(k) Interceptor sizes greater than 2,500 gallons shall be served by two tanks installed in series.

SECTION 8. Maintenance of GCE.

(a) Owners/users are responsible for maintenance of the GCE.

(b) Grease traps should be cleaned once every two weeks, or sometimes more often, if the

combined depth of FOG and solids exceed 50% of the trap.

- (c) Grease Interceptors shall be pumped when the layer of FOG and settled solids combined reaches 25% of the tank depth.
- (d) When grease interceptors are pumped, the entire contents, FOG layer, settled solids and water shall be fully removed. No water may be returned to the tank.
- (e) Interceptors shall be inspected for deterioration and damage by the waste grease hauler each time the unit is cleaned.
- (f) Deteriorated or damaged tanks shall be repaired or replaced within 60 days of notice of such conditions.
- (g) Kingston Water Department shall be notified at least 24 hours prior to trap or interceptor pumping event so the Department can provide each FSE no cost inspection service to assure proper pumping, cleaning, and inspection.

SECTION 9. Additives.

- (a) Additives include but are not limited to products that contain solvents, emulsifiers, surfactants, caustics, acids, enzymes and bacteria. They may be inorganic or organic in origin.
- (b) The use of additives is prohibited with the following exceptions:
 - i. Additives may be used to clean FSE drain lines but only in such quantities that will not cause FOG to be discharged from the GCE to the sanitary sewer or cause temporary breakdown of the FOG that will later re-congeal in the downstream sewer pipes.
 - ii. If a product used can be proven to contain 100% live bacteria, with no other additives, a request for permission to use the product shall be made to the superintendent. The request must be submitted in writing with a full disclosure Material Safety Data Sheet and a certified statement from the manufacture.

SECTION 11. Fees. This Policy empowers the KWD to establish fees (through a separate fee ordinance) to offset costs associated with the implementation of this Policy. Possible fees include: inspection fees, permitting fees, surcharge fees for high strength discharges, cleanup fees associated with FOG cleanup within the sanitary sewer system, and other fees necessary for implementation of this Policy.

SECTION 12. Permitting. The City may use FSE permits as a way of implementing this Policy, and may further require the permitting or certification of GCE service and pumping vendors.

SECTION 13. Enforcement.

Violators of this Policy may be issued FSE permits, cited to City court, general sessions court, chancery court, or other court of competent jurisdiction. Violators may face fines, have water and/or sewer service terminated, and the City may seek further remedies as needed to protect the collection system, treatment plant, receiving stream and public health. Repeated or continuous violation of this Policy is declared to be a public nuisance and may result in legal action against the property owner and/or user, and the service line may be disconnected from sewer main. Upon notice by the

superintendent that a violation has or is occurring, the user shall immediately take steps to stop or correct the violation. The City may take any or all of the following remedies:

- (a) Cite the user to City or general sessions court, where each day of violation shall constitute a separate offense.
- (b) In an emergency situation where the superintendent has determined that immediate action is needed to protect the public health, safety or welfare, a public water supply or the facilities of the sewerage system, the superintendent may discontinue water service or disconnect sewer service.
- (c) File a lawsuit in chancery court or any other court of competent jurisdiction seeking damages against the user, and further seeking an injunction prohibiting further violations by user.
- (d) Seek further remedies as needed to protect the public health, safety or welfare, the public water supply or the facilities of the sewerage system.

SAMPLE PERMIT

Wastewater Discharge Permit

Food Service Establishment

In accordance with the Sewer Use Ordinances of the City of Kingston, Tennessee and the adopted Fat-Oil-Grease (FOG) Policies:

Name:

Address:

Kingston, Tennessee 37763

is hereby granted permission to discharge kitchen wastewater from the above location into the sewer collection system of the City of Kingston in accordance with the conditions of this Permit.

Noncompliance with any term or condition of this permit shall constitute a violation of the sewer use ordinances of the City of Kingston.

This permit is granted in accordance with the Ordinances of the City of Kingston/KWD and is subject to the enclosed terms and conditions.

This permit is non-transferable.

KWD shall be notified sixty (60) days prior to any substantial change in volume or concentration of the discharge or FOG control equipment.

The permittee shall take all reasonable steps to minimize or correct any adverse impact to the public treatment plant or the environment resulting from noncompliance with this permit.

EFFECTIVE DATE:

EXPIRATION DATE:

Water/Sewer Distribution Manager or designee

Kingston Water Department

SAMPLE PERMIT

Legal Authority

Kingston Municipal Code § 18-207,

“No user shall contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater which will interfere with the operation and performance of the POTW:”. Prohibited discharges include: “Solid or viscous substances which may cause obstruction to the flow in a sewer or other interference with the operation of the wastewater treatment facilities but not limited to: grease...” and “Any waters or wastes containing fats, wax, grease, or oil, whether emulsified or not, in excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperature between thirty-two (32) or one hundred fifty degrees (150°) F or (0 to 65° C).

Permit Requirements

- A. Follow the City of Kingston FOG Policies
- B. Implement “Best Operational Practices” within the kitchen to reduce FOG discharge.
- C. Proper Operations and Maintenance

The permittee shall at all times properly operate and maintain all FOG control equipment. Proper operations and maintenance include proper installation, usage and cleaning of FOG control equipment or devices.

- D. Contact the City whenever FOG traps or interceptors are cleaned to arrange for pumping inspections to assure complete and proper cleaning and inspection.

City Inspection and Sampling

The City shall have the right to inspect the facilities at random to ascertain whether the purpose of this permit is being met and all requirements are being complied with. Persons or occupants of premises where wastewater is created or discharged shall allow the City or its representative ready access at all reasonable times to all parts of the premises for the purposes of inspection and / or sampling in the performance of any of their duties. The City shall have the right to install on the user’s property such devices as are necessary to conduct sampling or metering operation.

Special Conditions

This permit may be reopened and modified to incorporate any new or revised state or federal requirements, to control an unforeseen impact upon the treatment facility, the receiving stream or the wastewater sludge generated at the treatment plant by the permittee’s discharge, or to control an unforeseen impact due to the combination of the permittee’s discharge with another discharge.

SAMPLE PERMIT

Acknowledgment

I acknowledge the receipt of the Food Service Establishment Discharge Permit that applies to the noted facility effective on _____ and expiring_____.

Establishment_____

Permit No. _____

Signed _____

Title _____

Date _____



EMERGENCY PLAN



December 2022

OFFICIALS

CITY OF KINGSTON, TENNESSEE

MAYOR

Timothy F. Neal

VICE MAYOR

Tara Stockton

MEMBERS OF CITY COUNCIL

Phillip Bredwell

Tony Brown

Randy Childs

Lucy Johnson

Stephanie Wright

CITY MANAGER

David L. Bolling

ATTORNEY

Andrew Thompson

CONTENTS

	SECTIONS	DESCRIPTIONS	PAGE NUMBER
	SECTION 1	INTRODUCTION	5
	1.0	USER GUIDE	5
	1.1	SYSTEM DESCRIPTION	6
	1.1.1	System Map	6
	1.1.2	Water Source	6
	1.1.3	Water Treatment Plant	6
	1.1.4	Distribution and Storage	7
	1.1.5	Interconnections	7
	1.2	EMERGENCY AID AGREEMENTS	7
	SECTION 2	GENERAL RESPONSE TO EMERGENCY	8
	2.0	OBJECTIVES OF EMERGENCY PLAN	8
	2.1	GENERAL RESPONSE PATTERN TO EMERGENCIES	8
	2.1.1	Identify Emergency	8
	2.1.2	Initial Investigation	8
	2.1.3	Initial Action	9
	2.1.4	Corrective Action	9
	2.1.5	Follow-Up	9
	2.1.6	Summary	10
	SECTION 3	PERSONNEL AND COMMUNICATIONS	11
	3.0	PERSONNEL LIST	11
	3.1	COMMUNICATIONS CHAIN OF COMMAND	11
	3.2	COMMUNICATION EQUIPMENT	12
	3.3	DISASTER ALERTING PROCEDURES	12
	SECTION 4	EQUIPMENT MATERIALS INVENTORY	13
		MATERIALS AND EQUIPMENT INVENTORY	14-17
	SECTION 5	EMERGENCY RESPONSES	18
	5.0	GENERAL	18
	5.1	RESPONSES	18
	5.1.1	Power Failure	53
	5.1.2	Contamination	54

	5.1.3		Drought	18
	5.1.3.1		Rationing	19
	5.1.3.2		New Construction	20
	5.1.3.3		Practical Considerations	20
	5.1.4		Breaks	21
	5.1.5		Flood	21
	5.1.6		Fire	21
	5.1.7		Chlorine Leak	22
	5.1.8		Threats	22
	5.1.9		Earthquakes	23
	5.1.10		Nuclear Accident	24
			Threat Sheet Form	26
	SECTION 7	MEDIA RELEASES		27
	7.0	PUBLIC NOTIFICATION		28
	7.1	EXAMPLE PRESS RELEASES		29
	7.1.1	Power Failures		29
	7.1.2	Contamination		29

APPENDICES

APPENDIX A	CHEMICAL INVENTORY	
APPENDIX B	HAZARDOUS MATERIAL SPILLS EMERGENCY HANDBOOK	
APPENDIX C	DROUGHT MANAGEMENT PLAN	
APPENDIX D	BACTERIOLOGICAL SAMPLING PLAN	

SECTION 1

INTRODUCTION

1.0 USER GUIDE

The purpose of this Emergency Operation Plan is to provide water system operators and managers with specific details for emergency operations. This plan has been written as an aid and single-source reference for the water system. It may be used as a reference for emergency operations and for training personnel in emergency operations.

This Plan has seven sections, each dealing with an important aspect of system operation. A brief description of each section follows.

Section 1 is very general in context, describing the system.

Section 2 provides a general response to any emergency and outlines steps to be taken in emergency situations.

Section 3 is a communications listing of emergency personnel, agencies, phone numbers, and an inventory of communications equipment and facilities. A chain of command is also given.

Section 4 is an equipment and materials inventory of items readily available to system personnel.

Section 5 is an inventory of chemicals stored at the treatment plant, chemicals available for use in emergencies, and a listing of the source of chemicals.

Section 6 is the main focus of the plan. It discusses in specific detail operation plans during various emergencies.

Section 7 provides guidance for dealing with media during emergencies.

1.1 SYSTEM DESCRIPTION

The Kingston Water system supplies water to an estimated 4670 total connections (September 2022). The source of water is the Kingston Water Treatment Plant and Swan Pond Spring. Kingston's personnel operate the water production facility.

1.1.1 System Map

A Water System Key Map is available for the service area. This map is located in the Distribution Office and at the Water Treatment Plant. This map shows the location of all facilities, lines, tanks, pump stations, and valves. Prints of the map can be obtained from the engineer.

1.1.2 Water Source

The Tennessee River and Swan Pond Spring provide all of the water for the City of Kingston. The Tennessee River is a reliable source capable of meeting Kingston's needs even during periods of extreme drought. In a report entitled "Drought Related Impacts on Municipal and Major Self Supplied Industrial Water Withdrawals in Tennessee – Part B" (WRI Report 84-4074, page 362), the United States Geological Survey (USGS) determined the source capacity of the Tennessee River at mile 568 to be 892 million gallons per day (MGD).

The intake structure is capable of withdrawing 2.3 MGD at Tennessee River Mile 568.15. Large objects, debris, leaves, etc. are deflected using a stationary screen. Water is transmitted through a 12-inch raw water line to the treatment plant. The intake and Water Treatment Plant are both located above the 100-year flood elevation. Average production from the filter plant is one million gallons per day MGD.

Swan Pond Spring supplies an average of approximately 0.45 MGD.

1.1.3 Water Treatment Plant

Plant capacity is MGD. Raw water from the intake flows through a flash mix basin where CATION/C Polymer Blend/EC675 (pac/ferric) and H₂O₂ (50% Hydrogen Peroxide) are added. Passing onto Flocculation, flow moves through the sedimentation basins where pre-bleach disinfection is added prior to filtration at weir. Filtered water flows into the clearwell where post-bleach disinfection is injected, as is Hydro Fluorosilicic Acid (Fluoride), and Sodium Ortho Polyphosphate (SeaQuest) prior to pumping into system. Backwash water is provided by a backwash pump drawing water from clearwell. Rewash uses finished water, with all water filtering to waste. The Water Treatment Plant has On-Site Back-up Power Capabilities.

1.1.4 Distribution and Storage

The distribution system is composed of water lines ranging in size from two (2) to sixteen (16) inches in diameter. Storage facilities are as follows:



DISTRIBUTION SYSTEM / TANK INFORMATION

LOCATION	CAPACITY GALLONS	ELEVATION BASE	ELEVATION OVERFLOW	OTHER
KINGSTON WATER TREATMENT PLANT <i>PWSID TN0000360 NPDES TN0058572 USEPA Lab ID TN01321</i>	2.3 MGD	790.41		
KINGSTON SPRING PUMP HOUSE	.45 MGD	787.49'		
MORRISON HILL TANK <i>30' Tank / 33,333 gpf</i>	1,000,000	1000.12'	1030.12'	GRAVITY FLOW
KINGWOOD TANK <i>30' Tank / 8,333 gpf</i>	250,000	999.42'	1029.42'	GRAVITY FLOW
BONNEYVIEW TANK <i>30' Tank / 8,333 gpf</i>	250,000	999.90'	1029.90'	GRAVITY FLOW
KINGSTON HEIGHTS <i>24' Tank / 12,500 gpf</i>	50,000	1,103.52'	1,143.52'	BOOSTER STATION FED
KINGSTON HGTS. PUMP STAT.		897.91		WTP SCADA CONTROL
LADD LANDING TANK <i>24' Tank / 12,500 gpf</i>	300,000	1,155.69'	1,179.69'	BOOSTER STATION FED
LADD LANDING PUMP STAT.		944.57'		WTP SCADA CONTROL
RIDGECREST TANK <i>22.67' Tank / 4,411.12 gpf</i>	100,000	1,131.50'	1,154.17	BOOSTER STATION FED
RIDGECREST PUMP STAT.		933.09'		WTP SCADA CONTROL
GALLAHER TANK <i>32.0" Tank / 7,812.5 gpf</i>	250,000	983.24'	1,015.24'	OUT OF SVC
GALLAHER VIEW PUMP STAT.		960.66'		OUT OF SVC
POPLAR SPRINGS PUMP STAT.		873.75		OUT OF SVC

1.1.5 Interconnections

Kingston is interconnected with Rarity Ridge Subdivision (Oak Ridge) and East Roane (Watts Bar) Utility Districts.

1.2 Emergency Aid Agreements

Rockwood has an emergency interconnect agreement with Kingston.

SECTION 2

GENERAL RESPONSE TO EMERGENCY

2.0 Objectives of Emergency Plan

The purpose of the Emergency Plan is to aid operating personnel in responding to emergencies by:

- a. Eliminating or minimizing adverse effects from emergency situations affecting the water supply.
- b. Developing procedures for properly responding to emergencies
- c. Providing instructions for system personnel to assure they understand their responsibilities during emergency situations.
- d. Providing inventories of available emergency equipment and outlining existing mutual aid agreements and contracts with outside organizations for specialized assistance.

2.1 General Response Pattern to Emergencies

There is a logical sequence of steps in responding to emergencies which should be followed by the personnel on duty. This sequence includes identifying the emergency, investigating the extent of the emergency, deciding on a proper initial course of action, taking corrective action to rectify the situation, and following up with a post-emergency investigation.

2.1.1 Identify Emergency

This step is obvious in most cases and essentially indicates becoming aware that an emergency exists. Injuries and natural disasters are usually rather dramatic and will capture the personnel's attention immediately upon occurrence.

Some emergency situations exist long before the personnel are aware of a problem. If no warning system exists, spills of toxic materials into the Tennessee River watershed could go undetected until the larger, more obvious emergency exists in the distribution system.

2.1.2 Initial Investigation

Once the personnel are aware that an emergency situation exists or that a disaster is impending, an immediate initial investigation should be made. This step is undertaken to assess the severity of the situation and collect just enough information to form an initial action plan. Assessment of the emergency should include identifying obvious injured persons (if

any), damage to buildings and water lines, type of chemical spilled noting possible impending damage which could occur if corrective action is not taken immediately, and itemizing resources required immediately to correct the situation.

2.1.3 Initial Action

Once the personnel are aware that an emergency situation exists or that a disaster is impending, an immediate initial investigation should be made. This step is undertaken to assess the severity of the situation and collect just enough information to form an initial action plan.

THE NUMBER MOST FREQUENTLY CALLED WILL BE THE TENNESSEE EMERGENCY MANAGEMENT AGENCY (TEMA): 1/800-262-2300.

The emergency personnel list in Table 3.0 is a critical assess to the operators during this phase of the emergency. After the necessary calls have been made, the operators should begin action on their own, within limitations, to remedy matters. The personnel should not unduly endanger themselves or others by attempting tasks for which they are not trained, e.g., injury cases. If the personnel are not familiar with the first aid techniques, they should do little more for the injured person than keep them out of further danger. Moving a patient unnecessarily or attempting first aid when not absolutely needed may cause further, lasting injury to the patient. Attempting to repair a chlorine leak when not properly trained can create a larger emergency.

In all cases, if in doubt, wait until qualified help arrives before taking action.

2.1.4 Corrective Action

When help arrives, the personnel should immediately inform those called of the pertinent details. If the type of emergency is beyond their own capabilities, the personnel should immediately appoint the proper person to supervise corrective action. While work is underway, the personnel should find time to notify persons not called initially, but who have interests at stake in the emergency.

Corrective action should be continued until the situation is either under control or completely rectified. If corrective action will take considerable time, the personnel should consult with the required persons to outline a long-term effort to complete the task.

2.1.5 Follow-Up

After the situation is corrected, the personnel should make every effort to determine why the emergency occurred, review the corrective action taken, and then take preventive action to minimize the chance of recurrence.

NOTE: In all emergencies, if the quality of water being pumped from the plant changes, i.e., pH alkalinity, color, taste, odor, etc., or if the pressure drops, the chief operator should be notified. This will allow him or her time to take appropriate action at the plant and to notify Local, State, and Federal

authorities.

2.1.6 Summary

This subsection has outlined a general pattern that personnel should follow in responding to emergencies. In most small emergencies, the personnel will go through these steps automatically; however, they should be kept in mind (and perhaps posted near telephones) in order to effectively deal with major disasters.

In summary, these steps are:

1. Identify emergency (be aware)
2. Investigate quickly (know what has happened)
3. Take initial action (notify) **TEMA 1-800-262-3300**
4. Take corrective action (remedy, implement actions plans)
5. Follow-up (prevent future similar disasters)

Emergency	911
Roane Central Dispatch	354-8045
Kingston Fire Dept.	376-2936
Kingston Police Dept.	376-2081
Roane County Sheriff's Office	376-5582
Roane County EMA/Hazmat	717-4115
TEMA	1-800-262-3300
THP	594-5800
TDOT	882-3618

TDEC

Knoxville Environmental Field Office	594-6035
***Water Specialist Richard Lambert	594-5565

<u>Nashville</u> Water Resources	615/532-0625
Water Quality / Water Supply	615/532-0191

SECTION 3
PERSONNEL AND COMMUNICATIONS

3.0 Personnel List

The following lists names, positions, and 24-hour phone numbers of persons able to assist in an emergency.

EMPLOYEE	POSITION	HOME PHONE
John M. Poole	Lead Operator, Water Treat. Plant	865/603-6386
Thomas David Ott	Operator	865/382-1042
Steve McKeethan	Operator	865/376-9034
James Tipton	Operator	865/617-0203
Kevin Hamilton	Utility Director, Manager, Distribution/Collection/GPS System	865/603-6373
James Evans	Operator	865/466-6859
David Loy	Distribution Maintenance	865/285-9771
David Alford	Distribution Maintenance	865/466-8778
Mike Jolly	Operator	865/399-7058
Greg Sexton	Operator	865/466-7873
Tony Workman	Manager, Wastewater Treatment Plant	865/466-9177
David Pinner	Operator, WWTP	865/466-9724
Shawn Clark	Operator, WWTP	865/466-1215

After-hours on-call emergency number: 1-865-717-4644

3.1 Communications Chain Of Command

Emergency calls will come in one of two ways: (1) to City Hall during normal working hours of 8 a.m. to 4:30 p.m. at 865/376-6584 or 865/376-2323 and (2) the police department after hours at 865/376-2331. For emergencies that arise at the water treatment plant, John M. Poole is called; for emergencies that arise in the distribution system, Kevin Hamilton is called.

In an emergency, some persons may not be available, but the following chain of command will be utilized:

Position	Name	Home Phone	Cell
Water Treatment Plant Mgr.	John M. Poole	865-603-6386	865/603-6386
Utility Director, Distribution & Collection Manager	Kevin Hamilton	865/603-6373	865/603-6373
Wastewater Treatment Plant Manager	Tony Workman	865/466-9177	865/466-9177
City Manager/Director	David L. Bolling	865/466-8118	865/466-8118
Mayor	Tim Neal	865/599-9459	865/599-9459

3.2 Communication Equipment

- Municipal Building 1 Base Station and 1 radio
- Distribution and Collection Building 1 Base Station and 6 radios
- Water Treatment Plant
- The Police Department base station has back-up power in case of an emergency.

3.3 Disaster Alerting Procedures

An “Emergency Management Operations Plan” is currently being rewritten by the Roane County Emergency Management Agency. This Emergency Plan will be sent to the City Manager’s office when completed and should be referred to in the event of an emergency.

SECTION 4

EQUIPMENT MATERIALS INVENTORY

4.0 Materials and Equipment

Table 4.1 contains the estimated quantity of materials and equipment available for repairs. All items on the list are stored in the maintenance building on James Ferry Road. These items are available through the following suppliers:

National Waterworks, Inc.
Jerald Gardner
1307 Galway Street
Knoxville, TN 37917
865/524-4638 Office
865/521-7214 Fax

Hughes Supply, Inc.
Joe S. Hammond
5905 Old Rutledge Pike
Knoxville, TN 37914
865/546-3225 Office
865/546-3448 Fax

Tennessee Meter & Supply, Inc.
P.O. Box 633
2198 Fisk Road
Cookeville, TN 38503-0633

Hayes Pipe Supply, Inc.
3000 Industrial Parkway, E.
Knoxville, TN 37921
1/800/548-8945

CITY OF KINGSTON
INVENTORY OF EXPENDABLES

KINGSTON WATER TREATMENT PLANT

Date: 6/30/2017

MSDS	Item Description		Qty.	Acquisition Cost	
Laboratory- Chemicals / Reagents / Supplies					
Acids					
M00196	Hydrochloric Acid Solution 1:1	884-49	0.5	\$ 23.45	\$ 11.73
75079	Hydrochloric Acid (4L)	LabChem LC15070-4	2.5	\$ 36.80	\$ 92.00
M00644	Nitric Acid Solution 1:1	2540-49	1	\$ 26.15	\$ 26.15
7664-38-2	Phosphoric Acid Solution 85%	Fisher A-242500	1	\$ 106.63	\$ 106.63
M00471	Sulfuric Acid Solution 19.2N	2038-32	2	\$ 21.99	\$ 43.98
75616	Sulfuric Acid 0.02N (4L)	20356	1.2	\$ 45.65	\$ 44.05
Alkalinity					
M00348	Bromocresol green-methyl red 1L	2329249	0.4	\$ 28.05	\$ 11.22
M00224	Phenolphthalein Indicator Solution	162-53	0.7	\$ 34.05	\$ 23.84
M00352	Sodium Thiosulfate Titrant, Solution 1000ml .010N	32353	2	\$ 23.25	\$ 46.50
M00371	Sodium Thiosulfate Titrant, Stabilized Sol. For H2O2	2408732	2	\$ 29.29	\$ 58.58
Bac-T Sampling					
	IDEXX Colilert	WP2001	2.4	\$ 918.18	\$ 2,203.63
	IDEXX Quanti-Tray 2000	WQT2K	2.6	\$ 198.36	\$ 515.74
	IDEXX Vessels	WV120SBST-200	3.2	\$ 130.47	\$ 417.50
	IDEXX Quanti-Tray 2000 Comparator	WQT2KC	1	\$ 23.62	\$ 23.62
	IDEXX Vessel Presence / Absence Comparator	WP104	1	\$ 12.37	\$ 12.37
	IDEXX Sterile Water	WSW-10	3	\$ 41.62	\$ 124.86
	IDEXX Quanti-Cult	WKIT-1001	1	\$ 199.04	\$ 199.04
Cl2					
M00109	DPD Free CL2 Reagent 10ml pillows 1000pk.	21055-28	0.2	\$ 176.00	\$ 35.20
M00109	DPD Free CL2 Reagent 25ml pillows 1000pk	14070-28	0.8	\$ 202.00	\$ 161.60
M00109	DPD Free CL2 Reagent 10ml pillows 100pk.	21055-69	0	\$ 208.00	\$ -
M00110	DPD Total CL2 Reagent 10ml pillows 100pk.	21056-69	0.6	\$ 20.65	\$ 12.39
M00110	DPD Total CL2 Reagent 25ml pillows 100pk.	1406499	0	\$ 23.79	\$ -
0 #	DPD Chlorine HR Secondary Standards Kit	2893300	1	\$ 166.00	\$ 166.00
See Below	CL 17 Analyzer Buffer Reagent Set	2557000	6	\$ 53.75	\$ 322.50
M01127	CL 17 Analyzer Buffer Reagent - DPD Compound	2297255		\$ 19.69	\$ -
M00598	CL 17 Analyzer Buffer Reagent - Indicator Solution	2314011		\$ 19.69	\$ -
M00599	CL 17 Analyzer Buffer Reagent - Buffer	2314111		\$ 18.35	\$ -
Fluoride					
M02594	Fluoride Accuvac SPADNS 2	25270-25	5.5	\$ 35.59	\$ 195.75
M02594	SPADNS 2 Reagent	29475-53	1	\$ 35.65	\$ 35.65
Hardness					
M00305	Hardness 1 Buffer Solution	424-53	2.2	\$ 45.09	\$ 99.20
M00635	ManVer Hardness 2	425-49	1.4	\$ 30.89	\$ 43.25
M00348	TitraVer EDTA 4L	205-56	0.6	\$ 42.29	\$ 25.37
H2O2					
M00642	Ammonium Molybdate Reagent f/ Silica	193332	0.5	\$ 17.85	\$ 8.93
M00011	Sulfite 1 Reagent Pillows	2203-99	2	\$ 32.75	\$ 65.50
M00352	Sodium Thiosulfate Titrant	32353	1.5	\$ 23.25	\$ 34.88
M00371	Sodium Thiosulfate Titrant for H2O2	24087-32	2.1	\$ 29.29	\$ 61.51

Tubing					
	Cole Palmer Masterflex	06424-14	0.25	\$ 42.50	\$ 10.63
	Cole Palmer C-flex 0.031	06424-60	0.25	\$ 26.50	\$ 6.63
	Cole Palmer C-flex 0.125	06424-67	0.25	\$ 35.75	\$ 8.94
	Cole Palmer C-flex 0.062	06424-62	0.25	\$ 29.85	\$ 7.46
Water Treatment Chemicals					
*****	Aluminum Sulfate	gals	0	\$ 1.99	\$ -
*****	Ferric Sulfate CPF-4245	lbs	0	\$ 0.49	\$ -
*****	Ferric Chloride CPF-4109	lbs	0	\$ 0.55	\$ -
*****	Fluoride HFS Acid	lbs	700	\$ 0.41	\$ 287.00
*****	Hydrogen Peroxide 50% Solution	lbs	500	\$ 0.52	\$ 260.00
*****	NPE-4705	lbs	0	\$ 2.35	\$ -
*****	PAC EC-675	lbs	6000	\$ 0.55	\$ 3,300.00
*****	PAC EC-609	lbs	0	\$ 0.53	\$ -
*****	Esco Polymer	lbs	0	\$ 2.50	\$ -
*****	PAX XL-8	lbs	0	\$ 0.60	\$ -
*****	PAX XL-18	lbs	0	\$ 0.60	\$ -
*****	Veras Phosphate dry	lbs	1800	\$ 2.50	\$ 4,500.00
*****	SeaQuest Phosphate dry	lbs	0	\$ 2.20	\$ -
*****	Sodium Hypochlorite 12.5%	gals	10000	\$ 2.09	\$ 20,900.00
*****	Chlorine Tablets (3")	lbs	20	\$ 1.95	\$ 39.00
*****	Calcium Hypochlorite (granular)	lbs	20	\$ 2.55	\$ 51.00
	Total				\$ 15,631.03
	Grand Total				\$ 15,631.03

**Kingston Sewer
Inventory of Expendables
February 6, 2018**

Item	Amount		Unit Cost		Total
Diesel 9For Generator	125	gallon	\$ 2.85		\$356.25
Hydraulic Oil	15	gallon	\$ 41.50		\$622.50
Grease	1	case	\$ 235.00		\$235.00
Trailblazer Max	2.5	gallon	\$ 32.00		\$80.00
Opti Kill	2.5	gallon	\$ 85.00		\$212.50
Flow Mate	5	gallon	\$ 52.50		\$262.50
Polymer	150	gallon	\$ 20.21		\$3,031.50
Microfiber Filters	2		\$ 49.75		\$99.50
Presto Powder Chlorine	1		\$ 154.99		\$154.99
Buffer Solution (6 pack)	1		\$ 43.70		\$43.70
Sodium Hypochlorite	150		\$ 2.09		\$313.50
Disposable gloves	8		\$ 19.00		\$152.00
Total Chlorine packs	1	100/pack	\$ 18.70		\$18.70
Quanti Trays	2	case	\$ 100.00		\$200.00
Kem Wipes	42		\$ 4.00		\$168.00
20 yard dumpster liners 3ml	22		\$ 14.50		\$319.00
EZ 101 & 102	5		\$ 32.52		\$162.60
Total			\$908.31		\$6,432.24

SECTION 5

EMERGENCY RESPONSES

5.0 General

The most desirable condition is to have the emergency response performed at the lowest level. Personnel nearest the emergency should be provided adequate resources to cope with all but the most severe incidents. The following sections should serve as a guide in formulating a response to an emergency.

5.1 Responses

Steps to be taken in each of several emergency operating conditions are detailed in this subsection. In developing contingency plans, it is necessary to attempt to foresee as many different types of emergencies as possible.

5.1.1 Power Failure

The operation of the treatment facility is totally dependent upon electric power. Results of a power failure are obvious; all or part of the facility ceases to function. Causes of failure must be determined by checking circuit breakers. If caused by a malfunction inside the plant, the most likely causes are overloaded main circuits or problems in the motor control center or control panels, and an electrician should be called in to correct the problem.

If the power failure was caused by a condition outside the plant, the chief operator should consult with Rockwood Electric Utility (phone 865/376-7545 or 354-0514) to determine how long power is expected to be off and that the treatment plant be placed on a priority list for resumption of normal power.

Total Kingston storage is 2.3 million gallons which under normal conditions provides almost 34 hours of storage.

By using the local media (radio, television and newspaper) mandatory water use restrictions can be implemented.

Should Rockwood Electric Utility say that the outage will extend beyond 34 hours, users should be asked to limit water usage to essential purposes listed below:

- Water necessary to sustain human life and to maintain minimum standards of hygiene and sanitation.
- Health care facilities
- Fire fighting

Note, this does not include:

- Irrigation
- Watering
- Industrial Use
- Commercial Use
- Air Conditioning and Cooling Water
- Schools
- Washing of Vehicles
- Line flushing and Maintenance

Should the above usages be restricted, the storage facilities should be capable of providing a longer supply.

5.1.2 Contamination

The water treatment plant is only designed to remove suspended matter and bacteria from the water source. Accidental spills, unless reported by the police or a responsible citizen, could very easily go undetected and contaminants be pumped into the system. Contamination can also occur during flood, civil disorder, earthquake, and nuclear disaster.

Containment of a spill or avoiding pumping contaminants into the system is obviously the most desirable solution. Operators should determine the cause, nature, and chemical, and the extent of the spill. They should determine the length of time before the spill reaches the plant and shut off the intake prior to its arrival and immediately notify TEMA at 1-800-262-3300. If necessary, they should notify the public.

If the contamination is in the plant, operators should immediately shut down the high service pumps. If allowed by the Knoxville Basin Office (phone 865/594-6444) and if the spill has passed the intake, production should continue and filtered water be wasted through the clearwell overflow. Extreme caution must be exercised in that the clearwell overflows indirectly to the Tennessee River above the intake. Any oils or grease can be skimmed off the top of tanks and taken away for disposal. Final disposal is to be made by the party responsible for the spill.

Assuming contamination has been introduced into the plant or system, identification of the contamination is imperative. This will require the use of an outside laboratory if the source of chemical spill is unknown. Environmental Science and Engineering Corporation in Mt. Juliet (800-767-5859) or the Tennessee Department of Health and Environment can provide such analysis. Once the chemical has been identified, proper treatment techniques must be used such as activated carbon, potassium permanganate, alternate coagulants, aeration, chlorination, etc. Appendix A contains a Hazardous Materials Spills Emergency Handbook; advice should be obtained from the consulting engineer (phone 865/984-9638) and the Knoxville Basin Office (phone 865/594-6444).

Contamination in the distribution system must be removed through flushing of lines and draining of tanks. Public notices to stop using water, to boil water, etc., if necessary, must quickly be placed on the local radio and TV stations and in the newspapers.

It may become necessary to use potable water trucks to obtain water from other systems such as Tennessee American for distribution to customers at strategic locations such as schools or shopping centers.

5.1.3 Drought

The two general categories of action that can be taken in a drought or emergency are: augmentation of the supply and reduction of demand. This plan separates emergency from routine water-conservation practices because of the more severe measures needed when shortages are critical. In that context, situations designated as emergencies may include those of short duration due to a temporary supply interruption such as a major break in finished water transmission lines or extreme long-term drought. The nature of the emergency will determine what measures will be effective in alleviating the crisis. The use of mandatory or voluntary rationing, for example, may be limited to drought situations and may not be necessary for a line break. See Appendix B – Drought Management Plan.

5.1.3.1 Rationing

Ten to Twenty Percent Reduction – A 10 to 20 percent reduction should be fairly easy to achieve through voluntary residential action. Residential water users include those in both single-family and multi-family buildings. Given a goal of reducing their water consumption rather than requiring mandatory reductions, homeowners should comply with requests presented through the local media. Actual restrictions are hard to enforce and may not be as effective as the plans developed by the users. Examples should be given such as reducing the number of toilet-flushings, showers versus baths, elimination of lawn and garden watering, elimination of car washing, less frequent use of automatic appliances by waiting until a full load can be run, etc. Instructions should be given such as how to read water meters so that the users can see their actual reduction. Studies have shown that users will employ a combination of methods to meet the specified goal rather than complete elimination of certain uses.

Media sources are the local newspaper, radio and television. Press releases should be developed and readily available for presentation. Radio announcements should be informative and refer the listener to the newspaper for further information.

Any municipal uses such as street washing, vehicle cleaning, fire hydrant flushings, etc. shall be eliminated to set a good example. The City shall step up their efforts of leak detection.

Twenty to Thirty Percent Reduction – Utilities have been able to achieve 20 to 30 percent reduction through a combination of voluntary and mandatory residential and commercial reduction. To reduce the possibility of going to a succeeding stage of the emergency plan, Officials shall place mandatory restriction of all public and private uses not required for public health. This may require advanced legal authority through a special ordinance passed by the City of Kingston. This will include mandatory restriction of all outside uses by residential users and will prohibit unnecessary outside uses by any commercial users. All public water-using activities not required for health or safety should be closed.

It is important to provide for equitable sharing of any deficiency. If the sharing is not proportional among various classes of users, the disproportion should be explained clearly in

public information releases. In this stage, consumption by residential and commercial users has been limited but industrial use has not been restricted. However, industrial users should be notified that the next stage of emergency will include industrial restrictions.

First violations should result in written warning delivered by utility representatives who will offer conservation tips. Second violations should result in a surcharge added to the monthly bill.

Media sources should also include the local Chamber of Commerce and television. Communications from the Chamber of Commerce to business and industry may provide for more rapid cooperation in the emergency plan.

Greater Than Thirty Percent Reduction – The public information and action is the same as the preceding stage with the addition of limiting industrial usage. This stage will require all industrial users to reduce the usage by 10 to 20 percent. Violations will be similar to other stage with the addition of third violations resulting in shut off and reconnection fees.

5.1.3.2 New Construction

Kingston will continue to receive applications for new services during emergencies. Granting new connections may be questioned by the public and a system should be developed that allocates new connections only after the emergency is over.

5.1.3.3 Practical Considerations

When an emergency occurs, it will be necessary to update emergency plans to reflect current conditions and to adopt new or revised policies, ordinances or regulations.

5.1.4 Breaks

Breaks can and do occur at any time. Breaks are also very likely to occur during earthquakes. Slip joint pipe and mechanical joint pipe are less susceptible to breaks during earthquakes than flanged or restrained joint pipe.

- A. Isolate the line segment with valves.
 - B. If necessary, notify affected customers either by knocking on doors, if the area is small enough, or by announcements over local radio or television stations. Inform customers as to anticipated length of time water will be off.
 - C. Control water to a level below the break as quickly as possible.
 - D. Make repairs.
1. Breaks in lines where contamination is unlikely, such as in well-drained soil and/or above the water table, require only treatment of replacement pipes or fittings with a five percent chlorine solution.
 2. Flush line using nearby hydrants or, if necessary, provide a means to flush the line.

3. Breaks resulting in contamination may require chlorine dosages up to 50 ppm and contact times from two to six hours in affected lines. All disinfection solution must be removed and the main flushed, with particular attention being paid to flushing each service line to customers' meters. All disinfection solution must be removed and replaced with system water before checking the bacterial safety of the main. Control samples taken upstream of the repaired line should also be checked. If necessary, issue boil-orders until adequate bacteriologic monitoring confirms that the water is safe.

F. Restore service.

5.1.5 Flood

Floods are acts of nature which cannot be prevented. Although intake and treatment facilities are located above the regional flood, situations could occur where on-duty operators are in the plant and will be unable to get home and off-duty operators will be unable to get to work due to flooded roads.

In case of a flood, communications should be maintained with the National Weather Service and the Civil Defense Office regarding forecasted water levels in the Tennessee River and tributaries.

5.1.6 Fire

In the event of a fire, personnel should make certain there is no immediate threat of spreading outside the limits of the treatment facility. Personnel should determine whether or not they are able to extinguish the fire themselves or if they should notify the local fire department for help. Explosive or flammable materials should be moved to a safe place where they will be out of the reach of flames, providing the action does not endanger the personnel.

If the fire is a large one, efforts at putting it out should be made only by the fire department. If the fire is small and can be handled by the personnel, they should act swiftly. A fire extinguisher should handle a small fire. Shovels, dirt, sand, or water could be used in situations where an extinguisher is not readily available. If the fire is in an enclosed area, the personnel should be aware of the possibility of smoke inhalation. After the fire is out, they should water down the ashes or remains until the area is cool and free of all traces of smoke.

Damage to the treatment facility, if any, should be assessed as soon as possible after a fire. If the fire is of major consideration, water should be restricted to essential use only (see Section 5.1.1).

5.1.7 Chlorine Leak

N/A – No longer used

5.1.8 Threats

If a threat of poisoning the water supply is received, record the call on the Threat Sheet which follows this section. Dispatch police to patrol each tank and reservoir and spring. Have the police and sheriff departments patrol the Tennessee River at known access points.

Most contaminants cause secondary effects in a water supply such as taste, color, odor, or chlorine demand.

Because utility operators “know” their water supply (they know its characteristics), any subtle changes in taste, odor, color, and chlorine demand are instantly recognized. Once it has been determined that the water supply may be contaminated, water samples can be tested. Test can either be done by the state health department or a local laboratory.

Finally, maintain a high-chlorine residual. Generally, chlorine residuals of 1 ppm or higher effectively oxidize or destroy most contaminants. For example, infectious hepatitis virus will not survive a free residual chlorine level of 0.7 mg/L.

The following is a list of emergency countermeasures that, when used over a short time period, can increase protection of a water supply.

- Maintaining a high-chlorine residual in the system
- Having engineers, chemists, and medical personnel on 24-hour alert
- Continuously monitoring key points in the distribution system (monitoring chlorine residual is mandatory)
- Increasing security around reservoirs and tanks
- Setting up emergency crews that can isolate sections of the distribution system
- Staffing the treatment facility on a 24-hour basis

If contamination of the water supply is discovered, the immediate concern must be the safety of the public. If the contaminated water has entered the distribution system, immediate public notification is the highest priority (see Section 6.1.2).

If the contaminated water has not entered the distribution system, it may be possible to isolate the contaminated source and continue to supply water from other, unaffected sources. If the contaminated water is the only source for the community, treatment measures may be available that will remove the contaminant or reduce its toxicity.

Table 5.1.8 lists a series of emergency treatment steps that can be taken when identified chemicals are added to the system. These emergency treatment methods are effective only if the contaminant has been identified.

This section was adapted from AWWA Manual M19, Emergency Planning for Water Utility Management.

5.1.9 Earthquakes

Efforts have been made to predict if and when an earthquake will occur; however, to date, no reliable early warning system exists. East Tennessee is in Zone 2 where moderate damage is likely to occur in the event of an earthquake. Should an earthquake occur, operators may anticipate breaks and structural failures. Exposed pipes such as in the pipe gallery of the filter plant should be inspected. Storage tanks should be inspected for possible structural failures.

Major earthquakes will create fires, mobility will be restricted and lines may be broken. Demand will be high until the fires have been extinguished, until broken lines are valved off and stored water contained.

In the event of an earthquake, all off-duty personnel should report to the **City Manager**. Production should increase immediately to meet anticipated increases in demand. Crews should check all visible pipe in the filter plant and all pump stations. Each tank should be visibly inspected and pressure readings should be made in each area to check for possible leaks.

5.1.10 Nuclear Accident

The single biggest concern is radioactive fallout. Primary concern will be survival and utility personnel will be concerned not only with their survival but that of their families. In the event of radioactive contamination of the supply, the Tennessee Department of Health and Environment will collect samples, provide sample analysis, and will notify operators when to shut off facilities and when facilities can be put back on line. The TEMA should make all decisions relative to the continued use and/or treatment of water supply sources.

Radios should be turned on the Emergency Broadcast System. Windows and doors should be closed and attempts should be made to seal openings in walls and roofs. If evacuation is ordered by TEMA, personnel should shut down the filter plant and springs and leave the area as directed.

Water treatment will remove large percentages of radioactive fallout; however, only the State can make determinations as to the safety of water.

TABLE 5.1.8

**EMERGENCY TREATMENT FOR REDUCING CONCENTRATION
 OF SPECIFIC CHEMICALS IN COMMUNITY WATER SUPPLIES***

CONCENTRATION	TREATMENT
<u>Arsenicals</u>	
Unknown organic and inorganic arsenicals in groundwater at concentrations of 100 mg/L	Precipitation with ferric sulfate and liming to pH 6.8, followed by sedimentation and filtration.
<u>Cyanides</u>	
Hydrogen cyanide	Prechlorination to free residual with pH 7, followed by coagulation, sedimentation, and filtration. CAUTION: housed facilities must be adequately ventilated. Precipitation with ferrous or ferric salts to form Prussian blue (iron, ferric cyanide) followed by coagulation, sedimentation, and clarification. As long as an excess of iron coagulant is applied, the filtered water should be nontoxic even though it is blue.
Acetone cyanohydrin	Same as for hydrogen cyanide.
Cyanogen chloride	Same as for hydrogen cyanide.
<u>Hydrocarbons</u>	
Kerosene peak concentrations of 140 mg/L	Preapplications of bleaching clay and activated carbon, plus some increase in normal dosages of alum, chlorine dioxide, lime, and carbon, to provide treatment enabling continued production of water.
<u>Miscellaneous Organic Chemicals</u>	
LSD (lysergic acid derivative)	Chlorination in alkaline water, or water made alkaline by addition of lime or soda ash, to provide a free chlorine residual. Two parts free chlorine are required to react with each part LSD.
<u>Nerve Agents</u>	
(Organophosphorus compounds)	Superchlorination at pH 7 to provide a least 40 mg/L residual after 30-minute chlorine contact time, followed by dechlorination and conventional clarification processes.
<u>Pesticides</u>	
2,4-DCP (2,4-Dichlorophenol) and impurity in commercial 2,4-D herbicides	Adsorption on activated carbon followed by coagulation, sedimentation, and filtration.
DDT (dichlorodiphenyltrichloroethane), concentrations of 10 g/L	Chemical coagulation, sedimentation, and filtration.
Dieldrin, concentrations of 10 g/L	Chemical coagulation, sedimentation, and filtration. Supplemental treatment with activated carbon may be necessary.
Endrin, concentrations of 10 g/L	Chemical coagulation, sedimentation, and filtration. Supplemental treatment with activated carbon may be necessary.
Lindane, concentrations of 10 g/L	Application of activated carbon followed by chemical coagulation, sedimentation, and filtration.
Parathion, concentrations of 10 g/L	Chemical coagulation, sedimentation, and filtration. Supplemental treatment with activated carbon may be necessary. Omit prechlorination as chlorine reacts with parathion to form paraoxon, which is more toxic than parathion.

*SOURCE Graham Walton, Chief, Technical Services, National Water Supply Research Laboratory, USSR Program, Oct. 24, 1968.

THREAT SHEET

RECORD IMMEDIATELY

DATE: _____

TIME: _____

EXACT WORDS OF CALLER _____

ASK: WHAT KIND OF POISON
OR WHAT KIND OF EXPLOSIVES _____
WHERE _____
HOW MUCH _____
WHEN _____

CHARACTERISTICS OF CALLER:

Male _____	Female _____	Adult _____
Child _____	Teen _____	Unknown _____

VOICE:

Loud _____	Soft _____	Whisper _____	Normal _____
Drunk _____	Calm _____	Distinct.. _____	Slurred _____
Excited _____	Nervous _____		

BACKGROUND NOISES: _____

NAME OF PERSON RECEIVING CALL: _____

PHONE NUMBER CALL RECEIVED ON: _____

SECTION 6

MEDIA RELEASES

6.0 PUBLIC NOTIFICATION

LOCAL RADIO STATIONS: South 105.7 Radio Station
116 Carousel Drive, Crossville, TN 38555
865/590-0958
865/882-3291
www.105.7.com

WIVK Radio Station
4711 Old Kingston Pike
P.O. Box 11167, Knoxville, TN 37919
865/588-6511
865/588-3725
www.wivk.com

LOCAL TELEVISION STATIONS: BBB Communications
170 Randolph Road, Grove Center, Oak Ridge, TN 37830
865/483-8112
865/386-6734 Fax
news@bbbtv12.com

WATE
1306 N. Broadway, Knoxville, TN 37901
865/637-6666
865/523-3561

WBIR
1513 Hutchison Avenue, Knoxville, TN
865/637-1010
865/522-7341

WVLT
6516 Papermill Drive, Knoxville, TN 37919
865/450-8880
865/584-1978 Fax
www.volunteertv.com

NEWSPAPER & PUBLICATIONS

THE ROANE COUNTY NEWS

1430 N. Gateway Ave
Rockwood, TN 37854
865/376-3481
865/376-1945 Fax

THE OAK RIDGER

Editor: Mr. Darrell Richardson
P.O. Box 3446, Oak Ridge, TN 37831
865/220-5505
865/482-7834 Fax
Darrell.Richardson@oakridger.com

KNOXVILLE NEWS-SENTINEL

Business Writer: Ms. Cynthia Yeldell
Business Editor: David Keim
Assistant Editor: Bill Brewer
P.O. Box 59038, Knoxville, TN 37950-9038
865/523-3131
865/673-3505 Fax
E-mail: yeldell@knews.com
Website: www.knoxnews.com

EAST TENNESSEE BUSINESS JOURNAL

Editor: Ms. Jayne Andrews
1530 Highland Avenue, Knoxville, TN 37016
865/524-3825
865/524-3825 Fax
jayneandrews@earthlink.com

FARRAGUT PRESS

Editor: Dan Barile
11863 Kingston Pike, Knoxville, TN 37922
865/675-6397
865/675-1675 Fax
editor@farragutpress.com

CLINTON COURIER

Editor: Ron Bridgeman
P.O. Box 270, Clinton, TN 37717
233 N. Hicks St., Clinton, TN 37716
865/457-2515
865/457-1586
ron@hometownclinton.com

LOUDON COUNTY NEWS HERALD

Editor: Linda Brewer
P.O. Box 310, 201 Simpson Rd., Loudon, TN 37771
865/986-6581
865/988-3261
lbrewer@xtn.net

6.1 EXAMPLES OF PRESS RELEASES

6.1.1 Power Failure

The City of Kingston' water treatment plant has been temporarily shut down due to a power failure. Utility crews are currently working to restore power as quickly as possible. Officials anticipate that operations will resume by _____. Customers are requested to (reduce their water usage by _____) or (restrict water usage for only the following purposes: _____.)

6.1.2 Contamination

The City of Kingston has reason to suspect that the water supply may be contaminated. Testing of the water is currently underway as a precautionary measure. (All citizens are urged not to use the water for any purpose.) or (All citizens are urged to _____ before using.) (Safe water for drinking and cooling may be obtained at (location) from (time, date) to (time, date).)

APPENDIX A

CHEMICAL INVENTORY

The following is an inventory of all major chemicals used in treating water, the daily quantity and estimated minimum supply stored at the treatment plant, source of supply, and alternate source of supply.

CHEMICAL: HFS ACID/FLUORIDE/FLOUROSILICIC ACID

POINT OF USE: Water Treatment Plant and Spring/Pumphouse

FORM OF CHEMICAL: Liquid

STRENGTH OF CHEMICAL: 25 Percent

DAILY CONSUMPTION: Plant: 45 Pounds/Day
(under normal conditions) Spring: 1 2 Pounds/Day

MINIMUM SUPPLY AVAILABLE: Plant: 500 Gallons
Spring: 200 Gallons

DAYS OF SUPPLY Plant: 100 Days
Spring: 150 Days

SUPPLIED BY: Hawkins Chemical Company
821 William D. Jones Boulevard
Fayetteville, TN 37334
1/888/542-8561

OTHER SOURCE OF SUPPLY:

UNIVAR
3 Riverside Lane
Chattanooga, TN 37406
1-800-233-0633

Brenn Tag/Mid South
355 Pottertown
Midway, TN 37809
865/423-7171

CHEMICAL: BLEACH/SODIUM HYPOCHLORITE

POINT OF USE: Water Treatment Plant/Spring House Pumps/
/Bleach House

FORM OF CHEMICAL: Liquid

STRENGTH OF CHEMICAL: 12.5 Percent

DAILY CONSUMPTION: Plant: 450 Pounds/Day
(under normal conditions) Spring: 4 Gallons/Day
Bleach House 2 Gallons/20 Pounds

MINIMUM SUPPLY AVAILABLE: Plant: 1000 Gallons
Spring: 200 Gallons
Bleach House 120 Gallons

DAYS OF SUPPLY Plant: 30 Days
Spring: 50 Days
Bleach House 60 Days

SUPPLIED BY: Hawkins Chemical Company
821 William D. Jones Boulevard
Fayetteville, TN 37334
1/888/542-8561

OTHER SOURCE OF SUPPLY:

UNIVAR
3 Riverside Lane
Chattanooga, TN 37406
1-800-233-0633

Brenn Tag/Mid South
355 Pottertown
Midway, TN 37809
865/423-7171



SAFETY DATA SHEET

HYDROGEN PEROXIDE 50% (ALL GRADES)

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Oxygenated and Derivatives

Customer Service Telephone Number: 1-800-346-5757
(Monday through Friday, 8.30 AM to 5:30 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: HYDROGEN PEROXIDE 50% (ALL GRADES)
Synonyms: H2O2 50%
Molecular formula: H2O2
Chemical family: peroxides
Molecular weight: 34.01 g/mol
Product use: Bleaching agent, Oxidizing agent, Cosmetics, Water treatment

2. HAZARDS IDENTIFICATION

Emergency Overview

Color: colourless
Physical state: liquid
Odor: pungent

*Classification of the substance or mixture:

Oxidizing liquids, Category 2, H272
Oral: Acute toxicity, Category 3, H301
Skin corrosion, Category 1C, H314
Serious eye damage, Category 1, H318
Specific target organ toxicity - single exposure, Category 3, H335
Chronic aquatic toxicity, Category 3, H412

*For the full text of the H-Statements mentioned in this Section, see Section 16

Product code: 04503

Version 3.0

Issued on: 02/10/2015

Page. 1 / 12

HYDROGEN PEROXIDE 50% (ALL GRADES)

GHS-Labeling

Hazard pictograms



Signal word:

Danger

Hazard statements:

- H272 : May intensify fire, oxidiser.
- H301 : Toxic if swallowed.
- H314 : Causes severe skin burns and eye damage.
- H335 : May cause respiratory irritation.
- H412 : Harmful to aquatic life with long lasting effects.

Product code: 04503

Version 3.0

Issued on: 02/10/2015

Page 2 / 12

HYDROGEN PEROXIDE 50% (ALL GRADES)

Precautionary statements:

Prevention:

P210 : Keep away from heat.
P220 : Keep/Store away from clothing/ combustible materials.
P221 : Take any precaution to avoid mixing with combustibles.
P261 : Avoid breathing gas/mist/vapours/spray.
P264 : Wash skin thoroughly after handling.
P270 : Do not eat, drink or smoke when using this product.
P271 : Use only outdoors or in a well-ventilated area.
P273 : Avoid release to the environment.
P280 : Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P310 : IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P301 + P330 + P331 : IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 : IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 : Immediately call a POISON CENTER or doctor/ physician.
P363 : Wash contaminated clothing before reuse.
P370 + P378 : In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

P403 + P233 : Store in a well-ventilated place. Keep container tightly closed.
P405 : Store locked up.

Disposal:

P501 : Dispose of contents/ container to an approved waste disposal plant.

Supplemental information:

Potential Health Effects:

If swallowed:

May cause: gastrointestinal symptoms, ulceration, burns, accumulation of fluid in the lungs which may be delayed for several hours, (severity of effects depends on extent of exposure).

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
HYDROGEN PEROXIDE	7722-84-1	50 %	H271, H301, H332, H335, H314, H318, H412



SAFETY DATA SHEET

HYDROGEN PEROXIDE 50% (ALL GRADES)

Water	7732-18-5	50 %	Not classified
-------	-----------	------	----------------

**For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

Inhalation:

If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Skin:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Remove contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

Eyes:

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Ingestion:

If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Call a Poison Control Center. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. Rinse mouth.

Notes to physician:

Exposure to material may cause delayed lung injury resulting in pulmonary edema and pneumonitis. Exposed individuals should be monitored for 72 hours after exposure for the onset of delayed respiratory symptoms.

5. FIREFIGHTING MEASURES

Extinguishing media (suitable):
water spray, water fog

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:

Oxidizing material

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Decomposition will release oxygen, which will intensify a fire.

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:

Product code: 04503

Version 3.0

Issued on: 02/10/2015

Page 4 / 12



SAFETY DATA SHEET

HYDROGEN PEROXIDE 50% (ALL GRADES)

Solutions above 65% are especially hazardous as they do not contain enough water to remove the heat of decomposition by evaporation.
Explosive when mixed with combustible material.
Avoid breathing fumes from fire exposed material.

6. ACCIDENTAL RELEASE MEASURES

In case of spill or leak:

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Eliminate all ignition sources. Avoid generation of vapors. Avoid contact with cellulose, paper, sawdust or similar substances. Risk of self-ignition or promotion of fires. Combustible materials exposed to hydrogen peroxide should be rinsed immediately with large amounts of water to ensure that all the hydrogen peroxide is removed. Contain and collect spillage with non-combustible absorbent material such as clean sand, earth, diatomaceous earth or non-acidic clay and place into suitable properly labeled containers for prompt disposal. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7. HANDLING AND STORAGE

Handling

General information on handling:

Do not taste or swallow.
Do not get in eyes, on skin, or on clothing.
Avoid breathing vapor or mist.
Keep from contact with clothing and other combustible materials.
Keep away from heat, sparks and flames.
Use only with adequate ventilation.
Wash thoroughly after handling.
Wear fire/ flame resistant/ retardant clothing.
Prevent product contamination.
Keep only in the original container.
Store in tightly closed container.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
Emptied container retains vapor and product residue.
Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.
Avoid contamination.

Storage

General information on storage conditions:

Store in tightly closed container. Store in cool, dry, well ventilated area away from sources of ignition such as flame, sparks and static electricity. Store out of direct sunlight in a cool well-ventilated place. Store in original container. Store away from combustibles and incompatible materials. Refer to National Fire Protection Association (NFPA) 430, Code for the Storage of Solid and Liquid Oxidizers

Storage incompatibility – General:

Store separate from acids, alkalis, reducing agents, and combustibles. Store separate from: Metallic oxides

Organic materials

Product code: 04503

Version 3.0

Issued on 02/10/2015

Page: 5 / 12



SAFETY DATA SHEET

HYDROGEN PEROXIDE 50% (ALL GRADES)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

HYDROGEN PEROXIDE (7722-84-1)

US. ACGIH Threshold Limit Values

Time weighted average 1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

PEL: 1 ppm (1.4 mg/m³)

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

Engineering controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Respiratory protection:

Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. When handling this material, gloves of the following type(s) should be worn: Neoprene

Polyvinylchloride

Impervious butyl rubber gloves

Wear a face shield, chemical goggles and chemical resistant clothing such as an approved splash protective suit made of SBR Rubber, PVC, Gore-Tex or a HAZMAT Splash Protective Suit (Level A, B, or C) when splashing may occur (such as connecting/disconnecting, mechanical first break). For foot protection, wear boots made of NBR, PVC, polyurethane, or neoprene. Overboots made of Latex or PVC, as well as firefighter boots or specialized HAZMAT boots are also permitted. DO NOT wear any form of boot or overboots made of nylon or nylon blends. DO NOT use cotton, wool or leather, as these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Rinse immediately if skin is contaminated. Remove contaminated clothing and shoes immediately. Thoroughly rinse the outside of gloves and protective clothing with water prior to

Product code 04503

Version 3.0

Issued on: 02/10/2015

Page: 6 / 12

HYDROGEN PEROXIDE 50% (ALL GRADES)

removal. Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Eye protection:

Where there is potential for eye contact, wear a face shield, chemical goggles, and have eye flushing equipment immediately available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	colourless
Physical state:	liquid
Odor:	pungent
Odor threshold:	No data available
Flash point	None
Auto-ignition temperature:	Not applicable
Lower flammable limit (LFL):	Not applicable
Upper flammable limit (UFL):	Not applicable
pH:	No data available
Density:	1.196 g/cm3 (68 °F (20 °C))
Vapor pressure:	18 mmHg (68 °F (20 °C))
Relative vapor density:	1.0
Vapor density:	not determined
Boiling point/boiling range:	237 °F (114 °C)
Freezing point:	-62 °F (-52 °C)
Evaporation rate:	No data available
Solubility in water:	completely soluble
% Volatiles:	100 %
Molecular weight:	34.01 g/mol

Product code 04503

Version 3.0

Issued on: 02/10/2015

Page 7 / 12

HYDROGEN PEROXIDE 50% (ALL GRADES)

Oil/water partition coefficient: No data available

Thermal decomposition: No data available

Flammability: See GHS Classification in Section 2

10. STABILITY AND REACTIVITY

Stability:
This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Materials to avoid:
Metals
Organic materials
Reducing agents
Metallic oxides
Dusts
Combustible materials (e.g., wood, sawdust)
Alkaline materials

Conditions / hazards to avoid:
Material decomposes with the potential to produce a rupture of unvented closed containers.

Hazardous decomposition products:
This material decomposes if contaminated, causing fire and possible explosions. Oxygen can be liberated at temperatures above ambient.

11. TOXICOLOGICAL INFORMATION

Data for HYDROGEN PEROXIDE 50% (ALL GRADES)

Acute toxicity

Oral:
Toxic if swallowed. (Rat) LD50 = 225 - 1,200 mg/kg. (50 %) (as aqueous solution)

Dermal:
Practically nontoxic. (Rat) LD50 = 9,200 mg/kg. (70 %) (as aqueous solution)

Inhalation:
No deaths occurred. (Rat) 4 h LC0 > 0.17 mg/l. (50 %) (saturated vapor)

Specific target organ toxicity - single exposure:
May cause respiratory irritation.

Skin Irritation:
Causes severe skin burns (Rabbit) (1 h) (50 %) (aqueous solution)

Eye Irritation:

HYDROGEN PEROXIDE 50% (ALL GRADES)

Causes serious eye damage. (Rabbit) (70 %) (aqueous solution)

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway

Data on this material and/or a similar material are summarized below.

Ecotoxicology

Data on this material and/or a similar material are summarized below.

13. DISPOSAL CONSIDERATIONS

Waste disposal:

Dilution with water is the preferred method of disposal. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Take appropriate measures to prevent release to the environment

14. TRANSPORT INFORMATION

US Department of Transportation (DOT)

UN Number	: 2014
Proper shipping name	: Hydrogen peroxide, aqueous solutions
Class	: 5.1
Subsidiary hazard class	: (8)
Packaging group	: II
Marine pollutant	: no

International Maritime Dangerous Goods Code (IMDG)

UN Number	: 2014
Proper shipping name	: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Class	: 5.1
Subsidiary hazard class	: (8)
Packaging group	: II
Marine pollutant	: no

15. REGULATORY INFORMATION

Chemical Inventory Status

EU EINECS	EINECS	Conforms to
-----------	--------	-------------

Product code: 04503

Version 3.0

Issued on 02/10/2015

Page: 9 / 12



SAFETY DATA SHEET

HYDROGEN PEROXIDE 50% (ALL GRADES)

US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.
Australia. Industrial Chemical (Notification and Assessment) Act	AICS	Conforms to
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL.
Japan. Kashin-Hou Law List	ENCS (JP)	Does not conform
Korea. Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH)	Does not conform
China. Inventory of Existing Chemical Substances	IECSC (CN)	Does not conform

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>SARA Reportable Quantities</u>	<u>SARA Threshold Planning Quantity</u>
HYDROGEN PEROXIDE	7722-84-1	1000 lbs	1000 lbs

SARA Title III - Section 311/312 Hazard Categories:

Acute Health Hazard, Fire Hazard, Reactivity Hazard

SARA Title III – Section 313 Toxic Chemicals:

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

United States – State Regulations

New Jersey Right to Know

<u>Chemical Name</u>	<u>CAS-No.</u>
Water	7732-18-5
HYDROGEN PEROXIDE	7722-84-1

Product code: 04503

Version 3.0

Issued on: 02/10/2015

Page: 10 / 12



SAFETY DATA SHEET

HYDROGEN PEROXIDE 50% (ALL GRADES)

New Jersey Right to Know – Special Health Hazard Substance(s)

Chemical Name	CAS-No.
HYDROGEN PEROXIDE	7722-84-1

Pennsylvania Right to Know

Chemical Name	CAS-No.
Water	7732-18-5

HYDROGEN PEROXIDE	7722-84-1
-------------------	-----------

Pennsylvania Right to Know – Environmentally Hazardous Substance(s)

Chemical Name	CAS-No.
HYDROGEN PEROXIDE	7722-84-1

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H272	May intensify fire; oxidiser.
H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

Miscellaneous:

Other information.	This MSDS covers the following grades of 50% H ₂ O ₂ . ALBONE®, PEROXAL®, VALSTERANE®, A; Alb. BIO; CG; CG-HP; CGHP; CLG; DS; FG; M; MS.
--------------------	--

Latest Revision(s):

Revised Section(s):	New GHS SDS
Reference number:	00000033382
Date of Revision:	02/10/2015
Date Printed:	02/10/2015

ALBONE® is a registered trademark of Arkema Inc.
PEROXAL® is a registered trademark of Arkema Inc.
VALSTERANE® is a registered trademark of Arkema Inc.

Product code: 04503

Version 3.0

Issued on: 02/10/2015

Page 11 / 12



SAFETY DATA SHEET

HYDROGEN PEROXIDE 50% (ALL GRADES)

Arkema Inc. believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use are beyond the control of Arkema Inc., Arkema Inc. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

Product code: 04503

Version 3.0

Issued on 02/10/2015

Page 12 / 12

Quick-FDS [17208-76400-09998-018235] - 2015-02-10 - 21 13 21

MATERIAL SAFETY DATA SHEET

HYDROFLUOSILICIC ACID 23%

MSDS ID: AC0025

Revised: 07-24-2008

Replaces: 10-27-2005

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: HYDROFLUOSILICIC ACID 23%
MSDS ID: AC0025
Synonyms: Hydrofluorosilicic Acid; Fluorosilicic Acid; Fluosilicic Acid; Hexafluorosilicic Acid; HFS; FSA; Silicate(2-), hexafluoro-, dihydrogen
CAS Number: 16961-83-4
Chemical Family: Inorganic Acid
Formula: H₂SiF₆

DISTRIBUTED BY:
Hydrite Chemical Co.
300 N. Patrick Blvd.
Brookfield, WI 53008-0948
(262) 792-1450

EMERGENCY RESPONSE NUMBERS:
24 Hour Emergency #: (414) 277-1311
CHEMTREC Emergency #: (800) 424-9300

MANUFACTURED BY: Solvay Fluorides, LLC

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: DANGER! CORROSIVE. Causes severe burns to eyes, skin, and respiratory tract. Harmful if inhaled. Harmful if swallowed. Contact with water may generate toxic, irritating and corrosive gases.

Physical State: Liquid.
Color: Colorless.
Odor: Pungent.

POTENTIAL HEALTH EFFECTS

Routes Of Exposure: Eyes. Ingestion. Inhalation. Skin. Absorption.

Target Organs: Respiratory System. Kidneys. Liver. Eyes.

Eye Contact: CORROSIVE-Causes severe irritation and burns. Causes: watering, redness, swelling. May cause: serious eye damage, permanent eye damage, blindness.

Skin Contact: CORROSIVE-Causes severe irritation and burns. Causes: painful irritation, redness, swelling, severe burns. Effects may be slow to heal.

Skin Absorption: Absorption may cause: shock, hypocalcemia following the extent of the lesions.

Inhalation: CORROSIVE-Causes severe irritation and burns. Causes: spasmodic cough, difficulty breathing. May cause: chemical pneumonitis, pulmonary edema. Inhalation of high concentrations may cause: hypocalcemia, nervous problems (tetany), cardiac arrhythmia (heart irregularity). Prolonged or repeated contact may cause: sore throat, nose bleeds, chronic bronchitis.

Ingestion: CORROSIVE-Causes severe irritation and burns. May cause severe burns to the: mouth, throat. May cause: perforation of the esophagus, perforation of the stomach, throat edema, suffocation, abdominal cramps, nausea, vomiting (bloody), bloody diarrhea, coughing, difficulty in breathing, convulsions.

MATERIAL SAFETY DATA SHEET

HYDROFLUOSILICIC ACID 23%

MSDS ID: AC0025

Revised: 07-24-2008

Replaces: 10-27-2005

unconsciousness, coma, cardiopulmonary arrest, hypocalcemia with nervous disorders (tetany) and cardiac rhythm disorders, general symptoms having a severe prognosis.

Medical Conditions Aggravated By Exposure To Product: No data available.

Other: Chronic exposure at high concentrations can cause bone fluorosis. Seriousness of lesions and prognosis of intoxication depend directly on the concentration and duration of exposure.

Cancer Information: This product does not contain 0.1% or more of the known or potential carcinogens listed in NTP, IARC, or OSHA.

Potential Environmental Effects: See Section 12.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS Number</u>	<u>OSHA Hazard</u>	<u>% by Wt.</u>
Water	7732-18-5	NO	75 - 77 %
Hydrofluosilicic Acid	16961-83-4	YES	23 - 25 %

4. FIRST-AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Tilt head to avoid contaminating unaffected eye. Get immediate medical attention. If there is difficulty opening the lids, administer an analgesic eye wash (oxybuprocaine).

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Do not reuse clothing and shoes until cleaned. Keep warm (blanket); provide clean clothing.

Inhalation: Remove to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration, preferably mouth-to-mouth. GET MEDICAL ATTENTION IMMEDIATELY. Keep warm and quiet.

Ingestion: If swallowed, call a physician immediately. DO NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Rinse mouth with fresh water. DO NOT give anything to drink. If the subject presents nervous, respiratory or cardiovascular disorders: administer oxygen.

Note to Physicians: ALL TYPES OF CONTACT SHOULD BE TREATED IMMEDIATELY.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Not flammable. Not combustible. Use extinguishing agents appropriate for surrounding fire. DO NOT USE: Water.

Fire Fighting Methods: Evacuate area of unprotected personnel. Wear protective clothing including NIOSH-approved self-contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products. Use water spray to cool fire-exposed containers and disperse vapors. Water spray may be useful in minimizing or dispersing vapors. Contact with water liberates hazardous gas.

MATERIAL SAFETY DATA SHEET

HYDROFLUOSILICIC ACID 23%

MSDS ID: AC0025

Revised: 07-24-2008

Replaces: 10-27-2005

Fire And Explosion Hazards: Product may react with some metals (ex.: Aluminum, Zinc, Tin, etc.) to release flammable hydrogen gas.

Hazardous Combustion Products: Thermal decomposition may release: Hazardous fumes or hazardous decomposition products.

6. ACCIDENTAL RELEASE MEASURES

Spill Clean-Up Procedures: CORROSIVE MATERIAL. Evacuate unprotected personnel from area. Maintain adequate ventilation. Follow personal protective equipment recommendations found in Section 8. Never exceed any occupational exposure limit. Shut off source of leak if safe to do so. Keep upwind of leak or spill. Use water spray to control vapor. Contain spills immediately with inert materials (e.g., sand, earth). Place in non-leaking containers for immediate disposal. Dilute with plenty of water. To avoid excess fuming, do not apply water directly onto the spillage, but upstream or on a run off. Neutralize with an alkali (sodium carbonate, lime, etc.) Absorb spill with inert material and dispose of properly. Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Do not swallow. Avoid breathing vapors, mists, or dust. Do not eat, drink, or smoke in work area. Wash thoroughly after handling. Provide tight electrical equipment well protected against corrosion. Use only equipment and materials which are compatible with the product. Use in closed system. Handle in small quantities under a lab hood. Preferably transfer by pump or gravity.

Storage: CORROSIVE MATERIAL. Store in a cool, well ventilated area, out of direct sunlight. Store in a dry location away from heat. Keep away from incompatible materials. Keep containers tightly closed. Do not store in unlabeled or mislabeled containers. Keep in a diked area. Highly corrosive to most metals with evolution of hydrogen gas.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

<u>Component</u>	<u>OSHA PEL</u>	<u>OSHA STEL/C</u>	<u>ACGIH TWA</u>	<u>ACGIH STEL/C</u>
Water	Not Estab.	Not Estab.	Not Estab.	Not Estab.
Hydrofluosilicic Acid	*2.5 mg/m3	Not Estab.	*2.5 mg/m3	Not Estab.

Note: * Exposure Limit for Fluorides, as F.

Engineering Controls: General room ventilation and local exhaust are required. Maintain adequate ventilation. Do not use in closed or confined spaces. Avoid creating dust or mist. Keep levels below exposure limits. To determine exposure levels, monitoring should be performed regularly.

Eye/Face Protection: Wear chemical safety goggles and a full face shield while handling this product.

Skin Protection: Prevent contact with this product. Wear gloves and protective clothing depending on condition of use. Protective gloves: Butyl rubber.

MATERIAL SAFETY DATA SHEET

HYDROFLUOSILICIC ACID 23%

MSDS ID: AC0025

Revised: 07-24-2008

Replaces: 10-27-2005

Respiratory Protection: Respiratory protection must be worn if ventilation does not eliminate symptoms or keep levels below recommended exposure limits. If exposure limits are exceeded, wear: NIOSH-Approved air-purifying respirator with: Acid gas cartridge. In a confined or poorly ventilated area, wear: NIOSH-Approved self-contained breathing apparatus. DO NOT exceed limits established by the respirator manufacturer. All respiratory protection programs must comply with OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements and must be followed whenever workplace conditions require a respirator's use.

Other Protective Equipment: Eye-wash station. Safety shower. Rubber apron. Rubber boots. Protective clothing.

General Hygiene Conditions: Wash with soap and water before meal times and at the end of each work shift.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.

Color: Colorless.

Odor: Pungent.

Boiling Point (deg. F): 227.3 (Decomposes at 226F)

Freezing Point (deg. F): < - 22

Melting Point (deg. F): N.D.

Vapor Pressure (mm Hg): from 22.5 @ 68 F

Vapor Density (air=1): > 1

Solubility in Water: Completely miscible

pH: 1 @ 100 g/l

Specific Gravity: 1.32 @ 68 F

% Volatile (wt%): N.D.

Evaporation Rate (nBuAc = 1): N.D.

VOC (wt%): 0

VOC (lbs/gal): 0

Viscosity: N.D.

Flash Point: Not combustible.

Flash Point Method: N.A.

Lower Explosion Limit: N.D.

Upper Explosion Limit: N.D.

Autoignition Temperature: No Data

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Conditions To Avoid: Avoid heating the product to its decomposition temperature.

Incompatible Materials: Metals. Strong oxidizing agents. Glass.

Hazardous Decomposition Products: Hydrogen gas. Hydrogen fluoride.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur under normal conditions. May react with certain metals to produce flammable hydrogen gas. Explosive mixtures in contact with alkaline materials (Na, K, Li). Reacts violently with water.

MATERIAL SAFETY DATA SHEET

HYDROFLUOSILICIC ACID 23%

MSDS ID: AC0025

Revised: 07-24-2008

Replaces: 10-27-2005

11. TOXICOLOGICAL INFORMATION

LD50 Oral: No Data

LD50 Skin: No Data

LC50 Inhalation: Rat: 850 - 1070 mg/m³/1 h

Oral: LC100 (guinea pig): 80 mg/kg (2% solution)

Chronic toxicity:

Inhalation, Prolonged exposure, rat. Target Organs: Respiratory system, kidney, liver, eyes, observed effect, (hydrofluoric acid)

Genetic toxicity in vitro:

In vitro, Animal testing did not show any mutagenic effects.

Remarks:

Corrosive effect linked to acid properties of the product.

Chronic exposure may entail dental or skeletal fluorosis.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information: Acute Toxicity:

Fishes, *Salmo gairdneri*, LC50, 96 h, 51 mg/l (Fluorides)

Remarks: 10 mg HF/l: pH = 3.15; 100 mg HF/l: pH = 2.65

Crustaceans, *Daphnia magna*, EC50, 48 h, 97 mg/l (Fluorides)

Remarks: fresh water

Crustaceans, *Mysidopsis bahia*, EC50, 96 h, 10.5 mg/l (Fluorides)

Remarks: salt water

Chronic Toxicity:

Fishes, *Salmo gairdneri*, LC50, 21 Days, from 2.7 - 4.7 mg/l (Fluorides)

Crustaceans, *Daphnia magna*, NOEC, 21 Days, 3.7 mg/l (Fluorides)

Algae, *Scenedesmus* sp., EC50, 96 h, 43 mg/l (Fluorides)

Chemical Fate Information: Mobility:

-Air: mobile in aerosol form.

-Water: considerable solubility and mobility.

-Soil/sediments (Fluorides): absorption on mineral soil constituents. Conditions: slightly acid pH.

Persistence and degradability:

Abiotic degradation:

-Air: neutralization by natural alkalinity.

-Water/soil (Fluorides): complexation/precipitation of inorganic materials. Degradation Products: aluminum/iron/calcium/phosphate complexes and/or precipitates as a function of pH.

-Water/soil: ionization/neutralization.

Biodegradation:

MATERIAL SAFETY DATA SHEET

HYDROFLUOSILICIC ACID 23%

MSDS ID: AC0025

Revised: 07-24-2008

Replaces: 10-27-2005

-The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative potential:

-Bioconcentration: log Pow
not applicable (ionizable inorganic compound)
-(Fluorides)
accumulation into vegetable leaves.

Remarks:

-No specific data.
-Harmful to aquatic organisms.
-Hazard for the aquatic environment is limited due to product properties:
-low chronic toxicity.
-Product fate is highly depending on environmental conditions: pH, temperature, oxidoreductive potential, mineral and organic content of the medium...

13. DISPOSAL CONSIDERATIONS

Hazardous Waste Number: D002

Disposal Method: Dispose of in a permitted hazardous waste management facility following all local, state and federal regulations. Since emptied containers retain product residue, follow label warnings even after container is emptied

14. TRANSPORTATION INFORMATION

DOT (Department of Transportation):

Proper Shipping Name: FLUOROSILICIC ACID
Hazard Class: 8
Identification Number: UN1778
Packing Group: II
Label Required: CORROSIVE

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA Inventory Status: All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements

SARA Title III Section 311/312 Category:

Immediate (Acute) Health Hazard: Yes

Delayed (Chronic) Health Hazard: Yes

Fire Hazard: No

Sudden Release Of Pressure Hazard: No

Reactive Hazard: Yes

SARA Section 302/304/313/HAP:

Component

CERCLA RQ SARA RQ SARA TPQ SARA 313 U.S. HAP

Page: 6 of 7

MATERIAL SAFETY DATA SHEET

HYDROFLUOSILICIC ACID 23%

MSDS ID: AC0025

Revised: 07-24-2008

Replaces: 10-27-2005

Water	N.A.	N.A.	N.A.	NO	NO
Hydrofluosilicic Acid	N.A.	N.A.	N.A.	NO	NO

NSF/ANSI Standard 60 Maximum Use Level: 6 mg/L.

U.S. STATE REGULATIONS

California - The following components are listed under Proposition 65:
Lead (0.02% max.)

Wisconsin - The following components are listed as a Wisconsin HAP:
Fluorides (inorganics), as F.

16. ADDITIONAL INFORMATION

Hydrite Rating System

Health: 3*

Flammability: 0

Reactivity: 1

* = Chronic Health Hazard

NFPA Rating System

Health: 3

Flammability: 0

Reactivity: 1

Special Hazard: None

MSDS Abbreviations

N.A. = Not Applicable

N.D. = Not Determined

HAP = Hazardous Air Pollutant

VOC = Volatile Organic Compound

C = Ceiling Limit

N.E./Not Estab. = Not Established

MSDS Prepared by: NAO

Reason for Revision: Changes made throughout the MSDS.

The data in this Material Safety Data Sheet relates to the specific material designated and does not relate to its use in combination with any other material or process. The data contained is believed to be correct. However, since conditions of use are outside our control it should not be taken as warranty or representation for which HYDRITE CHEMICAL CO. assumes legal responsibility. This information is provided solely for your consideration, investigation, and verification.

MATERIAL SAFETY DATA SHEET

SODIUM HYPOCHLORITE 12.5%

Product ID: CL150000

Revised: 08-23-2010

Replaces: 03-18-2010

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: SODIUM HYPOCHLORITE 12.5%
Synonyms: Bleach
CAS Number: MIXTURE
Chemical Family: Base
Formula: NaOCl

Hydrite Chemical Co.
300 N. Patrick Blvd.
Brookfield, WI 53008-0948
(262) 792-1450

EMERGENCY RESPONSE NUMBERS:
24 Hour Emergency #: (414) 277-1311
CHEMTREC Emergency #: (800) 424-9300

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: DANGER! CORROSIVE. Causes severe burns to eyes, skin, and respiratory tract. Harmful or fatal if swallowed. Harmful if inhaled.

Physical State: Liquid.
Color: Clear. Yellow.
Odor: Chlorine odor.

POTENTIAL HEALTH EFFECTS

Routes of Exposure: Eyes. Skin. Ingestion. Inhalation.

Target Organs: Eyes. Skin. Respiratory System.

Eye Contact: CORROSIVE-Causes severe irritation and burns. Small amounts may cause: permanent eye damage. blindness.

Skin Contact: CORROSIVE-Causes severe irritation and burns. Corrosive action causes burns and frequently deep ulceration with ultimate scarring. Contact may cause: redness. swelling. burns. blistering. tissue destruction.

Skin Absorption: No absorption hazard expected under normal use.

Inhalation: CORROSIVE-Causes severe irritation and burns. May cause: coughing. difficulty breathing. pulmonary edema. nausea. May irritate: nose. throat. mucous membranes.

Ingestion: CORROSIVE-Causes severe irritation and burns. May cause damage to the: mouth. esophagus. stomach. May cause: vomiting. colitis. hypotension. perforation of the esophagus. circulatory collapse. convulsions. coma. death.

Medical Conditions Aggravated by Exposure to Product: Respiratory system disorders.

Other: None known.

Cancer Information:

This product does not contain 0.1% or more of the known or potential carcinogens listed in NTP, IARC, or OSHA.

Potential Environmental Effects: See Section 12.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS Number</u>	<u>% by Wt.</u>
Water	7732-18-5	87.5 %
Sodium Hypochlorite	7681-52-9	12.5 %

4. FIRST-AID MEASURES

SODIUM HYPOCHLORITE 12.5%
Product ID: CL150000

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Tilt head to avoid contaminating unaffected eye. Get immediate medical attention.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Do not reuse clothing and shoes until cleaned. Do not apply oils or ointments unless ordered by the physician.

Inhalation: Remove to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration, preferably mouth-to-mouth. GET MEDICAL ATTENTION IMMEDIATELY.

Ingestion: If fully conscious, drink a quart of water. DO NOT induce vomiting. CALL A PHYSICIAN IMMEDIATELY. If unconscious or in convulsions, take immediately to a hospital or a physician. NEVER induce vomiting or give anything by mouth to an unconscious victim. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.

Note to Physicians:

Do not administer acidic antidotes or Sodium Bicarbonate following overexposure. An ounce of 1% Sodium Thiosulfate or milk of magnesia may be helpful.

5. FIRE FIGHTING MEASURES

Extinguishing Media: For fires in area use appropriate media. For example: Water spray. Dry chemical. Carbon dioxide. Alcohol foam.

Fire Fighting Methods: Evacuate area of unprotected personnel. Wear protective clothing including NIOSH-approved self-contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products. Use water spray to cool fire-exposed containers and disperse vapors.

Fire and Explosion Hazards: May generate potentially explosive oxygen.

Hazardous Combustion Products: Chlorine-containing gases.

6. ACCIDENTAL RELEASE MEASURES

Spill Clean-Up Procedures: CORROSIVE MATERIAL. Evacuate unprotected personnel from area. Maintain adequate ventilation. Follow personal protective equipment recommendations found in Section 8. Never exceed any occupational exposure limit. Contain spill, place into drums for proper disposal. Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Do not swallow. Avoid breathing vapors, mists, or dust. Do not eat, drink, or smoke in work area. Wash thoroughly after handling. Empty containers retain product residue (vapor, dust, or liquid) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other source of ignition. They may explode and cause injury or death.

Storage: CORROSIVE MATERIAL. Store in a cool, well ventilated area, out of direct sunlight. Store in a dry location away from heat. Keep away from incompatible materials. Keep containers tightly closed. Do not store in unlabeled or mislabeled containers. Relieve pressure in containers weekly. Do not freeze. Avoid temperatures greater than 70 Deg F. Product degrades more rapidly with increasing temperature.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OSHA Exposure Guidelines:

<u>Component</u>	<u>Limits</u>
No components found.	

ACGIH Exposure Guidelines:

<u>Component</u>	<u>Limits</u>
No components found.	

SODIUM HYPOCHLORITE 12.5%**Product ID: CL150000****Note:**

*Exposure Limit for Chlorine: 1 ppm Ceiling; 3 mg/m³ Ceiling (OSHA); 0.5 ppm TWA; 1 ppm STEL (ACGIH).

Engineering Controls: Local exhaust ventilation, process enclosures, or other engineering controls are required when handling or using this product to avoid overexposure. Keep levels below exposure limits. To determine exposure levels, monitoring should be performed regularly.

Eye/Face Protection: Wear chemical safety goggles and a full face shield while handling this product. Do not wear contact lenses.

Skin Protection: Prevent contact with this product. Wear gloves and protective clothing depending on condition of use. Protective gloves: Rubber (latex). Polyvinyl chloride. Neoprene.

Respiratory Protection: If vapors or mists are present, wear: NIOSH-Approved respirator. NIOSH-Approved self-contained breathing apparatus. DO NOT exceed limits established by the respirator manufacturer. All respiratory protection programs must comply with OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements and must be followed whenever workplace conditions require a respirator's use.

Other Protective Equipment: Eye-wash station. Safety shower. Rubber apron. Chemical safety shoes. Protective clothing.

General Hygiene Conditions: Wash with soap and water before meal times and at the end of each work shift. Good manufacturing practices require gross amounts of any chemical be removed from skin as soon as practical, especially before eating or smoking.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.

Color: Clear. Yellow.

Odor: Chlorine odor.

Boiling Point (deg. F): Not Estab.

Freezing Point (deg. F): ~ -10

Melting Point (deg. F): N.D.

Vapor Pressure (mm Hg): Not Estab.

Vapor Density (air=1): > 1

Solubility in Water: Complete

pH: > 12

Specific Gravity: 1.210 @ 25C

% Volatile (wt%): 100

Evaporation Rate (nBuAc = 1): N.D.

VOC (wt%): 0

VOC (lbs/gal): 0

Viscosity: N.D.

Flash Point: None.

Flash Point Method: N.A.

Lower Explosion Limit: N.A.

Upper Explosion Limit: N.A.

Autoignition Temperature: No Data

Fire Point: N.D.

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Conditions to Avoid: Avoid exposure to light. Avoid temperatures greater than 70 Deg. F. Product degrades more rapidly with increasing temperature.

Incompatible Materials: Ammonia. Organic materials. Acids. Amines. Ammonium salts. Aziridine. Methanol. Reducing agents. Oxidizing agents. Iron. Copper. Bisulfates. Phenyl acetonitrile. Cellulose. Ethyleneimine. Oxidizable metals. Soaps.

Hazardous Decomposition Products: Chlorine-containing gases. Reacts with acids to release poisonous chlorine gas. Sodium oxide.

SODIUM HYPOCHLORITE 12.5%
Product ID: CL150000

Possibility of Hazardous Reactions: Hazardous polymerization will not occur under normal conditions.

11. TOXICOLOGICAL INFORMATION

<u>Component</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Inhalation LC50</u>
Sodium Hypochlorite	Rat: 8200 mg/kg	Rabbit: > 10000 mg/kg	No Data
<u>Other Information</u>			
Inhalation LC50: Rat: 293 ppm/1 H (Chlorine)			

12. ECOLOGICAL INFORMATION

Ecotoxicological Information: DATA PROVIDED ARE FOR SODIUM HYPOCHLORITE-

Freshwater Fish Toxicity:

LC50 clupea harengus 0.033 - 0.097 mg/l/96 hr, flow through bioassay (pH: 8)
LC50 cymatogaster aggregata 0.045 - 0.098 mg/l/96 hr, flow through bioassay (pH: 8)
LC50 gasterosteus aculeatus 0.141 - 0.193 mg/l/96 hr, flow through bioassay (pH: 8)
LC50 oncorhynchus gorbuscha 0.023 - 0.052 mg/l/96 hr, flow through bioassay (pH: 8)
LC50 oncorhynchus kisutch 0.026 - 0.038 mg/l/96 hr, flow through bioassay (pH: 8)
LC50 oncorhynchus mykiss: 0.05-0.771 mg/L/96 hr, flow through
LC50 oncorhynchus mykiss: >0.03-<0.19 mg/L/96 hr, semi-static
LC50 oncorhynchus mykiss: 0.18-0.22 mg/L/96 hr, static
LC50 parophrys velulus 0.044 - 0.144 mg/l/96 hr, flow through bioassay (pH: 8)
LC50 pimephales promelas 0.22 - 0.62 mg/l/96 hr, flow through bioassay (pH: 7)
LC50 pimephales promelas: 4.5-7.6 mg/L/96 hr, static
LC50 lepomis macrochirus: 0.4-0.8 mg/L/96 hr, static
LC50 lepomis macrochirus: 0.28-1 mg/L/96 hr, flow through

Invertebrate Toxicity:

EC50 ceriodaphnia sp. 0.006 mg/l/24 hr
EC50 daphnia magna 0.07 - 0.7 mg/l/24 hr
EC50 daphnia magna 2.1mg/l/96 hr
EC50 gammarus fasciatus 4 mg/l/96 hr
EC50 nitocra spinipes 40 mg/l/96 hr
EC50 palaemonetes pugio 52 mg/l/96 hr

Other Toxicity:

Algae:

ErC50 dunaliella sp. 0.6 mg/l/24 hr
ErC50 dunaliella tertiolecta 0.11 mg/l/24 hr
ErC50 skeletonema costatum 0.095 mg/l/24 hr

Chemical Fate Information: BIODEGRADATION: This material is inorganic and not subject to biodegradation.

PERSISTENCE: This material is believed not to persist in the environment.

BIOCONCENTRATION: This material is not expected to bioconcentrate in organisms.

13. DISPOSAL CONSIDERATIONS

Hazardous Waste Number: D002

Disposal Method: Dispose of in a permitted hazardous waste management facility following all local, state and federal regulations. If approved, flush to sewer with large quantities of water.

14. TRANSPORTATION INFORMATION

DOT (Department of Transportation):

Identification Number: UN1791
Proper Shipping Name: HYPOCHLORITE SOLUTION

SODIUM HYPOCHLORITE 12.5%**Product ID: CL150000**

Hazard Class: 8
Packing Group: III
Label Required: CORROSIVE
Reportable Quantity (RQ): 100# (Sodium Hypochlorite)

15. REGULATORY INFORMATION

TSCA Inventory Status: All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

SARA Title III Section 311/312 Category Hazards:

<u>Immediate (Acute)</u>	<u>Delayed (Chronic)</u>	<u>Fire Hazard</u>	<u>Pressure Release</u>	<u>Reactive</u>			
Yes	No	Yes	No	No			
<u>Regulated Components:</u>	<u>CAS</u>	<u>CERCLA</u>	<u>SARA</u>	<u>SARA</u>	<u>U.S.</u>	<u>WI</u>	<u>Prop</u>
<u>Component</u>	<u>Number</u>	<u>RQ</u>	<u>EHS</u>	<u>313</u>	<u>HAP</u>	<u>HAP</u>	<u>65</u>
Sodium Hypochlorite	7681-52-9	Yes	No	No	No	No	No

***Prop 65 - May Contain the Following Trace Components**

No data available.

NSF/ANSI Standard 60 Maximum Use Level: 84 mg/L.

16. ADDITIONAL INFORMATION**Hazard Rating System**

Health: 3

Flammability: 0

Reactivity: 1

* = Chronic Health Hazard

NFPA Rating System

Health: 3

Flammability: 0

Reactivity: 1

Special Hazard: OX

MSDS Abbreviations

N.A. = Not Applicable

N.D. = Not Determined

HAP = Hazardous Air Pollutant

VOC = Volatile Organic Compound

C = Ceiling Limit

N.E./Not Estab. = Not Established

MSDS Prepared by: JAK

Reason for Revision: Change(s) made in Section 12.

The data in this Material Safety Data Sheet relates to the specific material designated and does not relate to its use in combination with any other material or process. The data contained is believed to be correct. However, since conditions of use are outside our control it should not be taken as warranty or representation for which HYDRITE CHEMICAL CO. assumes legal responsibility. This information is provided solely for your consideration, investigation, and verification.

SECTION V - HEALTH HAZARD DATA - Cont'd

FIRST AID

IF ON SKIN: Wash affected area with soap and large amounts of water
IF IN EYES: Flush with plenty of water. Consult a physician if irritation persists.
IF SWALLOWED: Drink large amounts of water or milk. Do not induce vomiting. Consult a physician
IF BREATHED: If inhalation problem occurs remove victim to fresh air

SECTION VI - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID: Alkaline materials, strong oxidizers
STABILITY: Stable
INCOMPATIBILITY: Strong oxidizing agents, alkalis

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Spill should be covered with absorbent material, and swept up as soon as possible and placed in a dry container. Wash spill area with large amounts of water. Dispose of in landfill in accordance with federal, state, and local regulations

SECTION VIII - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: None normally needed
VENTILATION: Provide enough ventilation to minimize any vapor inhalation.
PROTECTIVE GLOVES: Rubber gloves, if needed to avoid prolonged contact
EYE PROTECTION: Safety goggles, or glasses with side shields
OTHER PROTECTIVE EQUIPMENT: None
HANDLING PRECAUTIONS: Avoid skin contact. Spills should be dealt with immediately

SECTION IX - TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION: FOR FURTHER INFORMATION RELATIVE TO SPILLS RESULTING FROM TRANSPORTATION INCIDENTS, REFER TO LATEST DEPARTMENT OF TRANSPORTATION EMERGENCY RESPONSE GUIDEBOOK FOR HAZARDOUS MATERIALS INCIDENTS, DOT P 5800.3

DOT IDENTIFICATION NUMBER: Not regulated

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED UPON DATA BELIEVED TO BE CORRECT. HOWEVER, NO GUARANTEE OR WARRANTY OF ANY KIND EXPRESSED OR IMPLIED IS MADE WITH RESPECT TO THE INFORMATION CONTAINED HEREIN.

SEAQUEST

MATERIAL SAFETY DATA SHEET

Health [0] Flammability [0]
Reactivity [0]
Personal Protection-[gloves and
goggles as needed]

Manufacturer's Name:
AQUA SMART, INC.

Emergency Telephone No.
404-696-4406

Address:
**4445 COMMERCE DR. SW. STE. A-4
ATLANTA, GA. 30336-1962**

Other Information Calls:
404-696-4406

Person
Responsible for Preparation: **Adam Grossblatt**

Date Prepared: 03/01/2009
Adam Grossblatt

SECTION 1 - IDENTITY

Common Name: (used on label)
(Trade Name & Synonyms)

SEAQUEST

Chemical Name: Not applicable

Chemical Family: Blend of inorganic
phosphates

Formula: Granular-Potable water treatment compound for corrosion and scale control

SECTION 2 - HAZARDOUS INGREDIENTS

Principal Hazardous Component (s)	CAS No.	% by Weight	Threshold Limit Value
--------------------------------------	---------	-------------	-----------------------

Not classified as a "Hazardous Material" in normal use as defined in
29 CFR section 1910.1200

Maximum use level in potable water = 10.0 mg/l

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosion Data)

Boiling Point: Not Applicable	Specific Gravity: 85 lbs./ft ³	Vapor Pressure: Not applicable (mm Hg)
Percent Volatile by Volume (%): 0	Vapor Density (Air=1): Not applicable	Evaporation Rate (ether=1): Not applicable
Solubility in water: 150 parts in 100 parts of water		Reactivity in water: None
Appearance and Odor: White free flowing granular powder, odorless		
Flash Point: None	Flammable: Lower Limits: Not applicable	Upper Limits: Not applicable Extinguisher Media: Not applicable
Auto-Ignition Temperature: Not applicable		
Special Fire Fighting Procedures: Not applicable		
Unusual Fire and Explosion Hazards: If spilled in fire areas. flush with water to avoid slipperiness.		

SECTION 4 - PHYSICAL HAZARDS

Stability: Unstable [] Stable [X] Conditions to avoid: None

Incompatibility: (Materials to avoid) None

Hazardous Decomposition Products: None

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: Not applicable

Signs and Symptoms of Exposure 1. Acute Overexposure: Slight eye irritant

2. Chronic Overexposure: May cause spotty surface blistering on sweaty, moist skin or on frequent repeated prolonged skin contact.

Medical Conditions Generally Aggravated by Exposure: None known

Chemical Listed as Carcinogen or potential carcinogen:

NTP	Yes []	I.A.R.C.	Yes []	OSHA	Yes []
	No [X]		No [X]		No [X]

OSHA Permissible Exposure Limit: Not applicable	ACGIH Threshold Limit Used: Not applicable
Other Exposure Limit Used: Not applicable	
Emergency and First Aid Procedures:	
1. Inhalation: No emergency care anticipated	
2. Eyes: In case of contact, flush with plenty of water for 15 minutes. If irritation persists, get medical attention.	
3. Skin: In case of contact, wash with soap and water If irritation persists, get medical attention.	
4. Ingestion: No emergency care anticipated. Treat symptomatically.	
SECTION 6 - SPECIAL PROTECTION INFORMATION	
Respiratory Protection (Specify Type) : None required in normal use	
Ventilation: Local Exhaust: Adequate Special: None	Mechanical (General): Not required Other: None
Protective Gloves: Gloves to avoid skin contact Other Protective Clothing: None required	Eye Protection: Goggles
SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES	
Precautions to be Taken in Handling and Storage: Keep dry in storage	
Other Precautions: Keep container closed when not in use	
Steps to be Taken in Case Material is Released or Spilled: If spilled, sweep up to nearest waste container	
Waste Disposal Methods: To dispose of, check with Federal, State and local regulations	



Aulick Chemical Solutions, Inc.
111 Patton Court, Nicholasville, KY 40356
phone number: 859.881.5422

For Emergency Assistance
call Chemtrec: 1 800 424 9300

Material Safety Data Sheet

Verus 2575

Revision Date: 7/18/2011

1. Product Identification

Chemical Family:	Blend of Inorganic Phosphates
Chemical Name:	Not Applicable

2. Hazardous Composition / Ingredient Information

Component	CAS Number	% By Weight
-----------	------------	-------------

Verus 2575 does not contain any hazardous ingredients and is not classified as a "Hazardous Material" as defined in 29 CFR section 1910.1200

3. Hazard Identification

Emergency Overview: Verus 2575 is considered a Stable product.

Potential Health Effects:

Eye: Slightly irritating

Skin: Can cause irritation, drying and cracking

Inhalation: No irritation anticipated

Ingestion: Irritating if swallowed

Verus 2575 does not contain any chemicals listed as carcinogen or potential carcinogen

4. First Aid Measures

Eye Contact: Flush immediately with large amounts of water for at least 15-30 minutes

Seek medical attention if irritation persists

Skin: Flush with large amounts of water and wash thoroughly with soap and water

Remove grossly contaminated clothing, including shoes and launder before reuse. If irritation persists, seek medical attention immediately

Inhalation: No emergency care expected

Ingestion: No emergency care expected. Seek medical attention if nausea or sickness occurs

5. Fire and Explosion Hazard

Extinguishing Media: Not Applicable

Other Information:

Decomposition product under fire conditions: None

HMIS Rating:

Health: 0

Fire: 0

Reactivity: 0

Special.

6. Spill Control Procedure

Personal precautions: Wear eye protection and rubber gloves.

Product Spill: If product is spilled sweep up and dispose into container.

Follow all local, state and federal regulations when disposing of Eco Strip

7. Handling and Storage

Storage: Store in dry environment

8. Personal Protection

For open system where contact is likely, wear chemical resistant gloves and chemical goggles.

Handle in accordance with good industrial hygiene and safety practice

9. Physical and Chemical Properties

Product Appearance: White Powder

Odor: Odorless

pH: Not Applicable

Boiling Point: Not Applicable

Flash Point: Not Applicable

Vapor Pressure: Not Applicable

Viscosity of Liquid, CST at °F: Not Applicable

Freezing/ Melting Point: Not Applicable

Solubility: 35grams/100mL

10. Stability and Reactivity Information:

Stability: Stable
Conditions to avoid instability: None
Hazardous Decomposition: Will not occur
Hazardous Polymerization: Will not occur.
Conditions to avoid Hazardous Polymerization: None

11. Transportation

Verus 2575 is non-DOT regulated and does not require placards.

NOTE:

This Technical and Safety Information is given in good faith to our customers but it should not be construed as a warranty or representation for which Aulick Chemical Solutions, Inc. can assume legal responsibility. This information should not be construed as a recommendation to use any product in conflict with existing patents or licenses. Users should verify and test the suitability of the products for their own specific applications. Furthermore, no responsibility is assumed or implied for misuse and resulting damages.

APPENDIX B

**HAZARDOUS MATERIALS SPILLS
EMERGENCY HANDBOOK**

**HAZARDOUS MATERIALS
REMOVAL METHODS**

Reprinted from:
Hazardous Materials Spills Emergency Handbook,
by Permission

F-1

HAZARDOUS MATERIALS SPILLS EMERGENCY HANDBOOK

SECTION 5 – Removal Methods



Part A – Materials Hazardous to a Water Supply

Many materials are potentially hazardous to a water supply. The degree of hazard usually depends upon the amount and concentration of a material, its properties, and its effect on the waters to which it was introduced. The following general classes of materials can be hazardous to a water supply. (See Table 5.1)

- 1. Oil and oil products**
- 2. Radioactive materials**
- 3. Any material transported in large commercial quantities (such as in 55 gallon drums), which**
 - a. is a very soluble acid or base**
 - b. causes abnormal growth of an organ or organism, or**
 - c. is highly biodegradable, exerting a severe oxygen demand**
- 4. Biologically accumulative poisons**
- 5. The active ingredients of economic poisons that are or were ever registered in accordance with the provisions of the Federal insecticide, Fungicide, and Rodenticide Act, as amended (7 USC 135 *et seq.*)**
- 6. Substances highly lethal to mammalian or aquatic life**

Part B — Removal of Spilled Substances

The methods and procedures that have been utilized for the removal of spilled hazardous materials from a water system are discussed below and are referenced in Table S.1. The information presented in this section is only intended as a general guideline and does not contain enough detail to direct cleanup crews.

The following are descriptions of methods and techniques for the removal of spilled hazardous substances. The code letters for each method that follows, such as *Ab* for accelerated biodegradation, are used in Table S.1. Appropriate code letters indicating an applicable removal method are placed after each designated hazardous substance in the table and are defined as follows.

1. *Ab* (accelerated biodegradation). Many hazardous substances may be totally detoxified through biodegradation. Therefore, it has become an occasional ultimate disposal practice to contain such spilled substances safely on land and seed the contained materials with appropriate mixed microbial cultures. The seeding material usually applied is sewage sludge, unless an acclimated seed is available from a local industrial treatment plant. Care must be exercised that there will be no surface- or ground-water contamination.
2. *Ac* (activated carbon). Activated carbon is the single most important vehicle for removal of nonionic hazardous substances from water. Most organic compounds, including the organic pesticides, are readily sorbed on activated carbon. Application methods are extremely variable and depend primarily on the conditions of the spill. Past experience, however, has proved the feasibility of processing large quantities of water contaminated with trace amounts of very toxic materials. *In situ* removal of soluble organic compounds by the use of flow-through activated carbon systems is recommended. Other methods of contacting the activated carbon with the polluted water are left to the discretion of the on-scene coordinator (OSC).
3. *Ae* (aeration). Many substances present a high chemical or biochemical oxygen demand when discharged into the water. These will reduce the dissolved oxygen level below that required by a large portion of aquatic life for life support. By artificially maintaining the required dissolved-oxygen level through mechanical aeration or other oxygen-replacement techniques, the lethal effects from the discharge of such substances can be eliminated. The possibility of stripping volatile materials should be noted and, where a toxic inhalation threat exists, proper safety precautions should be followed.
4. *Bs* (booms and skimmers). Although this may well be classed as a containment method, the coupling of booms and skimmers represents one of the more useful physical removal techniques for a number of floating hazardous substances. *Booms* include a large variety of materials and configurations that function to contain a floating, insoluble material physically. Booms employed should be constructed of nonreactive materials. *Skimmers* are mechanical devices designed to concentrate the less-dense liquid or solid phase, to provide some temporary storage of this two-phase system, and to permit the recovery of the spilled pollutant by some suitable procedure. (This method frequently overlaps into the use of oleophilic material, which is discussed later.)
5. *Bu* (burning). In open areas where very low risk to beneficial water uses or to other properties exists, burning of a combustible hazardous substance is an effective method of removal from beaches, shore lines, and, occasionally, the water. The approval of this method by EPA and the OSC is subject to several restrictions, namely (a) it must be shown that burning presents no significant air-pollution problem; (b) it must be shown that recovery of the material is not feasible; and (c) it must be shown that life, property, or the beneficial uses of water will not be endangered by the fire.
6. *Ic* (ionic clays). Anionic clays have been used with some success in the removal of objectionable substances from water. Bentonite and attapulgite clays have been chosen because they possess the necessary dispersive and adsorptive properties. They flocculate readily in the presence of oppositely charged ions (cations), especially if

these ions are polyvalent. The clays, which are dispersed as negatively charged particles (anions) in water's containing electrolytes, coagulate to form flocs that entrap suspended impurities. Montmorillonite clays display major cation exchange properties, expanding accordion-like in water to permit free ingress and egress of ions of various kinds. Their strong negative charge attracts them to positively charged particles, causing flocculation. In a dilute dispersion the flocs settle quickly. In thicker mixtures settling occurs more slowly; suspension may be sustained unless a substance such as alum is added to enhance settling. Ionic clays have proved most successful in the removal of ammonia and ammonia compounds. Their general use for removing hazardous substances from water, however, is limited by several variables—the turbidity of the water electrolytic concentration, the presence of protective colloids (causing dispersion rather than coagulation), water temperature, the minimum or optimum dosage necessary for clarification, and the period of time required for coagulation and sedimentation—all of which affect the cost of treatment.

7. **Ix (ion exchange).** The removal of ionic, hazardous, polluting substances can be achieved by the use of a number of commercially prepared polymeric organic resins or inorganic ion exchangers. This technique can be applied by either diking techniques using porous bags filled with exchanger or treatment outside of the water column. For efficiency, strong anionic or cationic resins with high exchange capacities are preferred, and the resins should be in either the hydrogen- or hydroxide-ion form. Mixed-bed resins are suitable for either external treatment or bagged exchanger diking. The removal of a specific ion may be carried out with the specific anionic or cationic resin required if the resulting pH change is not greater than 1.0. Where removal of one ionic species causes a pH change greater than 1.0, the other ionic species should be exchanged with the complementary resin to minimize pH changes.

8. **Np (neutralization-precipitation).** Neutralization or precipitation is to be used only as an external treatment. For the purposes of this section, neutralization means either a Lewis acid-base normalization of pH or the conversion of a toxic compound or ion into a less-toxic species by the addition of a specific chemical reactant that results in oxidation, reduction, complex formation, chelation, or other physical-chemical alteration. Precipitation means either the formation of an insoluble material because of the addition of a chemical reactant or the coprecipitation of hazardous suspended solids by the use of flocculating materials. Removal of the precipitate from the spill site is required and recycling of the material is recommended.

9. **Op (oleophilic materials).** Straw, specially treated perlite and talc, polymeric material, or rigid foam has been proved effective in treating oil spills. Providing that recovery of such sorbents from the water is feasible and the sorbents are available, every effort should be made to sorb the spilled substances as soon as possible after the discharge. Upon recovery of these contaminated sorbents, extraction or separation of the pollutant frequently leaves the oleophilic sorber ready for reuse and the recovered pollutant available for recycling. Many floating, low-solubility hazardous substances can be treated in this way, even if these pollutants are partially soluble. In the latter case, additional methods must be applied in order to remove the soluble fraction.

10. **Pm (peat moss).** Although this material is not as widely used as activated carbon (discussed previously), it has much of the same versatility. Peat moss is effective in sorbing both ionic and neutral solutes and has an advantage over activated carbon in being biodegradable. In the case of biodegradable pollutants, the broadcasting (*in situ*) of slurried peat moss will absorb the hazardous material and settle to the bottom. This treatment is then followed by vacuum pumping to remove the spent peat moss. Other methods employing peat moss for removal include sorption of the pollutant followed by recovery and proper disposal of the spent peat moss.

11. **Vp (vacuum pumping).** Vacuum pumping may offer the best removal method when a dense, insoluble spilled substance coats or lies on the bed of the river, lake, or sea. Restrictions on the use of this method of removal are that (1) it must be followed by an approved dredge spoil treatment technique, (b) there must be careful control of the turbidity and suspended solids released into the water column, and (c) the operation must be designed to minimize alterations of the character and structure of the substrate. Prior to initiating a vacuum pumping operation, one must clearly demonstrate that the effects of the hazardous substance will produce damage to the aquatic community greater than that of the removal operation.

Discussion of Table I

The removal methods shown in Table 5.1 are recommended for the treatment of hazardous material spills. Three columns appear at the right-hand side of the table, namely phase 1 removal methods, phase 2 removal methods, and other removal methods. When both phase 1 and 2 removal methods are listed, the former are the phase separation techniques that must be applied before phase 2, which is applied to remove the soluble fraction, in the case of partially soluble substances.

In cases where removal methods are begun after the material has all been dissolved, phase 2 methods should be initiated. For both columns alternates are frequently listed, and either method is equally good. Both are included in order to provide for flexibility. Single cleanup-phase recommendations are self-explanatory. The column labeled as *other* lists techniques that may be effective but can be applied only after consultation with the OSC; or they may reflect different methods for different water conditions. EPA approval should be sought for techniques that have not been demonstrated prior to the proposed use.

The pesticides-removal problem is especially important because of the common usage and extreme toxicity of many of these formulations. In general, organically based pesticides should be adsorbed from all affected waters on charcoal and incinerated in specially controlled furnaces. Exceptions to this general rule include neutralization and precipitation techniques for some organophosphates, using caustic soda or calcium hypochlorite for neutralization. Naturally, any insoluble portion should be recovered as soon as possible by whatever means appropriate. The inorganically based pesticides should be removed from all affected water, using the appropriate ion-exchange resin. Since many of these pesticide formulations are proprietary, immediate contact should be established with the appropriate regional office of the EPA and the pesticide manufacturer or the NACA. Recommended removal methods and assistance will be provided by one or more of these organizations.

An index to removal methods for Table 5.1 follows.

Index to Removal Methods

Abbreviation	Removal Method	For Discussion See Page
Ab	accelerated biodegradation	33
Ac	activated carbon	33
Ae	aeration	33
Bs	booms and skimmers	33
Bu	burning	33
Ic	ionic clays	33
Ix	ion exchange	34
Np	neutralization-precipitation	34
Op	oleophilic materials	34
Pm	peat moss	34
Vp	vacuum pumping	34

TABLE 5.1
Materials Hazardous to a Water Supply and Removal Methods*

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Abietic acid	Vp**	Ac	
Acetaldehyde	Ac		Bu
Acetamide	Ac/lx	Ae	
Acetanilide	Vp	Ac	
Acetic acid	Np/lx	Ae	
Acetic anhydride	Np/lx	Ae	
Acetone cyanohydrin	Vp	Ac/Np	
Acetonitrile	Vp	Ac	
Acetophenone	Vp	Ac/Pm	
Acetyl bromide	Vp	Ac	
Acetylene	Ac		
Acridine	Ac/Pm		
Acrylic acid	Np/lx		Ac
Acrylonitrile	Ac/Pm		Np
Adipic acid	Np/lx	Ac/Pm	
Adiponitrile	Bs	Ac/Pm	
Alkyldimethyldichlorobenzylammonium chloride	Np/lx	Ac/Pm	
Alkyldimethylbenzylammonium chloride	Np/lx	Ac/Pm	
Alkyldimethylbenzyltrimethylammonium chloride	Np/lx	Ac/Pm	
Alkylethylbenzyltrimethylammonium chloride	Np/lx	Ac/Pm	

*Based on evaluation and advice of George B. Grimes and Allen L. Jennings, Hazardous Mat'ls Br., USEPA, Washington D.C.

†Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

††Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

**See index to removal methods

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Allyl alcohol	Bs/Op	Ac	
Allyl chloride	Bs/Op	Ac/Pm	Np
Aluminum fluoride	Np/lx		
Aluminum sulfate	Np/lx		
Aminoethyl ethanol amine	Ac/Pm		lx
Ammonia	lx		lc
Ammonium acetate	lx		lc
Ammonium carbonate	lx		lc
Ammonium chloride	lx		lc
Ammonium chromate	lx		
Ammonium dichromate	lx		
Ammonium ferricyanide	lx		lc
Ammonium ferrocyanide	lx		lc
Ammonium nitrate	lx		lc
Ammonium perchlorate	lx		lc
Ammonium peroxydisulfate	lx/Np		lc
Ammonium phosphate	lx/Np		lc
Ammonium picrate	Vp	lx/Ac	lc
Ammonium sulfate	lx/Np		lc
Ammonium sulfide	lx		lc
Ammonium thiocyanate	lx		lc
Amyl acetate	Bs/Op	Ac/Pm	Bu
Aniline	Ac/Pm		Ab
Antimony potassium tartrate	Np/lx		
Antimony trichloride	Np/lx		
Antimony trifluoride	Np/lx		
Antimony trioxide	Vp	Np/lx	
Barium chloride	Vp	Np/lx	
Barium cyanide	Vp	Np/lx	
Barium hydroxide	Vp	Np/lx	

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Barium nitrate	Vp	Np/lx	
Benzene	Bs/Op	Ac/Pm	
Benzoic acid	Vp	Pm/lx	
Benzonitrile	Vp	Ac/Pm	
Benzoyl chloride	Vp	Pm/lx	Np
Benzylamine	Ac/Pm		lx
Beryllium chloride	lx/Np		
Beryllium nitrate	lx/Np		
Beryllium sulfate	lx/Np		
Boranes	Np/lx		
Boric acid	lx/Np		
Bromine	Vp	Np/Ac	
Butyl acetate	Bs/Op	Pm/Ac	
Butyl acrylate	Bs/Op	Pm/Ac	
Butyl alcohol	Ac		
Butylamine	Pm/Ac		lx
Butylene glycol	Pm/Ac	Ae	
Butyl mercaptan	Bs	Ac	
Cadium chloride	Np	lx	
Cadium nitrate	Np	lx	
Cadium sulfate	Np	lx	
Calcium carbide	Np	Ac	
Calcium cyanide	Np	lx	
Calcium hypochlorite	Np		
Calcium phosphide	Np		
Carbon disulfide	Vp	Ac/Pm	Bu
Carbon monoxide	Np		Ac
Carbon tetrachloride	Vp	Ac/Pm	
Cetyldimethylammonium bromide	Ac/Pm		lx
Cetyldimethylbenzylammonium chloride	Ac/Pm		lx

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Cetylpyridinium chloride	Ac/Pm		Ix
Cetyltrimethylammonium bromide	Ac/Pm		Ix
Cetyltrimethylethylammonium bromide	Ac/Pm		Ix
Chloramine	Ix		Ac/Pm
Chlorine	Np		Ac
Chloroacetic acid	Np		
Chlorobenzene	Vp	Ac/Pm	
Chlorobutadiene	Bs/Op	Ac/Pm	
Chloroform	Vp	Ac/Pm	
Chloroplatinic acid	Ix/Np		
Chlorosulfonic acid	Np		
Chlorothiazide	Vp	Ac/Pm	
Citric acid	Np/Ix	Ae	
Cobalt chloride	Np/Ix		
Cobalt nitrate	Np/Ix		
Cobalt sulfate	Np/Ix		
Copper chloride	Ix/Np		
Copper nitrate	Ix/Np		
Copper sulfate	Ix/Np		
Cresol	Vp	Ac/Pm	
Crotonaldehyde	Ac/Pm		
Cyanamide	Ac		Np
Cyanoacetic acid	Np		
Cyanobutadiene	Bs	Ac/Pm	
Cyanogen bromide	Np	Ac	
Cyanogen chloride	Np	Ac	
Cyclohexane	Bs/Op	Ac/Pm	Bu
Diaminoethane	Ac/Ix		
Diamylamine	Bs/Op	Ac/Pm	Ix
Dibutyl phthalate	Vp	Ac	Bs

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Dichlorobenzene	Vp	Ac/Pm	
Dichloroethane	Vp	Ac/Pm	
Dichloromethane	Vp	Ac/Pm	
Dichlorophenol	Vp	Ac/Pm	
Dichloropropane	Vp	Ac/Pm	
Diethanolamine	Ac/Pm		Ix
Diethylamine	Ac/Pm		Ix
Diethyl phthalate	Vp	Ac	Bs
Diethylhexyl phthalate	Bs/Op	Ac	
Diisobutylcresoxyethoxymethylmethyl benzylammonium chloride	Ac/Pm		Ix
Diisobutylphenoxyethoxymethyldimethyl benzylammonium chloride	Ac/Pm		Ix
Diisopropanolamine	Ix		Ac
Diisopropylamine	Ix		Ac
Dimethylamine	Ix		Ac
Dimethylbenzylammonium chloride	Ac/Pm		Ix
Dimethyl sulfate	Vp	Ac	
Dimethyl sulfoxide	Ac		
Dinitrobenzene	Vp	Ac/Pm	
Dinitrophenol	Vp	Ac/Pm	
Disodiumdibutylphenylphenoldisulfonate	Ac/Pm		Ix
Epichlorohydrin	Vp	Ac/Pm	Np
Ethanolamine	Ix		Ac
Ethyl acrylate	Bs/Op	Ac/Pm	
Ethyl alcohol	Ac		Bu
Ethylamine	Ix		Ac
Ethylbenzene	Bs/Op		
Ethylene	Ac/Pm		Bu
Ethylenediaminetetraacetic acid (EDTA)	Ix		Ac
Ethylene glycol	Ac		Bu
Ethylene glycol diacetate	Ac/Pm	Ac	

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Methods††</u>	<u>Other Removal Method§</u>
Ethylene glycol monobutyl ether	Bs	Pm/Ae	
Ethyleneimine	Ac		Ix
Ferric hydroxide	Ix/Np		
Ferric chloride	Ix/Np		
Ferric sulfate	Ix/Np		
Ferrous hydroxide	Ix/Np		
Ferrous sulfate	Ix/Np		
Ferrous sulfite	Ix/Np		
Fluorine	Np		
Formaldehyde	Np		Ae
Fumaric acid	Vp	Ac/Ix	
Furfural	Vp	Ac/Pm	Ae
Furfuryl alcohol	Np		Ae
Gallic acid	Vp	Ac/Ix	Np
Gluconic acid	Ac/Ix		Ae
Glucose	Ae		
Glycerol	Pm		
Heptanol	Bs	Pm/Ac	Bu
Hexamethylene diamine	Ac/Ix		
Hexanol	Bs	Pm/Ac	Bu
Hydrazine	Ae		
Hydrochloric acid	Np		
Hydrocyanic acid	Np/Ix		
Hydrofluoric acid	Np/Ix		
Hydrogen peroxide	Np		
Hydroquinone	Ae		
Hydroxylamine	Ix/Ac		Ae
Hypochlorous acid	Np		
Indole	Vp	Ac/Pm	
Isoprene	Bs/Op	Ac/Pm	

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Lactic acid	Ac/Ix		
Lanthanum acetate	Np		
Lauryldimethylbenzylammonium chloride	Ac/Pm		Ix
Lead acetate	Np/Ix		
Lead arsenate	Vp	Np/Ix	
Lead chloride	Vp	Np/Ix	
Lead nitrate	Np/Ix		
Lead sulfate	Vp	Np/Ix	
Lead tetraethyl	Vp	Ac	
Lead tetramethyl	Vp	Ac	
Linoleic acid	Bs/Op	Ac	
Lithium chloride	Np/Ix		
Maleic anhydride	Ac/Ix		
Maltose	Ae		
Mercury	Np/Ix		
Methanethiol	Bs/Op	Ac/Pm	
Methanol	Ae		Bu
Methyl acetate	Ac/Pm	Ae	Bu
Methyl acrylate	Ac/Pm	Ae	Bu
Methylamine	Ac/Ix	Ae	
Methyl azide	Ac/Ix		
Methylethyl pyridine	Bs/Op	Ac	
Methylisobutyl ketone	Bs/Op		Ac/Pm
Methylmethacrylate	Bs/Op	Ac/Pm	
Molasses	Ae		
Molybdc trioxide	Vp	Ix/Np	
Mustard gas	Vp	Ac	
Naphthalene	Vp	Ac	
Naphthalic acid	Vp	Ac/Ix	
Naphthenic acid	Vp	Ac/Ix	Bs

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Naphthol	Vp	Ac/Ix	
Naphthylamine	Vp	Ac/Ix	Bs
Nickel ammonium sulfate	Np/Ix		
Nickel chloride	Np/Ix		
Nickel nitrate	Np/Ix		
Nickel sulfate	Np/Ix		
Nitric acid	Np		
Nitrioltriacetic acid (NTA)	Ac/Ix		
Nitroaniline	Vp	Ac/Pm	
Nitrobenzene	Vp	Ac/Pm	
Nitrochlorobenzene	Vp	Ac/Pm	
Nitrocresol	Vp	Ac/Pm	
Nitrophenol	Vp	Ac/Pm	
Nitropropane	Bs/Op	Ac/Pm	Vp
Nitroxylene	Vp	Ac/Pm	
Octadecenyldimethylethylammonium- bromide	Ac/Pm		Ix
Octyl alcohol	Bs/Op	Ac	
Oleic acid	Bs/Op		
Oxalic acid	Vp	Np	
Oxydipropionitrile	Ac		
Paraformaldehyde	Vp	Ac/Ac	
Pentanal	Bs/Op	Ac	
Pentane	Bs/Op	Ac/Pm	Bu
Pentanol	Bs/Op	Ac/Pm	Bu
Pentene	Bs/Op	Ac/Pm	Bu
Phenobarbital	Vp	Ac/Pm	Ac
Phenol	Vp	Ac	
Phenylcarbylamine chloride	Vp	Ac	
Phosgene	Np		
Phosphoric acid	Np		

†Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

††Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Phosphorus	Np		
Phosphorus oxychloride	Np		
Phosphorus pentasulfide	Np	Ae	
Phosphorus trichloride	Np		
Polychlorinated biphenyls (PCB's)	Vp	Ac/Pm	
Polyglycol ether	Ac/Pm		Ae
Potassium chromate	Np/lx		
Potassium cyanide	Np/lx		
Potassium dichromate	Np/lx		
Potassium hydroxide	Np/lx		
Potassium permanganate	Np/lx		Ac
Propanal	Bs/Op	Ac/Pm	Ae
Propanoic acid	Np/lx	Ac/Ae	
Propanoic anhydride	Np/lx	Ac/Ae	
Propanolamine	lx/Ac		
Propyl alcohol	Ae		Bu
Propylamine	lx/Ac		
Propylene oxide	Ac/Pm		Bu
Pyridine	Ac/lx		
Pyrocatechol	Ac/Pm		
Pyrogallol	Ac/Pm		
Quinacrine hydrochloride	Vp	Np	Ac
Quinhydrone	Vp	Ac/Pm	
Quinine	Vp	Ac/Pm	
Quinoline	Vp	Ac/Pm	Bs
Quinone	Vp	Ac/Pm	
Resorcinol	Ac/Pm		
Salicylaldehyde	Vp	Ac/Pm	
Salicylic acid	Vp	Ac/Pm	
Selenium	Vp	Np/lx	

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Silver nitrate	Np/lx		
Sludge, chemical	All methods, depending on content		
Sludge, digested sewage	Vp		Np
Sludge, raw, undigested sewage	Vp		Np
Sodium	Np		
Sodium anthraquinone sulfonate	Ac/lx		
Sodium arsenate	Np/lx		
Sodium azide	Np		
Sodium bisulfite	Np/lx	Ac	
Sodium bromobenzene sulfonate	Ac/Pm		lx
Sodium butyldiphenyl sulfonate	Ac/Pm		lx
Sodium butylphenylphenol monosulfonate	Ac/Pm		lx
Sodium chromate	Np/lx		
Sodium cyanate	Np/lx		
Sodium cyanide	Np/lx		
Sodium decylbenzene sulfonate	Ac/Pm		lx
Sodium dichlorobenzene sulfonate	Ac/Pm		lx
Sodium dichromate	Np/lx		
Sodium dodecylbenzene sulfonate	Ac/Pm		lx
Sodium ferricyanide	Np/lx		
Sodium ferrocyanide	Np/lx		
Sodium fluoride	Np		
Sodium fluosilicate	Vp/lx		
Sodium hydrosulfide	Np	Ac	
Sodium hydroxide	Np		
Sodium lauryl sulfate	Ac/Pm		lx
Sodium methylate	Np	Ac	
Sodium naphthalene sulfate	Ac/Pm		lx
Sodium nitrite	lx		
Sodium nitrochlorobenzene sulfonate	Ac/Pm		lx

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Sodium octyl sulfate	Ac/Pm		Ix
Sodium oleate	Ac/Pm		Np
Sodium palmitate	Ac/Pm		Np
Sodium phosphate	Np		
Sodium selenite	Ix/Np		
Sodium silicate	Np		
Sodium stearate	Ac/Pm		Np
Sodium sulfide	Ix/Np		
Sodium sulfite	Np	Ae	
Sodium thiocyanate	Ix		
Sodium tungstate	Ix		
Stannous chloride	Ix/Np		
Strontium chloride	Ix/Np		
Strontium nitrate	Ix/Np		
Styrene	Bs/Op	Ac/Pm	
Sulfur chloride	Np		
Sulfuric acid	Np		
Sulfurous acid	Np/Ix		
Superphosphate	Np/Ix		
Tannic acid	Np/Ix		Ac
Tetraethylene pentamine	Ac/Ix		
Thallic oxide	Vp	Ix	
Thallium acetate	Ix		
Thioglycolic acid	Ix/Np	Ae	
Thorium chloride	Ix/Np		
Thorium nitrate	Ix/Np		
Titanium chloride	Ix/Np		
Titanium nitrate	Ix/Np		
Titanium sulfate	Ix/Np		
Toluene	Bs/Op	Ac/Pm	

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

<u>Hazardous Substance</u>	<u>Phase I Removal Method†</u>	<u>Phase II Removal Method††</u>	<u>Other Removal Method§</u>
Toluene diisocyanate	Ac/Ix		
Toluidine	Ac/Pm		Ix
Trichlorophenol	Vp	Ac/Pm	
Triethanolamine	Ix		Ac
Triethylamine	Ix/Ac		
Triethylenetetramine	Ix/Ac		
Trimethylamine	Ix/Ac		
Vanadyl sulfate	Np/Ix		
Vinyl acetate	Bs/Op	Ac/Pm	
Vinyl bromide	Ac/Pm		
Vinyl chloride	Ac/Pm		
Xylene	Bs/Op	Ac/Pm	
Xylenol	Bs/Op	Ac/Pm	Vp
Zinc chloride	Np/Ix		
Zinc nitrate	Np/Ix		
Zinc sulfate	Np/Ix		
Zirconium sulfate	Np/Ix		

† Phase I removal method—to be used if spilled material is not diluted (or still concentrated). Water supply contains both dissolved and undissolved spilled material.

†† Phase II removal method—to be used if spilled material has been diluted and is dissolved in the water supply.

§ Other removal methods—to be used only after consultation with local authority, the federally appointed on-scene coordinator (OSC), or approval of the federal EPA.

APPENDIX B
DROUGHT MANAGEMENT PLAN



Drought Management Plan

PWSID: TN0000360

December 2022

City of Kingston Drought Management Plan

Table of Contents

Authority and Status to Plan	3
System Characteristics.	3
Water System Characteristics and Risks.....	4
Purpose of the Drought Management Plan.....	4
Drought Management Plan within Context of EOP	5
The Planning Committee	5
Goals – Objectives and Priorities... ..	5
General Water Uses / Priorities... ..	6
Interconnections, Mutual Aid Agreements and Back-up Sources.....	6
Ordinances, Policies and Legal Requirements.	6
Agency Coordination and USGS Information.....	6
Phased Management.....	7
Drought Alert... ..	7
Voluntary Water Reductions... ..	7
Mandatory Water Restrictions.....	8
Emergency Water Management.	8
Monitor Supply and Demand	8
Trigger Points to Management Phases	9
Drought Alert.	9
Voluntary Reductions.....	9
Mandatory Water Restrictions.....	9
Water Emergency Management.....	9
Management Team.....	10
Review.....	10

City of Kingston – Drought Management Plan

Authority and Status to Plan

Kingston, Tennessee is a municipal corporation chartered and organized under the laws of the State of Tennessee. The City of Kingston owns and operates a Water Treatment Plant and Distribution System serving the citizens of Kingston and the surrounding Roane County area. The Mayor of Kingston has the authority to implement a Drought Management Plan; the Chief Water Treatment Plant Operator has been given the responsibility to complete the plan.

System Characteristics

The City of Kingston Water System has approximately 4,4670 active and inactive water connections. Using the household factor of 2.43 persons per household for Roane County this is equivalent to approximately 11,348 persons. The usage is categorized as follows:

Water Use – Average & Peak Day

Water Use / Customer Category	Customer Meter Count	Average Daily Use Whole Year*	% of Total	Peak Daily Use**	% of Total	Increase (Peak over Average)	% Increase (Peak over Average)
Residential	3,988	382,183	59.9	566,296	65.5	184,113	48
Business	297	231,990	36.4	250,668	29	18,678	8.1
Industrial	1	2,948.6	.5	3,323	.4	374.4	12.7
Government	35	20,387.5	3.2	44,193	5.1	23,805.5	117
Total	4,321	637,508.1	100.0	864,480	100	226,970.9	35.6

*Based on 2014-2015 Fiscal Year Usage

**Historical Peak August 2011-2015

The City of Kingston Water Treatment Plant is a conventional turbidity removal filter plant with a design capacity of approximately 2.3 MGD and the Swan Pond Spring 0.45 MGD. Average usage for the system is approximately 638,000 gallons per day.

The maximum daily pumped in recent years occurred in July of 2015, was 1,520,000 gallons which was due to a mainline break, which resulted in water loss. After repair the affected area (lines) had to be disinfected and flushed etc. and the affected Tanks had to be refilled.

Water System Characteristics and Risks

The City of Kingston, Tennessee is home to an estimated population of just more than 10,000 residents. The City of Kingston Operates the Kingston Water System which is a

Community Public Water System located in Roane County, Tennessee. The System has a reliable and substantial water source in the Watts Bar Reservoir/ Tennessee River. Based on the District's water source assessment, risks to the District's source are minimal short of a contaminant spill in the river.

Treatment and Distribution System risks would be potential line breaks, equipment failure, weather related hazards, or contamination. The District has service crews and equipment that are available to respond to these situations at any time.

The Water Treatment process includes conventional filtration, disinfection, fluoridation, and corrosion control. Upon treatment, water is pumped to the distribution system which supplies 4,670 service connections serving approximately 11,348 individuals. The water system has a finished storage capacity of 2.35 million gallons in 6 elevated tanks. The system maintains 4 pressure zones within its distribution system.

Purpose of the Drought Management Plan

The purpose of this plan is to reduce water demand in the event of a drought where existing water supplies are inadequate to meet current demand for potable water. The significance of taking into account water use on average and during peak water demand (though it may not reflect an extreme or exceptional drought) is that system officials can identify water uses that have the potential to be reduced more easily. The point here is to identify potential discretionary or non-essential water uses.

Because water use data reflects a typical peak summer water use but not necessary a moderate, severe or extreme drought, additional water use could be expected by residential customers on the system to water cattle and other livestock, though they usually rely on ponds and small streams which are likely to be depleted in a severe drought.

There is a connection with a neighboring Utilities Water System, Rockwood Water Department and also a Utility Customer Watts Bar Utility District.

Drought Management Plan within the Context of an EOP

Development of the town's drought management plan was assigned to the Chief Water Plant operator. He sought input from a local specialized team of individuals, including Utilities Superintendent, Employees and Officials to help organize and frame the plan. The City's Emergency Operations Plan addresses line breaks, storms, earthquakes, hazardous material spills and civil disturbances. The EOP is not available for public scrutiny. The drought management plan focuses attention on managing supply and demand during a declared drought.

The Planning Committee

City of Kingston's drought management plan is a separate component of the Emergency Operation Plan (EOP). It was developed by Water Department staff of the town, but included a focus group in its development and review. Unlike the EOP to which the drought plan is an "annex," the drought plan includes restrictions on some water uses and, in some cases, bans other water uses at times. The drought management plan will be

adopted by the mayor and town council. The final adoption process is the normal process used by city council to adopt resolutions allowing for public comment. The drought committee met on _____ and on _____.

Goals - Objectives and Priorities

The initial goal of the drought management plan was to provide water to all priority uses as established by the water system under worsening drought conditions (three levels). The water uses and levels of water availability take into account the maintenance of public health and safety, sustaining economic activity, preserving critical environmental resources and life activities.

General Water Uses in Order of Priority:

- Hospital and medical facilities
- Nursing homes and elderly care facilities
- Human Consumption (Drinking water, domestic cooking, bathing, toilet use)
- Fire protection (structural facilities, and hazardous situations)
- Pets (animal hospitals, kennels) and livestock
- Environment (Erosion, Aquatic Habitat)
- Commercial Uses (Restaurant, Laundry, Office, Retail)
- Industry and Manufacturing (Sanitation, Process, Cooling)
- Recreation (Pools, Athletic Fields)
- Landscape (shrubbery) watering (Home and Commercial)
- Lawn watering, Vehicle Washing (Home and Commercial)

Interconnections, Mutual Aid Agreements and Backup Sources

As a result of customers with livestock on the system with potentially inadequate streams, the plan calls for the use of fire department tankers to haul water from area streams (having available water) to assist farmers with livestock.

There is a connection with a neighboring Utilities Water System, Rockwood Water Department and also a Utility Customer Watts Bar Utility District.

Ordinances, Policies and Legal Requirements.

The City's Drought Management Plan, Rules, Ordinances, and Policies will be available for review. Copies can be examined at the Kingston City Manager's Office, 900 Waterford Place, Kingston, TN 37763.

Agency Coordination and United States Geological Survey (USGS) Information

During periods of drought or impending drought, operators at the Kingston Water Treatment Plant will monitor the Drought Monitor (<http://droughtmonitor.unl.edu/>) to determine the severity of drought. In the event that the River flow begins to approach preset trigger points, the Tennessee Division of Water Resources will be contacted to

discuss possible actions.

Phased Management.

The drought response plan is broken into four phases: Drought Alert, Voluntary Water Reductions, Mandatory Water Restrictions and Emergency Water Management. The drought management phases and sets of trigger points along with their associated goals are described below. Failure to achieve a management phase's goal within a reasonable time shall call for the next phase to be implemented.

Drought Alert

In the drought alert phase, no reduction in water use demand is planned. The Kingston Water System will focus on monitoring conditions, prepare for the possible implementation of "Voluntary Reductions," and call its drought task force group together to review the plan and next-step actions.

Voluntary Water Reductions

Under "Voluntary Reductions" Kingston Water Department has established a water use reduction goal of 10 percent. This figure corresponds to approximately 86,500 gallons per day water use judging by peak usage. Among the trigger points for implementing this phase would be a "*Noticeable*" lowering of The Tennessee River for five consecutive days. The public notification would consist of news releases to the media (weekly newspaper, local radio and regional television stations). Customers will be encouraged to use efficient water practices, e.g., watering lawns between sunset and sunrise, along with the more careful watering of shrubs and other landscape plantings.

Mandatory Water Restrictions

The goal of activating a "Mandatory Water Restrictions" phase would be to reduce water demand by customers by 15 percent (from estimated peak demand). This would amount to a reduction of approximately 130,000 gpd. Vehicle washing will be restricted. Restrictions to car/vehicle washing will apply to commercial car washes that do not re-cycle water and to the domestic washing of cars, etc. Lawn and landscape watering will be restricted. To assist in reducing usage, the water system will reduce the amount of flushing where possible. Public notification of the restrictions will be provided through the media and posted in public buildings such as libraries, city hall, court house, banks and grocery stores. System personnel will be utilized to monitor compliance with restrictions. Customers will also be requested to report violators of the restrictions.

The following will be used to enforce restrictions:

- First offense - A written warning will be issued
- Second Offense - A \$50.00 fine
- Third Offense - Customer's water service will be discontinued for a minimum of 15 days.

A reconnection fee will be required to have service restored.

Emergency Water Management

The "Emergency Water Management phase of the drought plan would be triggered by a further lowering of The Tennessee River for five consecutive days. The purpose of this phase would be to reduce water use to 25 percent of the peak demand. This would be a reduction of approximately 215,000 gpd. The public will be strongly encouraged to curtail any nonessential usage. System personnel will be utilized to monitor compliance with restrictions. Customers will also be requested to report violators of the restrictions.

The following will be used to enforce restrictions:

- First offense - A written warning will be issued
- Second Offense - A \$50.00 fine
- Third Offense - Customer's water service will be discontinued for a minimum of 30 days.

A reconnection fee will be required to have service restored.

Monitor Supply and Demand

The City of Kingston established 3 drought management phases in addition to a "Drought Alert" Phase. All four phases are described below. In addition, numerous trigger points were identified signaling the beginning of a phase.

Triggerpoints to Management Phases

The USGS does monitor The Tennessee River and there is historical data regarding flow rates maintained, as does TVA River Operations at Fort Loudon Dam as the River is used for Power Production and to maintain River Navigability, etc. During non-drought periods the water level can be measured on the water Intake Structure.

Drought Alert

US Drought Monitor includes the service area of the City of Kingston in the D1 classification (Moderate Drought). Once an area is included in one of these classifications' officials responsible for monitoring drought trigger-points will initiate monitoring activities.

Voluntary Water Reductions (the trigger-point for this phase is anyone of the following):

- The lowering of The Tennessee River to 24 inches below water intake pipe level for five consecutive days
- The system usage reaches 2,000,000 gpd for five consecutive days.

Mandatory Water Restrictions (the trigger-point for this phase is anyone of the following):

- The lowering of The Tennessee River 30 inches below water intake pipe level for five consecutive days

- The system usage reaches 2,300,000 gpd for five consecutive days.

- Unable to maintain Morrison Hill Tank level of 15 feet for three consecutive days.

Water Emergency Management (the trigger point for this phase is anyone of the following):

- The lowering of The Tennessee River 36 inches below water intake pipe level for five consecutive days
- The system usage reaches 2,600,000 gpd for five consecutive days.
- Morrison Hill Tank remaining below 10 feet for three consecutive days.

The goal of this phase is to bring water use demand to a level where water supplies could be maintained and sufficient time be allowed for filter backwashing and plant maintenance. This phase calls for sacrifices by users, with the expectation that rainfall is not likely to occur and that extremely limited supplies must be reserved for supporting life and necessary sanitary uses (human consumption). The phase would likely correspond to conditions described by the US Drought Monitor as a D4 condition or exceptional drought.

Management Team

The City of Kingston designated the Chief Water Treatment Plant Operator to be the Drought Plan Implementation Manager. He will be responsible for monitoring trigger-points, updating the Drought Committee of changes, calling the committee meetings and updating the plan as needed. In addition, the Mayor of Kingston, City Manager, Utility Superintendent, Police Chief, Fire Chief, Distribution Supervisor and City Council Representatives make up the drought management group responsible for overseeing the implementation of the plan. They advise and assist the Chief Operator in gathering information, assessing the situation and recommend, advise and approve the Chief Operator's actions. The task group is activated and will meet as necessary, but no less than once a week, once a "Drought Alert" has been initiated. A "Drought Alert" corresponds to the US Drought Monitor's categorization of the water system's service area as being characterized as under "Severe" drought conditions. The task group monitors water system conditions, including water demand, water supply, forecasted conditions, hydraulic conditions, water quality issues, impacted communities, public notification, plan modifications, staffing, trigger points and other issues related to the implementation of the plan. The task group and chief operator must also maintain records of their actions, system conditions at the time of management actions taken, and their effects. Finally, the Drought Management Group and Plan Implementation Manager must also determine and announce the step-down and/or deactivation of the plan.

Review, Evaluation and Up-dating the Management Plan

The Drought Management Plan was adopted on July 12, 2016, by the Kingston City Council. The Drought Manager will review the plan within 6 months after any phase of the plan has been implemented and/or every 2 years. Refinements to the Drought Management plan will be made as necessary. The Drought Manager is responsible for making the review and presenting that review before council.



Guidance for Small Community Water Systems on Risk and Resilience Assessments under America's Water Infrastructure Act

Who Should Use this Guidance?

- This guidance is intended for small community water systems (CWSs) serving greater than 3,300 but less than 50,000 people to comply with the requirements for **risk and resilience assessments** under *America's Water Infrastructure Act of 2018 (AWIA)*.
- For larger CWSs, EPA recommends the [Vulnerability Self-Assessment Tool \(VSAT\) Web 2.0](#) or an alternate risk assessment method.
- CWSs serving 3,300 or fewer people are not required to conduct risk and resilience assessments under AWIA. EPA recommends, however, that very small CWSs use this or other guidance to learn how to conduct risk and resilience assessments and address threats from malevolent acts and natural hazards that threaten safe drinking water.

What is the Purpose of this Guidance?

- This guidance will help small CWSs meet the requirements for risk and resilience assessments in AWIA.
- This guidance does not address emergency response plans (ERPs), which are also required under AWIA for CWSs serving more than 3,300 people.
 - EPA has developed an [Emergency Response Plan Template and Instructions](#) for CWSs to comply with AWIA.
- Further, this guidance does not cover all aspects of water system security and resilience, such as asset management, climate change, and emergency preparedness and response. Visit EPA's [Drinking Water and Wastewater Resilience](#) page to find more information.

What are the Risk and Resilience Assessments Requirements in AWIA?

AWIA requires CWSs serving more than 3,300 people to assess the risks to and resilience of the system to malevolent acts and natural hazards. The law specifies water system assets (e.g., infrastructure) that the assessment must address. These assets are listed in Tables 1a – 10b in the *Risk and Resilience Assessment Checklist* (see fillable checklist below on page 4).

Water systems **must certify to EPA** that the system conducted the assessment not later than the following dates:

- March 31, 2020 for systems serving 100,000 or more
- December 31, 2020 for systems serving 50,000 or more but less than 100,000

- June 30, 2021 for systems serving more than 3,300 but less than 50,000

NOTE: Water systems do not submit the actual assessment to EPA. Visit EPA's informational page on [How to Certify Your Risk and Resilience Assessment or ERP](#) for instructions. Every five years, CWSs must review the risk and resilience assessment, revise it as needed, and provide a new certification to EPA.

What are Risk and Resilience in a Water System?

- **Risk** to critical infrastructure, including water systems, is a function of **threat likelihood**, **vulnerability**, and **consequence**.
 - **Threat** can be a malevolent act, like a cyberattack or process sabotage, or a natural hazard, such as a flood or hurricane.
 - **Threat likelihood** is the probability that a malevolent act will be carried out against the water system or that a natural hazard will occur.
 - **Vulnerability** is a weakness that can be exploited by an adversary or impacted by a natural hazard. It is the probability that if a malevolent act or a natural hazard occurred, then the water system would suffer significant adverse impacts.
 - **Consequences** are the magnitude of loss that would ensue if a threat had an adverse impact against a water system. Consequences may include:
 - Economic loss to the water system from damage to utility assets;
 - Economic loss to the utility service area from a service disruption, and
 - Severe illness or deaths that could result from water system contamination, a hazardous gas release, or other hazard involving the water system.
- **Resilience** is the capability of a water system to maintain operations or recover when a malevolent act or a natural hazard occurs.
- **Countermeasures** are steps that a water system implements to reduce risk and increase resilience. They may include plans, equipment, procedures, and other measures.

How does a Community Water System Assess Risk and Resilience Under AWIA?

Tables 1a – 10b in the *Risk and Resilience Assessment Checklist* (see fillable checklist below on page 4) list the categories of water system assets that you must assess under AWIA. In all tables (i.e., for all asset categories), do the following:

1. Select only the **malevolent acts** from those listed in the table that pose a significant risk to the asset category at the CWS. You may write-in malevolent acts not listed in the table.
 - a. Focus the selection of malevolent acts on those that are prevalent in the United States (e.g., cyber-attacks), can exploit vulnerabilities at the CWS (e.g., known security gaps), and have the potential for significant economic or public health consequences (e.g., contamination).

NOTE: EPA's [Baseline Information on Malevolent Acts Relevant to Community Water Systems](#) assists water systems with estimating the likelihood of these malevolent acts and provides resources for additional information.

2. For each malevolent act that you identify as a significant risk, briefly describe how the malevolent act could impact the asset category at the CWS. Include major assets that might be damaged or disabled, water service restrictions or loss, and public health impacts as applicable.
3. Select only the **natural hazards** from those listed in the table that may pose a significant risk to the asset category at the CWS. You may write-in natural hazards not listed in the table.
 - a. Focus the selection of natural hazards on those that are prevalent in the area where the water system is located, may affect vulnerable water system infrastructure, and have the potential for significant economic or public health consequences related to the CWS.
4. For each natural hazard that you identify as a significant risk, briefly describe or provide examples of how the hazard could impact the asset category at the CWS. Include major assets that might be damaged or disabled, water service restrictions or loss, and public health impacts as applicable.
5. **OPTIONAL Table 11 (*Risk and Resilience Assessment Checklist*, see below):** Identify **countermeasures** that the CWS could potentially implement to reduce risk from the malevolent acts and natural hazards that you selected in in this assessment.
 - a. For malevolent acts, countermeasures are intended to deter, delay, detect, and respond to an attack.
 - b. For natural hazards, countermeasures are intended to prepare, respond, and recover from an event.

NOTE: A single countermeasure, such as emergency response planning or power resilience, may reduce risk across multiple malevolent acts, natural hazards and asset categories.

Complete the *Risk and Resilience Assessment Checklist* here

EPA offers the *Risk and Resilience Assessment Checklist* in two formats. A fillable PDF format is provided on the pages that follow. This format has fixed fields and may not be changed by the user. Alternatively, a Word version may be accessed by clicking on the icon below. The Word version may be changed by the user. **The content of the PDF and Word versions is the same.** To access the Word version, the file must be downloaded to your computer.



Risk and Resilience Assessment Checklist

Community Water System Risk and Resilience Assessment

Kingston Water System Risk and Resilience Assessment

Please fill in the information below.

Facility Name (if applicable): Kingston Water System

PWSID: TN0000360

Analyst Name(s): Chuck Moore
John Poole

Date of Analysis: 04/27/2021

Analysis Notes:

Table 1a: Physical Barriers (Malevolent Acts)¹

Asset Category: Physical Barriers Examples of Assets in this Category: Encompasses physical security in place at the CWS. Possible examples include fencing, bollards, and perimeter walls; gates and facility entrances; intrusion detection sensors and alarms; access control systems (e.g., locks, card reader systems); and hardened doors, security grilles, and equipment cages.	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Physical Barriers</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☒ Assault on Utility – Physical	The City of Kingston operates and maintains a 2 million gallon a day water treatment plant. This plant would be vulnerable to an intrusion by the public when left unattended. The plant is manned 12 hours a day and is shut down for the other 12. The plant has the entire perimeter fenced in as well as magnetic locks on the doors and 24 hour surveillance to protect against any intrusion.
☒ Contamination of Finished Water – Intentional	The water system operates and maintains 6 water storage tanks throughout the water system. These tanks would be vulnerable to public intrusion. This is the only point in the distribution system that would allow access to finished water. These tanks are protected by locked fences that span the perimeter as well as locked ladder guards and locked entryways.
☒ Contamination of Finished Water – Accidental ²	The water system operates and maintains 6 water storage tanks throughout the water system. These tanks would be vulnerable to public intrusion. This is the only point in the distribution system that would allow access to finished water. These tanks are protected by locked fences that span the perimeter as well as locked ladder guards and locked entryways.
☒ Theft or Diversion – Physical	The water system keeps all tools, parts and equipment at a separate facility. The distribution shop where all the equipment is stored could be vulnerable to theft. This facility is protected by a fence which surrounds the entire property as well as a locked building and security cameras which watch the facility 24/7.
☐ Cyberattack on Business Enterprise Systems	

¹In a risk assessment, physical barriers are usually treated as countermeasures, which reduce the risk of a threat to an asset, rather than being treated as assets. However, under AWIA, a CWS must assess the risks to and resilience of physical barriers.

²Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: Physical Barriers

Examples of Assets in this Category: Encompasses physical security in place at the CWS. Possible examples include fencing, bollards, and perimeter walls; gates and facility entrances; intrusion detection sensors and alarms; access control systems (e.g., locks, card reader systems); and hardened doors, security grilles, and equipment cages.

Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Physical Barriers</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Cyberattack on Process Control Systems	
☐ Sabotage – Physical	
☒ Contamination of Source Water – Intentional	The water system uses the Tennessee River as its source of water. The water system could be vulnerable to contamination of its source water. The water system has a large fence around their intake as well as individual fences around each pump. They have some signage warning of the intake and are in the process of adding more signage to warn the public on the river side of the intake.
☒ Contamination of Source Water – Accidental ³	The water system uses the Tennessee River as its source of water. The water system could be vulnerable to contamination of its source water. The water system has a large fence around their intake as well as individual fences around each pump. They have some signage warning of the intake and are in the process of adding more signage to warn the public on the river side of the intake.
☐ Other(s), enter below:	

³ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 1b: Physical Barriers (Natural Hazards)⁴

Asset Category: Physical Barriers Examples of Assets in this Category: Encompasses physical security in place at the CWS. Possible examples include fencing, bollards, and perimeter walls; gates and facility entrances; intrusion detection sensors and alarms; access control systems (e.g., locks, card reader systems); and hardened doors, security grilles, and equipment cages.	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Physical Barriers</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	
☐ Fire	

⁴ In a risk assessment, physical barriers are usually treated as countermeasures, which reduce the risk of a threat to an asset, rather than analyzed as assets themselves. However, under AWIA, a CWS must assess the risks to and resilience of physical barriers.

Kingston Water System

Asset Category: *Physical Barriers*

Examples of Assets in this Category: Encompasses physical security in place at the CWS. Possible examples include fencing, bollards, and perimeter walls; gates and facility entrances; intrusion detection sensors and alarms; access control systems (e.g., locks, card reader systems); and hardened doors, security grilles, and equipment cages.

Natural Hazards	Brief Description of Impacts
Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a natural hazard in the left column as a significant risk to the <i>Physical Barriers</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Other(s), enter below:	

Table 2a: Source Water (Malevolent Acts)

Asset Category: Source Water Examples of Assets in this Category: Encompasses all sources that supply water to a water system. Possible examples include rivers, streams, lakes, source water reservoirs, groundwater, and purchased water.	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Source Water</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☐ Contamination of Finished Water – Intentional	
☐ Contamination of Finished Water – Accidental ⁵	
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

⁵ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: Source Water Examples of Assets in this Category: Encompasses all sources that supply water to a water system. Possible examples include rivers, streams, lakes, source water reservoirs, groundwater, and purchased water.	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Source Water</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Cyberattack on Process Control Systems	
☐ Sabotage – Physical	
☒ Contamination of Source Water – Intentional	The water system uses the Tennessee River as its source of water. The water system could be vulnerable to contamination of its source water. The water system has a large fence around their intake as well as individual fences around each pump. They have some signage warning of the intake and are in the process of adding more signage to warn the public on the river side of the intake.
☒ Contamination of Source Water – Accidental ⁶	The water system uses the Tennessee River as its source of water. The water system could be vulnerable to contamination of its source water. The water system has a large fence around their intake as well as individual fences around each pump. They have some signage warning of the intake and are in the process of adding more signage to warn the public on the river side of the intake.
☐ Other(s), enter below:	

⁶ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 2b: Source Water (Natural Hazards)

Asset Category: Source Water Examples of Assets in this Category: Encompasses all sources that supply water to a water system. Possible examples include rivers, streams, lakes, source water reservoirs, groundwater, and purchased water.	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Source Water</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	
☐ Fire	

Kingston Water System

Asset Category: Source Water

Examples of Assets in this Category: Encompasses all sources that supply water to a water system. Possible examples include rivers, streams, lakes, source water reservoirs, groundwater, and purchased water.

Natural Hazards

Select the natural hazards in the left column that pose a significant risk to this asset category at the CWS.

Brief Description of Impacts

If you select a natural hazard in the left column as a significant risk to the *Source Water* asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.

☐ Other(s), enter below:

Table 3a: Pipes and Constructed Conveyances, Water Collection, and Intake (Malevolent Acts)

Asset Category: Pipes and Constructed Conveyances, Water Collection, and Intake Examples of Assets in this Category: Encompasses the infrastructure that collects and transports water from a source water to treatment or distribution facilities. Possible examples include holding facilities, intake structures and associated pumps and pipes, aqueducts, and other conveyances.	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Pipes and Constructed Conveyances, Water Collection, and Intake</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☐ Contamination of Finished Water – Intentional	
☐ Contamination of Finished Water – Accidental ⁷	
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

⁷ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: *Pipes and Constructed Conveyances, Water Collection, and Intake*

Examples of Assets in this Category: Encompasses the infrastructure that collects and transports water from a source water to treatment or distribution facilities. Possible examples include holding facilities, intake structures and associated pumps and pipes, aqueducts, and other conveyances.

Malevolent Acts	Brief Description of Impacts
Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a malevolent act in the left column as a significant risk to the <i>Pipes and Constructed Conveyances, Water Collection, and Intake</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Cyberattack on Process Control Systems	
☒ Sabotage – Physical	The water system has approximately 150 miles of main distribution lines throughout system. These water mains could be vulnerable to a direct sabotage or an accident. The utility has a Supervisory control and data acquisition system that allows the operators to read the tank levels. Reading these tank levels would be the way the operators can find leaks throughout the water system. In the event of an operator not being on duty the system will go into alarm and contact the operator in charge to the drop in tank levels.
☐ Contamination of Source Water – Intentional	
☐ Contamination of Source Water – Accidental ^B	
☐ Other(s), enter below:	

^B Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Table 3b: Pipes and Constructed Conveyances, Water Collection, and Intake (Natural Hazards)

Asset Category: Pipes and Constructed Conveyances, Water Collection, and Intake Examples of Assets in this Category: Encompasses the infrastructure that collects and transports water from a source water to treatment or distribution facilities. Possible examples include holding facilities, intake structures and associated pumps and pipes, aqueducts, and other conveyances.	
Natural Hazards	Brief Description of Impacts
☐ Hurricane	
☐ Flood	
☒ Earthquake	The water system has approximately 150 miles of main distribution lines throughout system. These water mains could be vulnerable to an earthquake. The utility has a Supervisory control and data acquisition system that allows the operators to read the tank levels. Reading these tank levels would be the way the operators can find leaks throughout the water system. In the event of an operator not being on duty the system will go into alarm and contact the operator in charge to the drop in tank levels. They system also has a listening device used to locate small leaks throughout the system.
☐ Tornado	
☐ Ice storm	
☐ Fire	

Kingston Water System

Asset Category: *Pipes and Constructed Conveyances, Water Collection, and Intake*

Examples of Assets in this Category: Encompasses the infrastructure that collects and transports water from a source water to treatment or distribution facilities. Possible examples include holding facilities, intake structures and associated pumps and pipes, aqueducts, and other conveyances.

Natural Hazards

Select the natural hazards in the left column that pose a significant risk to this asset category at the CWS.

Brief Description of Impacts

If you select a natural hazard in the left column as a significant risk to the *Pipes and Constructed Conveyances, Water Collection, and Intake* asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.

☐ Other(s), enter below:

Table 4a: Pretreatment and Treatment (Malevolent Acts)

Asset Category: Pretreatment and Treatment Examples of Assets in this Category: Encompasses all unit processes that a water system uses to ensure water meets regulatory public health and aesthetic standards prior to distribution to customers. Possible examples include sedimentation, filtration, disinfection, and chemical treatment. For the risk assessment, individual treatment processes at a facility may be grouped together and analyzed as a single asset if they have a similar risk profile.	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Pretreatment and Treatment</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☒ Contamination of Finished Water – Intentional	All pretreatment and treatment techniques are performed at the water treatment facility. The water plant stores all the chemicals and equipment used in the treatment process. The water plant could be vulnerable to intrusion. The plant is manned 12 hours a day during times in which the plant is not manned the entire perimeter is enclosed in a locked fence and remains locked at all times. The water treatment facility is also under 24 hour video surveillance.
☒ Contamination of Finished Water – Accidental ⁹	All pretreatment and treatment techniques are performed at the water treatment facility. The water plant stores all the chemicals and equipment used in the treatment process. The water plant could be vulnerable to intrusion. The plant is manned 12 hours a day during times in which the plant is not manned the entire perimeter is enclosed in a locked fence and remains locked at all times. The water treatment facility is also under 24 hour video surveillance.
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

⁹ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: *Pretreatment and Treatment*

Examples of Assets in this Category: Encompasses all unit processes that a water system uses to ensure water meets regulatory public health and aesthetic standards prior to distribution to customers. Possible examples include sedimentation, filtration, disinfection, and chemical treatment. For the risk assessment, individual treatment processes at a facility may be grouped together and analyzed as a single asset if they have a similar risk profile.

Malevolent Acts	Brief Description of Impacts
Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a malevolent act in the left column as a significant risk to the <i>Pretreatment and Treatment</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Cyberattack on Process Control Systems	
☐ Sabotage – Physical	
☐ Contamination of Source Water – Intentional	
☐ Contamination of Source Water – Accidental ¹⁰	
☐ Other(s), enter below:	

¹⁰ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System
Risk and Resilience Assessment

Table 4b: Pretreatment and Treatment (Natural Hazards)

Asset Category: Pretreatment and Treatment Examples of Assets in this Category: Encompasses all unit processes that a water system uses to ensure water meets regulatory public health and aesthetic standards prior to distribution to customers. Possible examples include sedimentation, filtration, disinfection, and chemical treatment. For the risk assessment, individual treatment processes at a facility may be grouped together and analyzed as a single asset if they have a similar risk profile.	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Pretreatment and Treatment</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	
☐ Fire	

Kingston Water System

Asset Category: *Pretreatment and Treatment*

Examples of Assets in this Category: Encompasses all unit processes that a water system uses to ensure water meets regulatory public health and aesthetic standards prior to distribution to customers. Possible examples include sedimentation, filtration, disinfection, and chemical treatment. For the risk assessment, individual treatment processes at a facility may be grouped together and analyzed as a single asset if they have a similar risk profile.

Natural Hazards	Brief Description of Impacts
Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a natural hazard in the left column as a significant risk to the <i>Pretreatment and Treatment</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Other(s), enter below:	

Table 5a: Storage and Distribution Facilities (Malevolent Acts)

Asset Category: Storage and Distribution Facilities Examples of Assets in this Category: Encompasses all infrastructure used to store water after treatment, maintain water quality, and distribute water to customers. Possible examples include residual disinfection, pumps, tanks, reservoirs, valves, pipes, and meters.	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Storage and Distribution Facilities</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☒ Contamination of Finished Water – Intentional	The water system operates and maintains 6 water storage tanks throughout the water system. These tanks would be vulnerable to public intrusion. This is the only point in the distribution system that would allow access to finished water. These tanks are protected by locked fences that span the perimeter as well as locked ladder guards and locked entryways.
☒ Contamination of Finished Water – Accidental ¹¹	The water system operates and maintains 6 water storage tanks throughout the water system. These tanks would be vulnerable to public intrusion. This is the only point in the distribution system that would allow access to finished water. These tanks are protected by locked fences that span the perimeter as well as locked ladder guards and locked entryways.
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

¹¹ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: Storage and Distribution Facilities

Examples of Assets in this Category: Encompasses all infrastructure used to store water after treatment, maintain water quality, and distribute water to customers. Possible examples include residual disinfection, pumps, tanks, reservoirs, valves, pipes, and meters.

Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Storage and Distribution Facilities</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Cyberattack on Process Control Systems	
☐ Sabotage – Physical	
☐ Contamination of Source Water – Intentional	
☐ Contamination of Source Water – Accidental ¹²	
☐ Other(s), enter below:	

¹² Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 5b: Storage and Distribution Facilities (Natural Hazards)

Asset Category: Storage and Distribution Facilities Examples of Assets in this Category: Encompasses all infrastructure used to store water after treatment, maintain water quality, and distribute water to customers. Possible examples include residual disinfection, pumps, tanks, reservoirs, valves, pipes, and meters.	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Storage and Distribution Facilities</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	
☐ Fire	

Kingston Water System

Asset Category: *Storage and Distribution Facilities*

Examples of Assets in this Category: Encompasses all infrastructure used to store water after treatment, maintain water quality, and distribute water to customers. Possible examples include residual disinfection, pumps, tanks, reservoirs, valves, pipes, and meters.

Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Storage and Distribution Facilities</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☒ Other(s), enter below: Power loss	The water system has 3 booster pump stations throughout the water system. These pump stations could be vulnerable in the even of a large scale power outage and would not be able to pump water to its customers. The utility has in place an on-site generator at the water treatment facility that will run the treatment facility as well as the raw water intake. They also have an on-site generator at one of the booster stations. The utility has a mobile generator that could run the other two booster stations.

Table 6a: Electronic, Computer, or Other Automated Systems (including the security of such systems) (Malevolent Acts)

Asset Category: <i>Electronic, Computer, or Other Automated Systems (including the security of such systems)</i> Examples of Assets in this Category: Encompasses all treatment and distribution process control systems, business enterprise information technology (IT) and communications systems (other than financial), and the processes used to secure such systems. Possible examples include the sensors, controls, monitors and other interfaces, plus related IT hardware and software and communications, used to control water collection, treatment, and distribution. Also includes IT hardware, software, and communications used in business enterprise operations. The assessment must account for the security of these systems (e.g., cybersecurity, information security).	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Electronic, Computer, or Other Automated Systems (including the security of such systems)</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☐ Contamination of Finished Water – Intentional	
☐ Contamination of Finished Water – Accidental ¹³	
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

¹³ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: *Electronic, Computer, or Other Automated Systems (including the security of such systems)*

Examples of Assets in this Category: Encompasses all treatment and distribution process control systems, business enterprise information technology (IT) and communications systems (other than financial), and the processes used to secure such systems. Possible examples include the sensors, controls, monitors and other interfaces, plus related IT hardware and software and communications, used to control water collection, treatment, and distribution. Also includes IT hardware, software, and communications used in business enterprise operations. The assessment must account for the security of these systems (e.g., cybersecurity, information security).

Malevolent Acts Select the malevolent acts in the left column that pose a significant risk to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Electronic, Computer, or Other Automated Systems (including the security of such systems)</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☒ Cyberattack on Process Control Systems	The system uses a Scada system to control certain aspects of the water distribution system. This system could be vulnerable in the event of a cyber-attack. The system uses a separate VPN and the system is not directly connected to the Internet. This would prevent anyone that is not on site at the water treatment facility from accessing any of the systems information.
☐ Sabotage – Physical	
☐ Contamination of Source Water – Intentional	
☐ Contamination of Source Water – Accidental ¹⁴	
☐ Other(s), enter below:	

¹⁴ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 6b: Electronic, Computer, or Other Automated Systems (including the security of such systems) (Natural Hazards)

Asset Category: <i>Electronic, Computer, or Other Automated Systems (including the security of such systems)</i> Examples of Assets in this Category: Encompasses all treatment and distribution process control systems, business enterprise information technology (IT) and communications systems (other than financial), and the processes used to secure such systems. Possible examples include the sensors, controls, monitors and other interfaces, plus related IT hardware and software and communications, used to control water collection, treatment, and distribution. Also includes IT hardware, software, and communications used in business enterprise operations. The assessment must account for the security of these systems (e.g., cybersecurity, information security).	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Electronic, Computer, or Other Automated Systems (including the security of such systems)</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	

Kingston Water System

Asset Category: *Electronic, Computer, or Other Automated Systems (including the security of such systems)*

Examples of Assets in this Category: Encompasses all treatment and distribution process control systems, business enterprise information technology (IT) and communications systems (other than financial), and the processes used to secure such systems. Possible examples include the sensors, controls, monitors and other interfaces, plus related IT hardware and software and communications, used to control water collection, treatment, and distribution. Also includes IT hardware, software, and communications used in business enterprise operations. The assessment must account for the security of these systems (e.g., cybersecurity, information security).

Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Electronic, Computer, or Other Automated Systems (including the security of such systems)</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Fire	
☐ Other(s), enter below:	

Table 7a: Monitoring Practices (Malevolent Acts)¹⁵

Asset Category: Monitoring Practices Examples of Assets in this Category: Encompasses the processes and practices used to monitor source water and finished water quality, along with any monitoring systems not captured in other asset categories. Possible examples include sensors, laboratory resources, sampling capabilities, and data management equipment and systems. Examples are contamination warning systems for the source water or distribution system.	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Monitoring Practices</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☐ Contamination of Finished Water – Intentional	
☐ Contamination of Finished Water – Accidental ¹⁶	
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

¹⁵ Monitoring associated with physical security should be addressed under *Physical Barriers*; monitoring associated with process controls and cybersecurity should be addressed under *Electronic, Computer or Other Automated Systems*; monitoring associated with financial systems should be addressed under *Financial Infrastructure*.

¹⁶ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: *Monitoring Practices*

Examples of Assets in this Category: Encompasses the processes and practices used to monitor source water and finished water quality, along with any monitoring systems not captured in other asset categories. Possible examples include sensors, laboratory resources, sampling capabilities, and data management equipment and systems. Examples are contamination warning systems for the source water or distribution system.

Malevolent Acts Select the malevolent acts in the left column that pose a significant risk to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Monitoring Practices</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Cyberattack on Process Control Systems	
☐ Sabotage – Physical	
☐ Contamination of Source Water – Intentional	
☐ Contamination of Source Water – Accidental ¹⁷	
☐ Other(s), enter below:	

¹⁷ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 7b: Monitoring Practices (Natural Hazards)¹⁸

Asset Category: Monitoring Practices Examples of Assets in this Category: Encompasses the processes and practices used to monitor source water and finished water quality, along with any monitoring systems not captured in other asset categories. Possible examples include sensors, laboratory resources, sampling capabilities, and data management equipment and systems. Examples are contamination warning systems for the source water or distribution system.	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Monitoring Practices</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	

¹⁸ Monitoring associated with physical security should be addressed under *Physical Barriers*; monitoring associated with process controls and cybersecurity should be addressed under *Electronic, Computer or Other Automated Systems*; monitoring associated with financial systems should be addressed under *Financial Infrastructure*.

Kingston Water System

Asset Category: *Monitoring Practices*

Examples of Assets in this Category: Encompasses the processes and practices used to monitor source water and finished water quality, along with any monitoring systems not captured in other asset categories. Possible examples include sensors, laboratory resources, sampling capabilities, and data management equipment and systems. Examples are contamination warning systems for the source water or distribution system.

Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Monitoring Practices</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☒ Fire	The system has daily lab analysis they must perform as well as yearly labs that are sent out to a third party. They also perform the monthly operating reports that must be sent to the state. These reports and labs are usually kept on hard copies. This would make the utility vulnerable in the even of a fire. The utility also keeps digital copies of all lab analysis and reports to prevent the loss.
☐ Other(s), enter below:	

Table 8a: Financial Infrastructure (Malevolent Acts)

Asset Category: Financial Infrastructure Examples of Assets in this Category: Encompasses equipment and systems used to operate and manage utility finances. Possible examples include billing, payment, and accounting systems, along with third parties used for these services. This asset category is not intended to address the financial “health” of the water utility (e.g., credit rating, debt-to-equity ratios).	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>Financial Infrastructure</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☐ Contamination of Finished Water – Intentional	
☐ Contamination of Finished Water – Accidental ¹⁹	
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

¹⁹ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: Financial Infrastructure

Examples of Assets in this Category: Encompasses equipment and systems used to operate and manage utility finances. Possible examples include billing, payment, and accounting systems, along with third parties used for these services. This asset category is not intended to address the financial “health” of the water utility (e.g., credit rating, debt-to-equity ratios).

Malevolent Acts	Brief Description of Impacts
Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a malevolent act in the left column as a significant risk to the <i>Financial Infrastructure</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Cyberattack on Process Control Systems	
☐ Sabotage – Physical	
☐ Contamination of Source Water – Intentional	
☐ Contamination of Source Water – Accidental ²⁰	
☐ Other(s), enter below:	

²⁰ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 8b: Financial Infrastructure (Natural Hazards)

Asset Category: Financial Infrastructure Examples of Assets in this Category: Encompasses equipment and systems used to operate and manage utility finances. Possible examples include billing, payment, and accounting systems, along with third parties used for these services. This asset category is not intended to address the financial “health” of the water utility (e.g., credit rating, debt-to-equity ratios).	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>Financial Infrastructure</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	
☐ Fire	

Kingston Water System

Asset Category: *Financial Infrastructure*

Examples of Assets in this Category: Encompasses equipment and systems used to operate and manage utility finances. Possible examples include billing, payment, and accounting systems, along with third parties used for these services. This asset category is not intended to address the financial “health” of the water utility (e.g., credit rating, debt-to-equity ratios).

Natural Hazards	Brief Description of Impacts
Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a natural hazard in the left column as a significant risk to the <i>Financial Infrastructure</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Other(s), enter below:	

Table 9a: The Use, Storage, or Handling of Chemicals (Malevolent Acts)

Asset Category: The Use, Storage, or Handling of Chemicals Examples of Assets in this Category: Encompasses the chemicals and associated storage facilities and handling practices used for chemical disinfection and treatment. Assessments under this asset category should focus on the risk of uncontrolled release of a potentially dangerous chemical like chlorine where applicable.	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>The Use, Storage, or Handling of Chemicals</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☒ Contamination of Finished Water – Intentional	The water system uses 5 chemicals that are commonly used in the treating of water. These chemicals include a Coagulant, Bleach, Fluoride, Phosphate and peroxide. The system could be vulnerable in the event of a spill or an overfeed. The system has in place alarms for overfeeds that will alert the operator in charge. Also all operators are trained in the storage and handling of these chemicals as well as trained on all Personal Protective Equipment needed to safely use chemicals.
☒ Contamination of Finished Water – Accidental ²¹	The water system uses 5 chemicals that are commonly used in the treating of water. These chemicals include a Coagulant, Bleach, Fluoride, Phosphate and peroxide. The system could be vulnerable in the event of a spill or an overfeed. The system has in place alarms for overfeeds that will alert the operator in charge. Also all operators are trained in the storage and handling of these chemicals as well as trained on all Personal Protective Equipment needed to safely use chemicals.
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

²¹ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: *The Use, Storage, or Handling of Chemicals*

Examples of Assets in this Category: Encompasses the chemicals and associated storage facilities and handling practices used for chemical disinfection and treatment. Assessments under this asset category should focus on the risk of uncontrolled release of a potentially dangerous chemical like chlorine where applicable.

Malevolent Acts	Brief Description of Impacts
Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a malevolent act in the left column as a significant risk to the <i>The Use, Storage, or Handling of Chemicals</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Cyberattack on Process Control Systems	
☐ Sabotage – Physical	
☐ Contamination of Source Water – Intentional	
☐ Contamination of Source Water – Accidental ²²	
☐ Other(s), enter below:	

²² Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 9b: The Use, Storage, or Handling of Chemicals (Natural Hazards)

Asset Category: <i>The Use, Storage, or Handling of Chemicals</i> Examples of Assets in this Category: Encompasses the chemicals and associated storage facilities and handling practices used for chemical disinfection and treatment. Assessments under this asset category should focus on the risk of uncontrolled release of a potentially dangerous chemical like chlorine where applicable.	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>The Use, Storage, or Handling of Chemicals</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	
☐ Fire	

Kingston Water System

Asset Category: *The Use, Storage, or Handling of Chemicals*

Examples of Assets in this Category: Encompasses the chemicals and associated storage facilities and handling practices used for chemical disinfection and treatment. Assessments under this asset category should focus on the risk of uncontrolled release of a potentially dangerous chemical like chlorine where applicable.

Natural Hazards	Brief Description of Impacts
Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a natural hazard in the left column as a significant risk to the <i>The Use, Storage, or Handling of Chemicals</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Other(s), enter below:	

Table 10a: The Operation and Maintenance of the System (Malevolent Acts)

Asset Category: <i>The Operation and Maintenance of the System</i> Examples of Assets in this Category: Encompasses critical processes required for operation and maintenance of the water system that are not captured under other asset categories. Possible examples include equipment, supplies, and key personnel. Assessments may focus on the risk to operations associated with dependency threats like loss of utilities (e.g., power outage), loss of suppliers (e.g., interruption in chemical delivery), and loss of key employees (e.g., disease outbreak or employee displacement).	
Malevolent Acts Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a malevolent act in the left column as a significant risk to the <i>The Operation and Maintenance of the System</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Assault on Utility – Physical	
☐ Contamination of Finished Water – Intentional	
☐ Contamination of Finished Water – Accidental ²³	
☐ Theft or Diversion – Physical	
☐ Cyberattack on Business Enterprise Systems	

²³ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Kingston Water System

Asset Category: *The Operation and Maintenance of the System*

Examples of Assets in this Category: Encompasses critical processes required for operation and maintenance of the water system that are not captured under other asset categories. Possible examples include equipment, supplies, and key personnel. Assessments may focus on the risk to operations associated with dependency threats like loss of utilities (e.g., power outage), loss of suppliers (e.g., interruption in chemical delivery), and loss of key employees (e.g., disease outbreak or employee displacement).

Malevolent Acts	Brief Description of Impacts
Select the malevolent acts in the left column that pose a <u>significant risk</u> to this asset category at the CWS. ☐ Cyberattack on Process Control Systems	If you select a malevolent act in the left column as a significant risk to the <i>The Operation and Maintenance of the System</i> asset category, briefly describe in the right column how the malevolent act could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Sabotage – Physical	
☐ Contamination of Source Water – Intentional	
☐ Contamination of Source Water – Accidental²⁴	
☐ Other(s), enter below:	

²⁴ Accidental contamination is not a malevolent act. It is included here due to similar potential consequences and because whether a contamination incident is intentional or accidental may not be known during initial response.

Table 10b: The Operation and Maintenance of the System (Natural Hazards)

Asset Category: <i>The Operation and Maintenance of the System</i> Examples of Assets in this Category: Encompasses critical processes required for operation and maintenance of the water system that are not captured under other asset categories. Possible examples include equipment, supplies, and key personnel. Assessments may focus on the risk to operations associated with dependency threats like loss of utilities (e.g., power outage), loss of suppliers (e.g., interruption in chemical delivery), and loss of key employees (e.g., disease outbreak or employee displacement).	
Natural Hazards Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	Brief Description of Impacts If you select a natural hazard in the left column as a significant risk to the <i>The Operation and Maintenance of the System</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☐ Hurricane	
☐ Flood	
☐ Earthquake	
☐ Tornado	
☐ Ice storm	
☐ Fire	

Kingston Water System

Asset Category: *The Operation and Maintenance of the System*

Examples of Assets in this Category: Encompasses critical processes required for operation and maintenance of the water system that are not captured under other asset categories. Possible examples include equipment, supplies, and key personnel. Assessments may focus on the risk to operations associated with dependency threats like loss of utilities (e.g., power outage), loss of suppliers (e.g., interruption in chemical delivery), and loss of key employees (e.g., disease outbreak or employee displacement).

Natural Hazards	Brief Description of Impacts
Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a natural hazard in the left column as a significant risk to the <i>The Operation and Maintenance of the System</i> asset category, briefly describe in the right column how the natural hazard could impact this asset category at the CWS. Include effects on major assets, water service, and public health as applicable.
☒ Other(s), enter below: Viral Pandemic	The System has 3 certified plant operators and 9 certified distribution operators. The system would be vulnerable in the event of an extended sickness or viral pandemic. The system has in place procedures to protect the system employees as well as the public. These procedures include Keeping operators as separated as possible. All employees are encouraged to wear masks when in close proximity with other employees and at all times when interacting with the public. All payments will be taken at the drive through window or on-line to reduce interactions with the public.

Table 11: Countermeasures (Optional)²⁵

Countermeasures (optional) List countermeasures in the left column the CWS could potentially implement to reduce risk from the malevolent acts and natural hazards that were selected.	Brief Description of Risk Reduction or Increased Resilience For each countermeasure, in the right column, describe how the countermeasure could reduce risk or increase resilience for CWS assets from malevolent acts or natural hazards that were selected in the analysis. A countermeasure may reduce risk across multiple malevolent acts, natural hazards and asset categories.
1.	
2.	
3.	
4.	
5.	

²⁵ IMPORTANT NOTE: The assessment does not require a specific number of countermeasures. You may have fewer than five countermeasures or add more countermeasures and describe them in a separate document.

Change History

Please describe the changes made to this risk and resilience assessment since its original development, who made the changes, and on what date the changes were incorporated.

CITY OF KINGSTON CONSENT/WAIVER FORM

As a City of Kingston employee, I understand that I may be tested for drug or alcohol at random according to Section VII of the Personnel Policy. I also understand that as an employee of the city, if I refuse to take a drug or alcohol test, I may be subject to disciplinary action up to and including termination.

Signed by _____ Date _____
Employee

Witnessed by _____ Date _____
Department Head

Employee Name: _____ **Employee Job Title:** _____
Facility: _____ **Location of Event:** _____
Observation Date: _____ **Time:** _____ a.m./p.m.
Was employee performing a safety-sensitive duty? Yes No

The following observations were made of the employee identified above:

Check ALL specific and contemporaneous observations and document the following:

BEHAVIOR

- ☐ unsteady gait, stumbling
- ☐ drowsy, sleepy, lethargic
- ☐ agitated, anxious, restless
- ☐ hostile, belligerent
- ☐ irritable, moody
- ☐ depressed, withdrawn
- ☐ unresponsive, distracted
- ☐ clumsy, uncoordinated
- ☐ tremors, shakes
- ☐ flu-like illness complaints
- ☐ suspicious, paranoid
- ☐ hyperactive, fidgety
- ☐ inappropriate, uninhibited behavior
- ☐ frequent use of mints, mouthwash, breath sprays, eye drops

APPEARANCE

- ☐ flushed complexion
- ☐ flushed complexion
- ☐ cold, clammy sweats
- ☐ bloodshot eyes
- ☐ tearing, watery eyes
- ☐ dilated (large) pupils
- ☐ constricted (pinpoint) pupils
- ☐ unfocused, blank stare
- ☐ disheveled clothing
- ☐ unkempt appearance

SPEECH

- ☐ slurred, thick
- ☐ incoherent
- ☐ exaggerated enunciation
- ☐ loud, boisterous
- ☐ rapid, pressured
- ☐ excessively talkative
- ☐ nonsensical, silly
- ☐ cursing, inappropriate speech

BODY ODORS

- ☐ alcohol
- ☐ marijuana

Other observations: _____

Supervisor Name (print or type) _____ Supervisors Signature _____ Date _____

Additional witnesses (optional)

Witness Name (print or type) _____ Witness Signature _____ Date _____

TEST DETERMINATION

- ☐ DOT ☐ NON-DOT
- ☐ Reasonable Suspicion Alcohol Test
- ☐ Reasonable Suspicion Drug Test
- ☐ No Test Required
- ☐ Employee Refused Test
- ☐ NO Test Conducted
- ☐ 8 hours elapsed for alcohol test
- ☐ 32 hours elapsed for drug test
- ☐ Employee transported for medical care
- ☐ Other (explain): _____

Employee transported to collection site by: _____
Time of Transport: _____ a.m./p.m. Collection Facility: _____

For EAP (Employee Assistance) Referral:

NATIONAL HOTLINE NUMBERS

Alcohol and Drug Referral Hot Line 1-800-252-6465

Child Help's - National Child Abuse Hot Line 1-800-422-4453

National A.I.D.S. Hot Line 1-800-342-2437

National Cocaine Hot Line 1-800-262-2463

National Hepatitis Hot Line 1-800-223-0179

National Runaway Switchboard and Suicide Hot Line 1-800-621-4000

National Sexually Transmitted Disease Hot Line 1-800-227-8922

NATIONAL ASSISTANCE GROUPS

Alcoholics Anonymous 1-800-344-2666

Food and Drug Administration 1-301-443-1240

M.A.D.D. 1-800-438-6233

Narcotics Anonymous 1-818-780-3951

AL-ANON Family Group Headquarters 1-800-356-9996

Nat'l Institute of Drug Abuse, Drug Info., Treatment 1-800-662-4357

Families Anonymous 1-800-736-9805

S.A.D.D. 1-508-481-3568

Tough Love 1-800-333-1069

American Cancer Society 1-800-227-2345

Council of Compulsive Gambling 1-800-426-7711

LOCAL DRUG AND ALCOHOL REHABILITATION CONTACTS

Centerpointe Alcohol & Drug ~ Knoxville 865-523-4704

Midway Rehab Center ~ Knoxville 865-522-0301

Drug Rehab Knoxville ~ 865-221-7255

Cross-Connection Survey

Occupant Name: _____

Occupant Address: _____

1. Occupancy: _____ Own _____ Rent _____
2. Meter serves: _____ Homes _____ How Many? _____
 Buildings _____ How Many? _____
3. Do you have? (Please check all that apply)
 Hot Tub _____ Swimming Pool _____ Jacuzzi _____
 Waterbed _____ Solar System _____ Green House _____
 Underground Sprinkler System _____ Darkroom Equipment _____
 Drip/Soaker/Irrigation System _____ Portable Dialysis Machine _____
 Insecticide Sprayers (That attach to garden hose also) _____
 Utility sink w/ threaded faucet _____
4. Do you have a bathtub that fills from the bottom? _____ Yes _____ No
5. Do you have a water softener or any extra water treatment system? _____ Yes _____ No
6. Do you have an auxiliary water supply on your premises? _____ Yes _____ No
7. Do you have livestock and use a water trough or water system connected to by public water?
 _____ Yes _____ No
8. Is your home or building elevated above your water meter? _____ Yes _____ No
9. Does a creek, river, or spring water run near or on your property? _____ Yes _____ No
10. Do you have a booster pump, well pump, or any other type water pump? _____ Yes _____ No
11. Do you receive irrigation water from a different source? _____ Yes _____ No
12. Do you have a backflow protection device on your property now? _____ Yes _____ No
13. Do you have any situation that you are aware of that could create a cross-connection?
 _____ Yes _____ No
14. Do you have any other water-using equipment on your property not mentioned above?
 _____ Yes _____ No

If yes, please list below: _____

_____/_____
 Print Name Phone #

_____/_____
 Signature Date

DEGREE OF HAZARDS

The low and high hazard classifications shall be required to install a backflow prevention device.

Applications requiring backflow prevention devices shall include, but shall not be limited to the following:

Low Hazard:

- Water Softeners and other treatment systems
- Restaurants
- Fountains
- Fire Line Systems
- Docks on Lakes, Rivers, Ponds, etc....
- Automatic Water Systems for Animals

High Hazard:

- Hospitals, Doctor/Dental Offices, Medical Facilities, etc...
- High-Rise Buildings
- Wells
- Car Washes
- Hotels/Motels
- Beauty Salons
- RV Parks/Campgrounds
- Water Plants
- Industry with toxic chemicals
- Irrigation Systems
- Veterinaries, Animal Clinics, Kennels, Grooming Facilities, Zoos, Animal Refuges, etc....
- Wastewater Treatment Plants, Lift Stations, etc....

WELL USER AGREEMENT
OF NON-USE OR CONNECTION TO THE PUBLIC WATER
SUPPLY

In accordance with KWD's Cross-Connection Control program and state law, a private well or auxiliary water source may not be connected in any manner to the public water supply unless proper protection against cross connection is provided. Only a Reduced Pressure Backflow Preventer or an approved air gap (complete separation from public water supply) may be used for protection. These devices must have prior approval by KWD. Customers using the public water supply and not in compliance with this rule will have their water service disconnected.

Check appropriate box:

☐ This serves as notification that a well is located on the property at the following address:

☐ This serves as notification that a well is not located on the property at the following address:

Complete Address:

I (we) understand and agree that this system is, and shall remain totally segregated from the public water supply, and no unapproved or unauthorized cross connections, auxiliary intakes, bypasses, or interconnections with any type of irrigation systems or otherwise will be permitted without the proper cross connection control device and approval of KWD.

I (we) further understand and agree that should an auxiliary water supply be connected to the public water system at the above address, maximum cross connection control equipment in the form of an approved air gap or reduced pressure backflow prevention device shall be installed to protect the public water supply.

Date:

Name:

Notary:

Signature:

Commission Expires:

Backflow Incident Report Form

Reporting Agency: _____ Report Date: _____

Reported By: _____ Title: _____

Mail Address: _____ City: _____

State: _____ Zip Code: _____ Telephone: _____

Date of Incident: _____ Time of Occurrence: _____

General Location (Street, etc): _____

Backflow Originated From:

Name of Premises: _____

Street Address: _____ City: _____

Contact Person: _____ Telephone # : _____

Type of Business: _____

Description of Contaminants (Attach Chemical Analysis or MSDS if available)

Distribution of Contaminants:

Contained within customer's premises: Yes: ____ No: ____

Number of persons affected:

Effect of Contamination:

Illness Reported:

Physical irritation

reported: _____

Cross-Connection Source of Contaminant (boiler, chemical pump, irrigation system, etc.):

Cause of Backflow (main break, fire flow, etc):

Corrective Action Taken to Restore Water Quality (main flushing, disinfection, etc.):

Corrective Action Ordered to Eliminate or Protect from Cross Connections (type of backflow preventer, location, etc.):

Previous Cross-Connection Survey of Premises:

Date: _____ By: _____

Types of Backflow Preventer Isolating Premises:

RPBA _____ RPDA _____ DCVA _____ DCDA _____

Air Gap _____ None _____ Other Type: _____

Date of Latest Test of Assembly: _____

Notification of Division of Water Supply:

Date:

Time:

Person Notified:

Attach sheets with additional information, sketches, and/or media information, and mail to Local Environmental Field Office.

State Guidance for Backflow Prevention Assembly Performance Evaluations

Performance evaluations are needed to demonstrate that all parts of the assemblies are performing as designed and as approved.

1. Performance evaluations must be performed on every assembly at least annually.
2. Each backflow prevention assembly must be deemed Passed to remain approved and acceptable protection for the public water system.

Passed: The status of a backflow prevention assembly determined by a performance evaluation in which the assembly meets all minimum standards set forth by the approved testing procedure.

Reduced Pressure Principle Assembly:

- a. Relief Valve must have an opening point of 2.0 psid or greater
- b. Backpressure on Check Valve #2 must hold tight
- c. Static Pressure Drop across Check Valve #1 must be 3.0 psid or greater than relief valve opening point.
- d. Shutoff Valve #2 must hold tight
- e. Static Pressure Drop across Check Valve #2 must be 1.0 psid or greater.

Double Check Valve Assembly:

- a. Static Pressure Drop across Check Valve #1 must be 1.0 psid or greater
- b. Backpressure on Check Valve #2 must hold tight
- c. Shutoff Valve #2 must hold tight
- d. Static Pressure Drop across Check Valve #2 must be 1.0 psid or greater.

3. The Backflow Prevention Assembly Tester must have, at minimum, a valid Certificate of Competency in Testing and Evaluation Backflow Prevention Assemblies and a valid test kit certification by a manufacturer-approved entity.
4. Backflow Prevention Assembly Testers must test and evaluate according to the latest Division of Water Supply's approved procedures.
5. Test kits must be certified annually and KWD and tester must show proof of certification from manufacturer-approved entities.
6. Proof of annual test kit certification and Certificate of Competency must be current and kept on file for each tester by KWD for five years.
7. Test reports must be completely and accurately documented and the appropriate evaluation determined from testing procedure.
8. All correspondence and documentation pertaining to each backflow prevention assembly will be kept on file by the water provider for at least five years. This includes, but not limited to, test reports, repair reports and installation records.
9. Each location requiring an assembly will have a documented backflow prevention assembly, if the assembly at the address cannot be identified or is not the correct assembly, KWD will be notified.

10. Every assembly must pass each part of the Performance Evaluation. If any test does not meet the minimum requirements set forth in the testing procedure, the assembly is deemed Failed. If conditions around the assembly do not allow the assembly to be tested, the assembly fails the assembly performance evaluation. (Examples would include assembly is submerged, test cocks missing or plugged, relief valve continually discharging)

Failed: The status of a backflow prevention assembly determined by a performance evaluation based on the failure to meet all minimum standards set forth by the approved testing procedure.

11. Assemblies must be tested when installed and after every repair. Backflow prevention assemblies on lawn irrigation systems must be tested when assemblies are placed in service. If lawn irrigation backflow assemblies are taken out of service to winterize the system, upon startup of the system, the assemblies must be retested.
12. KWD may elect to place additional requirements on assembly testers as long as there is no conflict with State statute or regulation.

State Guidance for Certificate of Competency for Testing and Evaluating Backflow Prevention Assemblies

The information listed below is guidance concerning Certificate of Competencies:

- Anyone testing backflow prevention assemblies for the purposes outlined in the utility Cross-Connection Control policy must have a valid Certificate of Competency in Testing and Evaluation of Backflow Prevention Assemblies issued by the Division of Water Supply.
- A valid certificate is defined as a Certificate (Basic or Renewal) issued by the state of Tennessee that has not surpassed the three-year time limit from issuance. After certificates have been granted by the State of Tennessee, a Certificate No. is assigned to the applicant. Certificates are valid for three (3) years after certificates are granted. All Certificates are no longer valid, if the Renewal Certificate is not attained within three (3) years from the date the certificate was issued. A one (1) year grace period is allow to attend the renewal class however, the person must not be allowed to test after the 3-year expiration.
- The applicant must complete and satisfy all requirement set forth by the Division of Water Supply to attain and renew the Certificate of Competency.
- Applicant must successfully complete a State-approved Basic Cross-Connection Control training session, written exam, and practical exam to attain an initial Certificate of Competency. The student must successfully complete a State-approved Renewal Cross-Connection Control training session and practical exam to renew the Certificate of Competency.
- Certificate of Competency must be valid in order to perform assembly evaluations.
- In order to renew the Certificate of Competency, a Renewal Course and Exam must be taken within three years after the issuance date to remain valid.
- If the Certificate of Competency is not renewed three years after issuance, the certificate is no longer valid, but does not expire.
- A one-year grace period to renew the Certificate of Competency is allowed once the three-year time limit has passed.
- The utility will not accept a test report from a tester whose certificate is in the grace period or has expired
- If the tester does not renew during the one- year grace period, the certificate expires and the tester must take the Basic Course and Basic Exam in order to attain the Certificate of Competency.
- The Certificate of Competency is not transferable and no one may work "under" the certificate
- A Plumber Certificate in Testing and Evaluating Backflow Prevention Devices issued by Division of Water Supply cannot be substituted and will not be accepted in place of the Certificate of Competency.
- Certificates of Competency in Testing and Evaluation of Backflow Prevention Assemblies from other states or entities will only be accepted if approved by the Division of Water Supply. No entities or states presently have an approved Certificate of Competency.

Minimum Requirements in Policy

Anyone testing backflow prevention assemblies for the purposes outlined in the utility Cross-Connection Control Policy must possess a valid Certificate of Competency in Testing Evaluation of Backflow Prevention Assemblies issued only by the Division of Water Supply.

State Guidance Concerning Lawn Irrigation Systems

Lawn irrigation systems, both commercial and residential, are recognized by the State of Tennessee, Division of Water Supply as an actual and potential cross-connection to a public water system. The contact between the sprinkler heads and the soil or submergence of sprinkler heads allows a connection between the potable water system and water of unknown or unsafe quality.

Soil and standing water in contact with the sprinkler heads poses a significant risk of containing E. coli, Cryptosporidium, Giardia, other pathogens, and hazardous chemicals used for lawn care. Many lawn irrigation systems use toxic chemicals injected in the piping to fertilize and eliminate undesired plants.

Required Protection for Lawn Irrigation Systems by Public Water Systems:

- For public water systems to protect their distribution lines, lawn irrigation systems are protected by a **Reduced Pressure Principle Assembly** or **Reduced Pressure Principle Detector Assembly**.
- Double Check Valves cannot be used for premise isolation on lawn irrigation systems. Double Check Valves may be used for non-health hazards only. Water which contains or may contain pathogens or harmful chemicals is considered a health hazard and must be protected by a **Reduced Pressure Principle Assembly** or **Reduced Pressure Principle Detector Assembly** only.
- Pressure vacuum breakers, Spill-resistant vacuum breaker, and atmospheric vacuum breakers may not be used to protect the public water system's main-line piping or distribution system. These devices are point-of-use devices and may not be used for premise isolation.
- Assemblies must be tested annually.
- Assemblies on lawn irrigation systems must be tested during the start-up period (typical maximum time limit is within 90 days). Annual testing just prior to winterization or seasonal shutdown is not acceptable. Testing may also be initially staggered in order to reduce problems with scheduling tests.

State Guidance for Approved Backflow Prevention Assemblies

All assemblies, used to protect the public water supply, must be approved by the Division of Water Supply. New installation and replacement assemblies required by a public water system must be included on the latest listing of the Approved List maintained by the Division of Water Supply. A backflow prevention device will qualify as an assembly, if it is consistent with the following definitions:

DOUBLE CHECK-DETECTOR CHECK VALVE ASSEMBLY (DCDA)

A Specially designed unit composed of a line size approved double check valve assembly with a specific bypass line equipped with a small water meter and a $\frac{3}{4}$ inch approved double check valve assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flow. The meter will detect small leakage or theft of water for unmetered fire lines. This assembly is designed for fire service lines and is recommended for unmetered fire lines. This assembly is designed to protect against a low hazard or pollutant.

DOUBLE CHECK VALVE ASSEMBLY (DCVA)

An assembly composed of two independently acting, approved check valves, including tightly closing shutoff valves located at each end of the assembly and fitted with properly located test cocks. This assembly is designed to protect against a low hazard or pollutant.

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (RPBP)

An assembly containing two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located test cocks and tightly closing shutoff valves at each end of the assembly. This assembly is designed to protect against a health hazard (i.e. contaminant).

REDUCED PRESSURE PRINCIPLE-DETECTOR BACKFLOW PREVENTION ASSEMBLY (RPDA)

A specifically designed assembly composed of a line-size approved pressure principle backflow prevention assembly with a bypass containing a specific water meter and an approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow up to 3gpm and shall show a registration for all rates of flow. This assembly shall be used to protect against a non-health hazard or a health hazard. The RPDA is primarily used on fire sprinkler systems. This assembly is designed to protect against a health hazard (i.e. contaminant).

The following assemblies will meet recommendations and requirements for protection of the water system:

1. Reduced Pressure Principle Assembly
2. Reduced Pressure Principle Detector Assembly
3. Double Check Valve Assembly *
4. Double Check Valve Detector Assembly*

*Double Check Valve Assemblies and Double Check Valve Detector Assemblies are permissible on non-chemical fire lines Class 1-3 only. Use of these assemblies is at discretion of the water purveyor.

Atmospheric Vacuum Breakers, Pressure Vacuum Breakers, and Spill-Resistant Pressure Vacuum Breakers are not approved by the Division of Water Supply for premise isolation.

Existing Assemblies not on Approved List

Assemblies not listed on the Approved List may be accepted by the Division of Water Supply as an approved assembly under very strict guidelines. The water purveyor may elect, at their discretion, to accept only assemblies listed on the Approved List in order to establish the utmost confidence in backflow protection and prevention.

The Division of Water Supply highly recommends the use of assemblies listed only on the Approved List. Approval of assemblies not listed on the Approved List will be considered on a case-by-case basis by KWD with fulfillment of these requirements:

1. Approved Policy of water purveyor at the time of installation did not address or require assemblies from Approved List. Policy must be amended and approved, if needed, to allow unapproved existing assemblies that meet the following requirements.
2. Assembly must meet all installation criteria required by KWD
3. Must meet the definition of assembly and is annually tested. The assembly must be deemed Passed to remain as an acceptable and approved backflow prevention assembly for the protection of the water system.
4. Installation, operation, and maintenance of the assembly will provide adequate protection against backflow.
5. Assembly must be repaired using manufacturer-specified parts in accordance to procedures outlined by manufacturer.
6. A written plan must be reported by KWD concerning the assembly not shown on the latest Approved List. The plan will specify all conditions and information concerning the assembly including manufacturer, model, serial number, installation, repair information (if available), time line of replacement (depending on type of hazard and risk of contamination) if assembly cannot be repaired in accordance with manufacturer procedures. All plans and worksheets must be completed and kept on file by KWD.
7. If assembly cannot be repaired according to the manufacturer-specified procedures, it must be replaced with an assembly listed on the latest Approved List. The replacement assembly will be installed, operated, and maintained in accordance to the approved policy of the water purveyor.

APPLICATION FOR WATER SERVICE
KINGSTON, TENNESSEE

DATE CONNECTED		ACCOUNT #	AMOUNT PAID OR BILLED	
DATE FINALLED		DATE CLOSED		
LAST NAME		FIRST NAME	BUSINESS NAME (IF APPLICABLE)	
SERVICE ADDRESS				
MAILING ADDRESS (IF DIFFERENT)				
OWNER	LANDLORD	RENTER	LEASE DATE: _____	
Would you want to be contacted by email or text concerning your account or water issues?			EMAIL	TEXT
Would you like to receive your bills by email instead of by mail?			YES	NEITHER NO
PHONE #1		PHONE #2	EMAIL	
DL # OR ID #		STATE	SSN #	DOB
METER #		TRANSPONDER #	SERVICES	
Is there any medical reason that service cannot be interrupted?			YES	NO
Written verification from a medical doctor is required before meter can be labeled as non-cut-off. The water bill is still required to be paid in full, but notification will be made prior to disconnect.				
<u>Voluntary Information for Federal Grant</u>				
RACE ETHNICITY _____		HISPANIC/LATINO	YES	NO

The undersigned hereby makes application for service at the above address and agrees to pay for said service as measured by the System's meters, according to the System's Standard Rules and Regulations and further agrees, that if bill becomes delinquent and must be sent to Collection Agency, will be responsible for all costs incurred for the Collection Services. The applicant agrees to be responsible for all water consumed upon the premises from the date of installation and to permit authorized agents of the System free access to the premises of the consumer for the purpose of inspecting, reading, examining, repairing, or removing meters or other property belonging to the System. The applicant shall provide the necessary space on or in its premises for the location, safe keeping and protection of pipe, devices, meters, and meter boxes. The applicant shall see that at all times the meter and meter box be accessible to the meter readers or other employees of the Kingston Water Department (This includes landscaping, fences, and parked vehicles).

The applicant is strictly forbidden to interfere with the meters or other appliances of the Utility.
The applicant agrees to pay a minimum cost of \$200.00 for repair or replacement, if meter is tampered with, broken, or disabled in anyway.

The applicant agrees to notify the Kingston Water Department in writing when they desire services to be discontinued and agrees to pay for all service for a reasonable time after such notice, in order to permit KWD to read or remove meter and render bill.

CUSTOMER SIGNATURE _____	EMPLOYEE SIGNATURE _____
APPLICANT ACKNOWLEDGES RECEIPT OR SERVLINE POLICY INFORMATION _____	
APPLICANT ACKNOWLEDGES RECEIPT OF INFORMATION REGARDING PAYMENTS, PENALTIES, DISCONNECT FOR NON-PAYMENT AND FEES ASSOCIATED FOR RECONNECT _____	
APPLICANT ACKNOWLEDGES THAT ACCOUNT OPENED AFTER READ DATE WILL BE ISSUED A MINIMUM BILL APPROXIMATELY _____	
POLICIES AND PROCEDURES LINK - https://water.kingstontn.gov/water-home/water-sewer-policies-procedures/ Revised 10.27.21	

KINGSTON WATER DEPARTMENT
New Customer Information

Bills are due upon receipt. to avoid penalty all payments must be paid by 4:30 pm on the 15th.

Disconnects for Non – Payment: To **avoid disconnection of water services**, all payments must be received by **4:30 pm on the 20th** of each month. **DISCONNECTION OF SERVICES** begins at **8:00 am on the 21st** of each month (or next business day). **If services are disconnected the customer will be responsible for paying the amount due plus a reconnect fee \$50 during business hours. Check Website for Full Policy and Procedures.**

Office hours: 8:00 am to 4:30 pm (Monday – Friday)
Office Phone: (865) 376-2323 Option 2
After Hours Emergency Phone: (865) 717-4644

Payment Options

****ACH bank draft (**Recommended**) We will need a voided check to set up. You will still receive a bill each month and the amount on the bill will be drafted automatically around the 15th of the month (depending on the day of the week). The service is free through our office.

-Kingston City Hall – 900 Waterford Place, Kingston, TN 37763

-Night Drop – locate just outside of the front door of Kingston City Hall

-Simmons Bank – 200 N. Kentucky Street, Kingston, TN 37763 (must have payment stub)

-Online through your bank

-www.kingstontn.gov – No registration required. Customer has several options such as receiving email reminders when payments are due and confirmation after making a payment. Sign up to receive text notifications or “Pay by Text”, set up AutoPay, review payment history and download/print bills anytime. **Invoice Cloud does charge \$2.95 fee per transaction.**

-Pay by Phone 1-855-760-0922

Invoice Cloud does charge \$2.95 fee per transaction.

Trash

The City of Kingston has a contract with Waste Connections. Should you have questions and/or concerns please contact 1-877-237-9042.

The only holidays observed by Waste Connections are Thanksgiving and Christmas.

-Trash must be out at the curb by 6:00 AM

-6 bags or cans of Household garbage only

TRASH DAY: _____

STANDARD WATER SPECIFICATIONS
CITY OF KINGSTON
ROANE COUNTY, TENNESSEE



NOVEMBER 2020

STANDARD WATER SPECIFICATIONS

CITY OF KINGSTON

ROANE COUNTY, TENNESSEE



DW20251166

APPROVED WATER SPECIFICATIONS

THE DOCUMENT BEARING THIS STAMP HAS BEEN RECEIVED AND REVIEWED BY THE

TENNESSEE DEPT. OF ENVIRONMENT & CONSERVATION

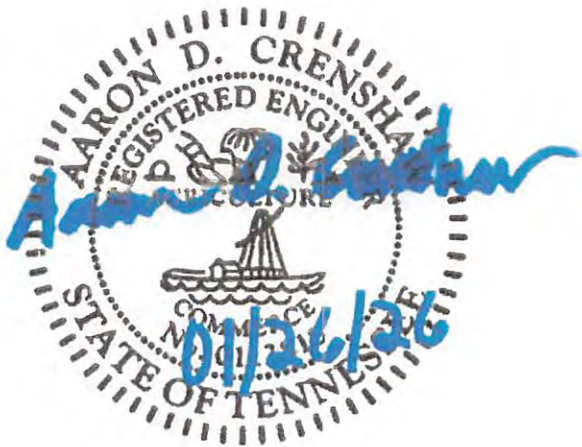
DIVISION OF WATER RESOURCES

AND IS HEREBY APPROVED FOR USE IN CONSTRUCTION BY THE COMMISSIONER

Johanna Miller
01/27/2026

THIS APPROVAL SHALL NOT BE CONSTRUED AS CREATING A
PRESUMPTION OF CORRECT OPERATION OR AS WARRANTING BY THE
COMMISSIONER THAT THE APPROVED FACILITIES WILL REACH THE
DESIGNED GOALS.

APPROVAL EXPIRES FIVE YEARS FROM ABOVE DATE



SYSTEM APPROVAL

A blue ink signature of an official from the City of Kingston, written over a horizontal line.

CITY OF KINGSTON

JANUARY 2026

STANDARD WATER SPECIFICATIONS

CITY OF KINGSTON

ROANE COUNTY, TENNESSEE



SYSTEM APPROVAL

CITY OF KINGSTON

JANUARY 2026

TABLE OF CONTENTS

City of Kingston Standard Water Specifications

Water Line Specifications

Part 1 - General

1.1 Preface

Part 2 - Requirements

2.1 Engineers Requirements

2.2 Contractors Requirements

2.3 Developer Requirements

Part 3 - Products

3.1 Pipe

Part 4 - Execution

4.1 General Requirements

Part 5 – Thrust Blocking

5.1 General Requirements

Part 6 – Service Assemblies

6.1 Products

6.2 General Requirements

Part 7 – Valves

7.1 Valves

Part 8 – Hydrants

8.1 Hydrants

Part 9 – Blow-offs and Air Release Valves

9.1 Blow-offs

9.2 Air Release Valves

Part 10 – Testing and Disinfecting

10.1 Field Test

10.2 Flushing and Disinfecting

WATER LINE SPECIFICATIONS

PART 1 GENERAL

1.1 PREFACE

- A. The standard specifications have been prepared to complement the standard detail drawings and to provide the qualitative requirements for products, materials workmanship or construction of additions to and replacements of the water system of the City of Kingston. These Standard Specifications are only to be used for projects with Drawings which have been approved by the Tennessee Department of Environment and Conservation, Division of Water Resources, as prepared by an engineer licensed in the state of Tennessee whose drawings must first be approved by the City of Kingston. All standard specifications are subject to revision for a special project.

PART 2 REQUIREMENTS

2.1 ENGINEERS REQUIREMENTS

- A. The engineer shall field verify all utilities' locations and elevations.
- B. The engineer shall provide a proposed site plan drawing to the City of Kingston to be approved before the project starts. If the City of Kingston returns the drawings to the engineer with revisions, the drawings shall be revised by the engineer and returned to the City of Kingston.
- C. The engineer shall have the drawings approved by the City of Kingston before sending them to the Tennessee Department of Environment and Conservation.
- D. The engineer shall provide the City of Kingston with two (2) sets of paper copy as-built drawings and two (2) electronic copies, one in pdf format and one in either dgn or dwg format after the job has been completed.
- E. The engineer shall provide the items listed below on the as-built drawings:
 - 1. Location of Waterline
 - 2. Depth of Waterline
 - 3. Location of Valves
 - 4. Location of Fire Hydrants
 - 5. Location of Water Service Stub Outs
 - 6. Location of Blow-Offs
 - 7. Type of Pipe Materials

2.2 CONTRACTORS REQUIREMENTS

- A. The contractor shall guarantee all materials, equipment, and workmanship for a period of one year from the date of final acceptance of the work by the City of Kingston. If during

this time any material, equipment, or item of construction proves defective, the contractor shall make the repairs at their own expense to the City of Kingston specifications.

- B. The contractor shall comply with all applicable laws, regulations and requirements which may or may not be included in these technical specifications, including, but not limited to, the contractor Licensing Act of 1994, as amended, and the Tennessee State, Health, and Labor Standards.
- C. The contractor shall obtain all licenses and permits prior to the start of work. Copies of each permit shall be submitted to the City of Kingston. The contractor shall have their municipal utility license to install water lines in the City of Kingston. The contractor shall be responsible for obtaining permission to work in the right-of-way from the necessary agencies.
- D. The contractor is required to contact the City of Kingston inspector three days prior to construction for a pre-construction meeting.
- E. The contractor shall submit electronic copies of the list of materials they plan to use. All materials and manufacturers must have final approval from the City of Kingston prior to construction.
- F. The contractor shall be responsible for obtaining and using the most recently revised plans.
- G. The contractor is responsible for pre-testing all lines before calling the City of Kingston for testing. The contractor is responsible for calling the inspector and setting up testing dates seven days prior to final testing.

2.3 DEVELOPER REQUIREMENTS

- A. The developer shall read and sign a Developers Agreement and return it to the City of Kingston main office.
- B. The developer shall refer to the Developers Agreement for most requirements.
- C. The developer is responsible for the engineer and contractor meeting their requirements.
- D. The developer is responsible for all costs in providing the City of Kingston with as-built plans.

PART 3 PRODUCTS

3.1 PIPE

- A. PVC Pipe: (2"-4") SDR 17 Class 250 with elastomeric gasketed joints, 20-foot laying length. Integral thickened bell at annular recess designed, sized, and shaped so that gasket is locked in place against displacement.
- B. PVC Pipe: (6"-8": PVC SDR 17) (10"-12" C900 DR 18), Class 200 with elastomeric gasketed joints, 20-foot laying length. Integral thickened bell at annular recess designed, sized, and shaped so that the gasket is locked in place against displacement.

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

- C. Ductile Iron Pipe shall be in conformance with AWWA C151/A21.51 Standard, Pressure Rating of 250 PSI, and push on joints lined with cement mortar according to ANSI 21.4/AWWA C-104. Ductile Iron fittings shall meet AWWA C110 standards, Pressure Rating of 250 PSI, and made in the United States with no slots. Joints shall be in conformance with AWWA standards C111/A21.11, Rubber gasket joints for Ductile-Iron Pressure Pipes and fittings. **All water pipe over 12" in diameter, Fire Lines, and water lines under paved areas shall be ductile iron pipe.** All pipe, fittings, and jointing compounds shall be NSF approved and shall be appropriately marked or labeled.

PART 4 EXECUTION

4.1 GENERAL REQUIREMENTS

- A. All ductile iron and PVC shall be installed with a 12-gauge solid copper wire with coating, which shall extend above ground 3 feet in valve boxes and shall run up fire hydrants base and be fixed to the bottom flange with 2" accessible.
- B. During pipe installation the contractor shall take every precaution to prevent foreign material from entering the pipe. When installing pipe through a bored hole, the leading end of the pipe to be inserted shall be closed. After the water pipe has been placed in the ditch or inserted through a bored hole, it shall be examined for damage. Damaged pipe shall be replaced, and corrective measures shall be taken to prevent damage to the replacement pipe.
- C. All pipes laid at a slope of 20 percent or greater will use an additional restrained joint fitting.
- D. Wherever pipe must be deflected from a straight line the pipe shall not exceed the deflection recommended by the pipe manufacturer and shall be approved by City of Kingston. Bend fittings shall be used when the deflection of the pipe is greater than allowed by the pipe manufacturer or when determined by the City of Kingston.
- E. A minimum cover of 36 inches shall be provided over the top of the pipe, except under streets and driveways where 48 inches of cover shall be provided.
- F. Connections to existing lines and connection of service lines shall be coordinated with the City of Kingston.
- G. All intersections will be built with ductile iron pipe regardless of line material being used (all hydrants, short nipples between valves, fittings, etc. shall be ductile iron). All intersections will be rodded together or employ a restrained-joint gland (mega-lugs count as a restrained-joint gland), but not a retainer gland, and will be so constructed to allow placement as a unit. Quick connect adapters (Flex T-3) can be used if approved by the City of Kingston. Concrete thrust blocking may be required but does not replace restrained joint construction.
- H. Whenever pipe installation is not in progress, the open ends of the pipe shall be closed either with a watertight plug or by other means approved by the City of Kingston.
- I. If the water main to be installed parallels a sewer line, there must be at least 10 feet horizontally from any sewer or sewer manhole. In conditions where the 10 feet of

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

horizontal separation cannot be obtained, the water main shall be laid in a separate trench so that the bottom of the water main is at least 18 inches above the sewer pipe.

- J. If the water main to be installed crosses under a sewer line, the water main must be Ductile Iron Pipe for a distance of 10 feet on either side of the sewer, with a full pipe section centered under the sewer, along with an 18" minimum separation. The water main, when installed under the sewer, shall be encased in concrete with a minimum 6" concrete depth to the first joint in each direction.
- K. For all roadway crossings and stream crossings, water pipe shall be installed in a casing pipe double the size of the water main. The pipe shall be centered with casing spacers installed per manufacturers' recommendations. All pipe inserted through casing must be ductile iron pipe.
- L. All water mains installed that come to a dead end must have a flushing device at the end of the line.

PART 5 THRUST BLOCKING

5.1 GENERAL REQUIREMENTS

- A. Thrust blocking shall be provided at all bends of 11'1/4" or greater and tees and valves. Blocking shall be poured against undisturbed earth and shall be a minimum of 12 inches thick and 3000 psi and constructed so that the pipe and fitting joints will be accessible for repairs. All pipe and fittings in contact with concrete thrust blocks should be wrapped in plastic sheeting. Refer to the chart below for thrust blocking reference: **If pressure exceeds test pressure in chart below contractor shall recalculate thrust blocking volume.**

THRUST BLOCKING CHART			
PIPE SIZE @ TEST P.S.I.	VERTICAL BEND (degrees)	VOLUME OF CONCRETE (ft cubed)	SIDE OF CUBE (FEET)
4" @ 300 psi	11 1/4	8	2
	22 1/2	11	2.2
	45	30	3.1
6" @ 300 psi	11 1/4	11	2.2
	22 1/2	25	2.9
	45	68	4.1
8" @ 300 psi	11 1/4	16	2.5
	22 1/2	47	3.6
	45	123	5.0

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

THRUST BLOCKING CHART -continued			
PIPE SIZE @ TEST P.S.I.	VERTICAL BEND (degrees)	VOLUME OF CONCRETE (ft cubed)	SIDE OF CUBE (FEET)
12" @ 250 psi	11 1/4	32	3.2
	22 1/2	88	4.5
	45	232	6.1
16" @ 225 psi	11 1/4	70	4.1
	22 1/2	184	5.7
	45	478	7.8
20" @ 200 psi	11 1/4	91	4.5
	22 1/2	225	6.1
	45	560	8.2
24" @ 200 psi	11 1/4	128	5.0
	22 1/2	320	6.8
	45	820	9.4

PART 6 SERVICE ASSEMBLIES

6.1 PRODUCTS

- A. Corporation Stop: the corporation stop shall be made of solid bronze and furnished with AWWA CC threads and compression connections for Type-K Copper.
- B. Service Line: All 3/4" – 1" service lines shall be Type K copper or Municipex – Municipal Grade Service Line – 200 psi with another type to receive final approval from the City of Kingston before final usage.
- C. Tapping Saddle: Tapping saddle shall be threaded to accept the corporation stop specified above. All tapping saddles shall be a ductile saddle with an epoxy coating with stainless-steel band.
- D. Ball Valve: 3/4" or 1" ball valve with a 5/8" reduced port is required. All ball valves must be female pipe thread or compression.

ITEM	MODEL #	BRAND	DETAILS
Corporation Stop	B25008	Mueller	CC Threads
	Fb1000	Ford	CC Threads

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

ITEM	MODEL #	BRAND	DETAILS
Tapping Saddle	DR2S	Mueller	CC Threads ¾" & 1"
	FS202	Ford	CC Threads ¾" & 1"
Ball Valve	B25170R	Mueller	
	B41 Series with Q nut	Ford	
Yoke	234B2458R2	Mueller	5/8 X ¾ X 7
	VBH72-7W-4M-33-Q	Ford	5/8 X ¾ X 7
Meter Box for ¾" Meter	MS1518B	Old Castle	13"x24"x15" Plastic Box with Cast Iron Reader in Middle
Meter Box Lid for ¾"		Old Castle	13"x24"x15" Plastic Box with Cast Iron Reader in Middle
Meter Box for 1-2"			Jumbo Box with a Cast Iron Reading Lid

6.2 GENERAL REQUIREMENTS

- A. The contractor will be responsible for running all service lines using a tapping saddle, corporation stop, service line and a ball valve at the end of the service line.
- B. The service line shall have a ¾" or 1" ball valve at the end of the line. The ball valve shall have a piece of 6" PVC Pipe, painted blue, with a cap extending 3 feet above the ground over the top of it.
- C. The service line shall have a minimum of 18 inches of cover.
- D. The contractor is responsible for providing temporary services as approved by the City of Kingston where needed.
- E. Services crossing a road or driveway must be in casing a minimum of three inches in diameter. This casing pipe may be PVC or HDPE. If the service is installed 3 feet to 8 feet deep, thin-walled PVC may be used.

PART 7 VALVES

7.1 VALVES

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

VALVE	MODEL NUMBER	TYPE
Gate	A2360	Mueller
Butterfly	B5227	Mueller
Gate	7571-01	M&H
Butterfly	4500-MJ-C1250	M&H
Gate	Series 2500	American

- A. Gate Valves (2" - 12") shall be iron body, bronze trim, resilient wedge design, non-rising stem, turning **counterclockwise to open**. Valves shall meet the requirements of AWWA C509. Internal and external iron surfaces of the valve shall be coated with fusion bonded epoxy meeting the requirements of AWWA C550. All Valves shall be by Mueller, M&H, or American. The City of Kingston must approve the class of the valve being used before installing.
- B. Gate Valves (12" & Larger) shall be resilient wedge type rated for 250 p.s.i.g. cold water working pressure. The gate valve stem and wedge nut shall be copper alloy in accordance with Section 4.4.5.1 of AWWA C515 standard.
- C. Butterfly Valves (12" & Larger) all butterfly valves shall be of the rubber-seated tight-closing type. They shall meet or exceed performance requirements for AWWA specification C504. A City of Kingston inspector must approve class of valve.
- D. Valve boxes shall be standard design cast-iron with cover. Boxes shall be two-piece coal tar coated, screw and adjustable type, consisting of a cover marked water. Valve boxes must be set flush with finished grade. **All valves shall have a valve box.**
- E. Both valve ends shall be mechanical-joint per AWWA Specification C111. Accessories (Bolts, glands and gaskets) shall be supplied by the valve manufacturer.
- F. All internal and external surfaces shall have an epoxy coating. Epoxy coating shall conform to AWWA standard C550.
- G. The operating nut and valve box shall be extended if deeper than five feet. The extension must be approved by the City of Kingston.

PART 8 HYDRANTS

8.1 HYDRANTS

MODEL NUMBER	SIZE	OPEN	TYPE
421	4 ½"	RIGHT	Mueller

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

MODEL NUMBER	SIZE	OPEN	TYPE
129	4 ½"	RIGHT	M & H
MK73	4 ½"	RIGHT	American

- A. Fire hydrants where the system can provide greater than 500 gpm @ 20 psi shall be designed for 150 PSI working pressure. Valve opening shall be 4-1/2 inches. Hydrant shall be equipped with two 2-1/2 inch nozzles, with National Standard threads. Hydrant shall be of the break-flange type. Hydrant shall be furnished with auxiliary gate valve and box.
- B. Hydrants shall be by Mueller, M&H, or American (Model MK73). Hydrants shall be open right.
- C. There shall be a hydrant or a blow-off assembly at the dead end of every main.

PART 9 BLOW-OFFS AND AIR RELEASE VALVES

9.1 BLOW-OFFS

- A. Blow-offs shall be made of all brass material with a 90-degree bend. A resilient wedge design valve shall be used on blow-off assemblies. Refer to the drawings to see specifications.

9.2 AIR RELEASE VALVES

- A. Refer to site plans for placements of air release valves. Site plans are subject to change at the request of the City of Kingston.
- B. Valves shall be manufactured and tested in accordance with American Water Works Association standard C512.

VAL-MATIC AIR RELEASE VALVES							
MODEL NO.	HEIGHT	WIDTH	INLET SIZE N.P.T	OUTLET SIZE	ORIFICE SIZE	MAX W.P.	WT. LBS.
15A 15A.2	5 1/4"	4 3/4"	½" ¾"	½" NPT	1/16"	175 PSI	6
22.4 22.9	6"	5 1/8"	½"-¾" ½"-1"	½" NPT	3/32" 1/16"	175 PSI 300 PSI	8

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

VAL-MATIC AIR RELEASE VALVES - continued

25.5	7"	6 1/8"	¾"-1"	½" NPT	1/8"	150 PSI	11
25.6					5/64"	300 PSI	

APCO AIR RELEASE VALVES

MODEL NO.	HEIGHT	WIDTH	INLET SIZE N.P.T	OUTLET SIZE	ORIFICE SIZE	MAX W.P.	WT. LBS.
200A	10"	7"	1"	½" NPT	5/16"	50 PSI	20
200A	10"	7"	1"	½" NPT	3/16"	150 PSI	20
200A	10"	7"	1"	½" NPT	5/32"	300 PSI	20

A.R.I. COMBINATION AIR VALVE

MODEL NO.	HEIGHT	WIDTH	INLET SIZE N.P.T	OUTLET SIZE	ORIFICE SIZE	MAX W.P.	WT. LBS.
D-040-C	5.9"	4.6	1"	¾"-1"-2"	3/8" BSP	230 PSI	1.7

PART 10 TESTING & DISINFECTING

10.1 FIELD TEST

- A. All newly installed water lines shall be tested in the presence of the City of Kingston before being placed into service. Prior to making tests, all air shall be expelled from the pipe. The contractor is responsible for installing taps at high points of the line for the purpose of expelling air if necessary.
- B. A two-hour test shall be performed in accordance with AWWA testing procedures on the pipeline between valves or temporary plugs at a test pressure of 200 psi, for two hours with no loss of pressure.
- C. All newly installed lines shall be pre-tested by the contractor before contacting the City of Kingston for a leakage test. The contractor will be responsible for costs or lost time incurred by the City of Kingston when attempting to test a faulty line. The contractor will be charged by the city 250 dollars if the first test fails and a second test is needed at a later date.

10.2 FLUSHING AND DISINFECTING

- A. All new sections of water mains including repaired portions of or extensions to existing systems must be flushed, disinfected and tested for bacteriological quality before being put into service. Disinfection must be through the use of chlorine or chlorine compounds in such amounts as to produce a concentration of at least 25 mg/L at the end of 24 hours and followed by flushing.
- B. During installation, the contractor shall use the necessary amount of chlorine (HTH granules) to provide proper disinfection. A chart is provided below to show how much granular or tablet HTH must be added to each pipe length according to its diameter. This should produce a chlorine residual of about 25 mg/L.

Ounces of hypochlorite granules to be placed at beginning of main and at each 500-ft interval	
Pipe Diameter (in)	Hypochlorite Granules (oz)
4"	1.7
6"	3.8
8"	6.7
10"	10.5
12"	15.1
14" and larger	$D^2 \times 15.1$

Where D is the inside diameter in feet $D = d/12$

Number of 5-gram hypochlorite tablets required for 25 mg/L dosage					
PIPE DIAMETER	13 or less	18	20	30	40
4"	1	1	1	1	1
6"	1	1	1	2	2
8"	1	2	2	3	4
10"	2	3	3	4	5
12"	3	4	4	6	7
16"	4	6	7	10	13

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

- C. Once the installation is complete, SLOWLY fill the line (approximately 1 ft/sec) to ensure that the calcium hypochlorite granules are not flushed to the end of the line. Also take action to release trapped air in the line while filling the line at dead ends and/or high points.
- D. Once the chlorinated water has remained in the line for 24 hours, there should be detectable chlorine residual in the line at any given point. The line can now be flushed to discharge heavily chlorinated water. This can be achieved through a hydrant using a diffuser to reduce the chlorine residual to a minimum. Final chlorine residual should be less than 1 mg/L. Once this is achieved, the main is now ready for bacteriological testing and pressure testing. These two tests can be coordinated through the city inspector.

Pipe Size (Inches)	Flow Required For 2.5 ft/sec (gpm)	Orifice Size (Inches)	Hydrant Outlet(s) (number)	Hydrant Nozzle Size Inches
4	100	15/16	1	2-1/2
6	220	1-3/8	1	2-1/2
8	390	1-7/8	1	2-1/2
10	610	2-5/16	1	2-1/2
12	880	2-13/16	1	2-1/2
14	1200	3-1/4	2	2-1/2
16	1565	3-5/8	2	2-1/2
18	1980	4-3/16	2	2-1/2
20	2440	4-3/16	2	2-1/2
24	3470	4-3/16	2	2-1/2

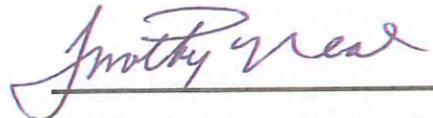
- E. Two sets of samples for bacteriological testing will be taken 24 hours apart and will be collected by City of Kingston. Samples will need to be collected every 2500 feet. Until the test results are found to be satisfactory, the line is not to be put into service.
- F. Following disinfection, all treated water shall be thoroughly flushed from the newly laid pipeline at its extremities until the replacement water throughout its length shall, upon test, be proved comparable to the quality of water served the public from the existing water supply system and approved by the Tennessee Department of Environment and

CITY OF KINGSTON STANDARD WATER LINE SPECIFICATIONS

Conservation, Division of Water Resources. This quality of water delivered by the new main should continue for a period of at least two full days as demonstrated by laboratory examination of samples taken from a tap located and installed in such a way as to prevent outside contamination. Samples shall not be taken from an un-sterilized hose.

STANDARD SEWER SPECIFICATIONS
CITY OF KINGSTON
ROANE COUNTY, TENNESSEE

SYSTEM APPROVAL


CITY OF KINGSTON

OCTOBER 2025

TABLE OF CONTENTS

City of Kingston Standard Sewer Specifications

Sanitary Sewer (Gravity)

Sanitary Sewer (Force Main)

Appendix A: Grinder Pump Station Specifications

Appendix B: Septage Receiving Control Program Policy

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

SANITARY SEWER (GRAVITY) SPECIFICATIONS

PART 1 GENERAL

1.1 PREFACE

- A. The standard specifications have been prepared to complement the standard detail drawings and to provide the qualitative requirements for products, materials and workmanship for construction of additions to and replacements of the wastewater system of the City of Kingston. These Standard Specifications are only to be used for projects with Drawings which have been approved by the Tennessee Department of Environment Conservation, Division of Water Resources as prepared by an engineer licensed in the state of Tennessee whose drawings must first be approved by the City of Kingston. All standard specifications are subject to revision for a special project.

PART 2 REQUIREMENTS

2.1 ENGINEERS REQUIREMENTS

- A. The engineer shall field verify all utilities' locations and elevations.
- B. The engineer shall provide a proposed site plan drawing to the City of Kingston to be approved before the project starts. If the City of Kingston returns the drawings to the engineer with revisions, the drawings shall be revised by the engineer and returned to the City of Kingston.
- C. The engineer shall have the drawings approved by the City of Kingston before submitting them to The Tennessee Department of Environment and Conservation.
- D. The engineer shall provide the City of Kingston with two (2) sets of paper copy as-built drawings and two (2) electronic copies, one in pdf format and one in either dgn or dwg format after the job has been completed.
- E. The engineer shall provide the items listed below on the As-built drawings:
 - 1. Site Plan and Profile
 - 2. Manhole Station Numbers
 - 3. Distance of lateral from downstream Manhole
 - 4. Length of lateral (From main to 6" cleanout)
 - 5. Depth of lateral
 - 6. Depth of the manhole invert elevations
 - 7. Invert In and Out elevations
 - 8. Manhole Top Elevation
 - 9. Length, Size of Pipe on Profile
 - 10. Type of Pipe Material

2.2 CONTRACTORS REQUIREMENTS

- A. The contractor shall guarantee all materials, equipment and workmanship for a period of one year from the date of final acceptance of the work by the City of Kingston. If during this time period any material, equipment, or item of construction proves defective, the contractor shall make the repairs at their own expense to the City of Kingston specifications.
- B. The contractor shall comply with all applicable laws, regulations and requirements which may or may not be included in these technical specifications, including, but not limited to, contractor Licensing Act of 1994, as amended, and the Tennessee State, Health, and Labor Standards.
- C. The contractor shall obtain all licenses and permits prior to the start of work. Copies of each permit shall be submitted to the City of Kingston. The contractor shall have their municipality utility license to install sewer in the City of Kingston's district. The contractor shall be responsible for obtaining permission to work in the right-of-way from the necessary agencies.
- D. The contractor is required to contact the City of Kingston inspector three days prior to construction for a pre-construction meeting.
- E. The contractor shall be responsible for obtaining and using the most recently revised plans.
- F. The contractor shall submit electronic copies of the materials they plan to use. All materials and manufacturers must have final approval from the City of Kingston prior to construction.
- G. The contractor is responsible for pre-testing all lines before calling the City of Kingston for testing. The contractor is responsible for calling the inspector and setting up testing dates seven days prior to final testing

2.3 DEVELOPER REQUIREMENTS

- A. The developer shall read and sign a Developers Agreement and return it to the City of Kingston's main office.
- B. The developer shall refer to the Developers Agreement for most requirements.
- C. The developer is responsible for the engineer and contractor meeting their requirements.
- D. The developer is responsible for all costs in providing the City of Kingston with as-built plans.

PART 3 PRODUCTS

3.1 PIPE

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

- A. Polyvinyl chloride (PVC) pipes and fittings shall meet or exceed the requirements of SDR 26 for pipe from 6 inches to 15 inches in diameter. For sizes from 18 inches to 24 inches in diameter, the pipe shall meet or exceed the requirements of ASTM F679, wall thickness T-1.
- B. Ductile Iron Pipe: AWWA C151, thickness class 350 for pipe 4"- 24". Joints: AWWA C111 mechanical joint with gray or ductile iron glands or push on joint; plain gaskets of natural rubber or neoprene.
 - a. Made of good quality ductile iron in conformance with the latest revision of AWWA C151/A21.51.
 - b. Push-on joint with a minimum pressure class of 150 psi for pipe sizes 24 inches and larger.
 - c. Ceramic epoxy lined and coated outside with an asphaltic coating.
 - d. Ceramic Epoxy Lining:
 - 1. 40-mils dry film thickness lining, consisting of amine cured novolac epoxy containing at least 20 percent by volume quartz pigment manufactured under the name of Protecto 401.
 - a. Line interior of bell and exterior of spigot in joint sealing areas with 6 mils to 10 mils of specified lining.
 - b. Surface Preparation: NAPF 500-03-04: Abrasive Blast Cleaning for Ductile Iron Pipe.
 - c. Pinhole Detection: 2,500 volts minimum over 100 percent of lined surfaces
 - or
 - 2. 40-mils dry film thickness lining, consisting of modified polyamine ceramic epoxy containing at least 20 percent by volume ceramic microspheres manufactured under the name of Perma-Shield PL Series 431 by Tnemec.
 - a. Surface Preparation: NAPF 500-03-04: Abrasive Blast Cleaning for Ductile Iron Pipe.
 - b. Pinhole Detection: 4,000 to 5,000 volts over 100 percent of lined surfaces.
- C. HDPE pipe and fittings shall be a minimum of SDR 11 meeting the requirements of AWWA C906, with an external green stripe light interior color, and heat fusion welded joints. Butt welded or electro-fusion pipe fittings shall be provided.

3.2 MANHOLE

- A. Manholes shall be cast-in-place or pre-cast concrete base, riser and flat top or cone section meeting specification ASTM C-478 (Latest Revision).

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

- B. Manhole steps shall be copolymer polypropylene plastic with ½" grade 60 steel reinforcement.
- C. Castings shall be cast iron conforming to the standard specifications of Class 30 ASTM 48. Casting shall have the City of Kingston name on them to be accepted by the City of Kingston. Vented Manhole rings and covers shall be East Jordon Iron Works 2450-A Watertight rings or approved equal and covers shall be East Jordon Iron Works 2450-B or equal, with anchor bolts. All manholes, frames and covers shall have a minimum 26-inch clear opening.
- D. Butyl Mastic Sealant shall be used when joining the casting frame to the precast manhole and for all manhole adjustments to provide a watertight structure. The sealing compound shall be produced from blends of refined hydrocarbon resins and plasticizing compounds reinforced with inner mineral filler and shall contain no solvents, irritating fumes, or obnoxious odors. It shall be supplied in rope form of suitable cross section and in such sizes as to seal the joint space. Use two complete ropes at each joint. The sealant shall be protected by a wrapper to protect the compound before application.
- E. Pipe connections to precast concrete manholes shall be with A-LOK cast-in-place gaskets, Kor-N-Seal, or Dura Seal.
- F. Drop Manholes can be pre-cast but only on the outside of the manhole.

PART 4 INSTALLATION

4.1 General Requirements

- A. Minimum slope for sanitary sewer shall be as follows:

PIPE SIZE	MIN. % SLOPE
6"	1.00%
8"	0.40%
10"	0.28%
12"	0.22%
15"	0.15%
18"	0.12%
21"	0.10%
24"	0.08%

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

- B. A minimum 12 AWG insulated solid copper wire shall be installed over all sewer lines from Manhole to Manhole and inserted into the manholes between casting and cone or flattop. Tracer wire shall be installed with all laterals and extend to the top of the stand-up pipe on 6" cleanout.
- C. Sewer shall be designed with a 10-foot horizontal separation from any existing or proposed water main. If conditions prevent a horizontal separation of 10 feet, the sewer shall be installed in a separate trench so that the top of the sewer pipe is at least 18 inches below the bottom of the water main.
- D. Where the slope of a sewer line is in excess of 15%, the line shall be constructed of mechanical joint ductile iron pipe, with concrete anchors at each joint. The ductile iron pipe shall be installed from one manhole to another.
- E. Minimum cover in roadways and other traffic-bearing areas is 48 inches. In non-traffic bearing areas, the minimum cover is 30 inches.
- F. Pipe depths greater than 14 feet shall require ductile Iron pipe and shall be approved by the City of Kingston. The ductile iron pipe shall be installed from one manhole to another.
- G. When ductile iron pipe must be used on a portion of a new sewer line segment due to minimum or maximum cover, water line proximity, or waterway crossing, the entire length between manholes shall be installed with ductile iron pipe. No flexible couplings will be permitted on new construction to convert to PVC between manholes.
- H. For all roadway crossings and stream crossings, sewer pipe shall be installed in a casing pipe double the size of the sewer main. The pipe shall be centered with centering spacers at each end of the casing and at each bell of pipe per manufacturers specifications.
- I. The maximum spacing for manholes shall be 400 feet.
- J. Where the difference in the invert elevations of two sewers intersecting in a manhole is 2 feet or more, a drop manhole shall be provided.
- K. Check dams shall be installed in the bedding and backfill of all new or replaced sewer lines to limit the drainage area subject to the French drain effect of gravel bedding. Major rehabilitation projects should also include check dams in the design. Dams shall consist of compacted clay bedding and backfill at least 3' thick at the top of the trench and out into the walls of the trench two feet. Alternately, concrete may be used, keyed into the trench walls. Dams shall be placed no more than 500 feet apart. The preferred location is upstream of each manhole. All stream crossings will include check dams on both sides of the crossing.
- L. Erosion control shall be performed on all cut and fill operations, excavation, backfill, check dams or other general construction activities within the limits of the construction site, within any temporary or permanent easements, and within any borrow site used during the period of construction including all construction general permitting. Erosion control devices shall be installed and maintained in accordance with Tennessee Department of Environment and Conservation's (TDEC) Erosion and Sediment Control

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

Handbook and TDEC's Construction General Permit requirements. Any devices shown in project plans are the minimum required. The contractor shall provide additional erosion control devices as needed. The protection of these sites shall continue throughout the construction period. During flood seasons, protect the sites by sandbagging, pumping water, and any other means appropriate to restrain flooding of neighboring streets and properties. During dry weather, sprinkle the sites with water and/or other means as necessary to provide dust control.

- M. Temporary pollution control provisions shall be coordinated with permanent erosion control features, to ensure economical, effective, and continuous erosion control throughout the construction and post-construction period.
- N. The contractor is responsible for obtaining a National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Stormwater Associated with Construction Activities and Aquatic Resource Alteration Permit (ARAP), if applicable to the project, to ensure compliance with all relevant state and federal water protection regulations. **It shall be the CONTRACTOR'S sole responsibility for payment of any fines or penalties the City of Kingston may receive as a result of Tennessee Department of Environment and Conservation (TDEC) enforcement due to a notice of noncompliance.**

4.2 Pipe Installation

- A. Lasers shall be used to install sewer lines, and the type and procedure shall be approved by the City of Kingston. Reference points for both line and grade shall be set at each manhole.
- B. Do not allow water to run or stand in the trench while pipe installation is in progress or before the trench has been backfilled. Do not at any time open up more trenches than the available pumping facilities are able to dewater.
- C. Carefully inspect each piece of pipe and fitting before it is placed in the trench. Pipe laying shall proceed upgrade, starting at the lower end of the grade and with the bells upgrade. When pipe laying is not in progress, keep the ends of the pipe tightly closed with an approved temporary plug.
- D. Trench bottoms shall be bedded with no less than 8" of ½" gravel before the sewer line is placed in the trench. Sewer pipe shall have 6" of ½" gravel on top of the pipe before beginning to backfill. If trench has rock bottom, pipe shall be bedded with 1 foot of gravel underneath and 1 foot of gravel above.
- E. The flow of existing sewer lines must be maintained throughout any construction. Whenever pipe laying requires the flow to be interrupted, the contractor is responsible for plugging the sewer upstream of the construction and provides bypass pumping to the next manhole. The contractor must submit a plan to be approved by the City of Kingston before bypass pumping begins.

4.3 Service Laterals

- A. Sewer laterals shall be of the same material as the main sewer.
- B. Install service laterals to the property line with a 6" cleanout at the property line. The lateral shall be a minimum of 6" PVC (SDR 26) at a minimum slope of 1 percent.
- C. The 6" cleanout stand up pipe shall extend a minimum of 3 feet above the ground with a cap with a screwed plug on top.
- D. The 6" cleanout shall connect to the lateral with a 6X6X6 wye with a 45-degree elbow. The backside of the wye shall have 2 feet of pipe with a cap.
- E. All service laterals require at least 18" of Cover.
- F. A 12 AWG insulated solid copper wire shall be installed over all laterals and ran up the 6" cleanout to the screw in cap. The copper wire shall be connected to the wire installed over the main.

PART 5 TESTING OF GRAVITY SEWER

5.1 Testing Procedures

- A. Prior to acceptance of completed sewer lines, the lines shall be inspected and tested to ensure compliance with the following provisions. The contractor shall remove all debris from lines and manholes before final inspection. After final inspection, a deflection test and air test will be performed by the contractor. All manholes will be required to have a vacuum test as well. The contractor is responsible for providing all materials needed to perform these tests. These tests must be passed and approved by the inspector before lines will be accepted by the City of Kingston.
- B. All newly installed lines shall be pre-tested by the contractor before contacting the City of Kingston for these tests. The Contractor will be responsible for costs or lost time incurred by the City of Kingston when attempting to test a faulty line. The contractor will be charged by the District 250 dollars if the first test fails and a second test is needed at a later date.
- C. Deflection test of all pipes shall be required. The Test shall be conducted after the backfill has been in place at least 72 hours.
- D. No pipe shall exceed a deflection of 5%.
- E. The test shall be run with a 9-arm mandrel approved by the City of Kingston. The mandrel shall have a diameter equal to 95% of the inside diameter of the pipe. The test must be performed by manually pulling the mandrel through the line.
- F. A five-minute air test shall be preformed on all sewer lines by the contractor with a City of Kingston inspector present. The sewer lines will be pressurized to 5 psi using plugs. The sewer lines must hold at 5 psi for 5 minutes with no loss of pressure to pass the air test. The contractor is responsible for all necessary repair work on sections not passing or sections damaged during the test.

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

- G. All manholes must be separately tested by a vacuum test. Installation and operation of all testing equipment shall be in accordance with equipment specifications and instructions provided by the manufacturer. The contractor is responsible for providing all testing equipment needed.
- H. A vacuum of 10.0 inches of mercury shall be drawn. The vacuum shall not drop below 9.0 inches of mercury in the time allowed below:

Manhole Depth	Diameter	Time to Drop 1" HG
4' to 10'	4'	75 seconds
10' to 15'	4'	90 seconds
15' to 25'	4'	105 seconds

- I. Once the three tests have been completed, then the contractor shall provide the City of Kingston with an as-built before the lines will be accepted by the City of Kingston.

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

SANITARY SEWER (FORCE MAIN) SPECIFICATIONS

PART 1 GENERAL

1.1 PREFACE

- A. The standard specifications have been prepared to complement the standard detail drawings and to provide the qualitative requirements for products, materials and workmanship for construction of additions to and replacements of the wastewater system of the City of Kingston. These Standard Specifications are only to be used for projects with Drawings which have been approved by the Tennessee Department of Environment Conservation, Division of Water Resources as prepared by an engineer licensed in the state of Tennessee whose drawings must first be approved by the City of Kingston. All standard specifications are subject to revision for a special project.

PART 2 REQUIREMENTS

2.1 ENGINEERS REQUIREMENTS

- A. The engineer shall field verify all utilities' locations and elevations.
- B. The engineer shall provide a proposed site plan drawing to the City of Kingston to be approved before the project starts. If the City of Kingston returns the drawings to the engineer with revisions, the drawings shall be revised by the engineer and returned to the City of Kingston.
- C. The engineer shall have the drawings approved by the City of Kingston before submitting them to The Tennessee Department of Environment and Conservation.
- D. The engineer shall provide the City of Kingston with two (2) sets of paper copy as-built drawings and two (2) electronic copies, one in pdf format and one in either dgn or dwg format after the job has been completed.
- E. The engineer shall provide the items listed below on the As-built drawings:
 - 1. Site Plan and Profile
 - 2. Force Main and Manhole Station Numbers
 - 3. Lateral station numbers
 - 4. Length of lateral (From main to service box)
 - 5. Depth of lateral
 - 6. Depth of the Force Main
 - 7. Invert In and Invert out Elevations
 - 8. Manhole Top Elevation
 - 9. Length, Size of Pipe on Profile
 - 10. Type of Pipe Material

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

2.2 CONTRACTORS REQUIREMENTS

- A. Contractor shall guarantee all materials, equipment and workmanship for a period of one year from the date of final acceptance of the work by the City of Kingston. If during this time period any material, equipment, or item of construction proves defective, the contractor shall make the repairs at their own expense to the City of Kingston specifications.
- B. The Contractor shall comply with all applicable laws, regulations and requirements which may or may not be included in these technical specifications, including, but not limited to, Contractor Licensing Act of 1994, as amended, and the Tennessee State, Health, and Labor Standards.
- C. The Contractor shall obtain all licenses and permits prior to the start of work. Copies of each permit shall be submitted to the City of Kingston. The contractor shall have their municipality utility license to install sewer in the City of Kingston's district. Contractor shall be responsible for obtaining permission to work in the right-of-way from the necessary agencies.
- D. The Contractor is required to contact the City of Kingston inspector three days prior to construction for a pre-construction meeting.
- E. The contractor shall submit electronic copies of the materials they plan to use. All materials and manufacturers must have final approval from the City of Kingston prior to construction.
- F. The Contractor is responsible for getting the most recently revised plans and to be working off those plans.
- G. The Contractor is responsible for pre-testing all lines before calling the City of Kingston for testing. The contractor is responsible for calling the inspector and setting up testing dates seven days prior to final testing.

2.3 DEVELOPER REQUIREMENTS

- A. The Developer shall read and sign a Developers Agreement and return it to the City of Kingston's main office.
- B. The Developer shall refer to the Developers Agreement for most requirements.
- C. The Developer is responsible for the engineer and Contractor meeting their requirements.
- D. The Developer is responsible for all costs in providing the City of Kingston with as-built plans.

PART 3 PRODUCTS

3.1 PIPE

- A. Polyvinyl chloride (PVC) or HDPE pipes and fittings may be used for force mains from 2" to 24" in diameter, in accordance with the requirements of AWWA C900 or AWWA

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

- C905. The pressure class shall be approved by the City of Kingston based on the design requirements of the system.
- B. Ductile Iron Pipe and fittings may be used for force mains 8" and larger: Made of good quality ductile iron in conformance with latest revision of AWWA/ANSI C151/A21.51. The Pipe shall be push-on joint with a minimum pressure class of 150 psi. Ductile iron pipe and fittings shall conform to the requirements of the materials specifications herein.
1. 40-mils dry film thickness lining, consisting of amine cured novolac epoxy containing at least 20 percent by volume quartz pigment manufactured under the name of Protecto 401.
 - a. Line interior of bell and exterior of spigot in joint sealing areas with 6 mils to 10 mils of specified lining.
 - b. Surface Preparation: NAPF 500-03-04: Abrasive Blast Cleaning for Ductile Iron Pipe.
 - c. Pinhole Detection: 2,500 volts minimum over 100 percent of lined surfacesor
 2. 40-mils dry film thickness lining, consisting of modified polyamine ceramic epoxy containing at least 20 percent by volume ceramic microspheres manufactured under the name of Perma-Shield PL Series 431 by Tnemec.
 - a. Line interior of bell and exterior of spigot in joint sealing areas with 6 mils to 10 mils of specified lining.
 - b. Surface Preparation: NAPF 500-03-04: Abrasive Blast Cleaning for Ductile Iron Pipe.
 - c. Pinhole Detection: 4,000 to 5,000 volts over 100 percent of lined surfaces.
- C. HDPE pipe and fittings may be used for force mains: Minimum HDPE SDR 11 for pipe 1.25" to 24" meeting the requirements of AWWA C906, ASTM F714 and ASTM D3035. HDPE pipe shall have a co-extruded green cover or extruded green stripes designating use for sanitary sewer. All fittings shall be butt fused.

PART 4 EXECUTION

4.1 INSTALLATION

- A. All force main pipe shall be installed with a 12-gauge insulated solid copper wire with coating for tracing purposes.
- B. All force mains shall have at least 48" of cover under roadways and driveways and 30" of cover elsewhere. The pipe shall slope continuously between high and low points to eliminate the formation of air pockets.
- C. Pipe shall be lowered carefully into the trenches with suitable equipment one piece at a time.

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

- D. Pipes and fittings shall not be lowered into the trench until they have been cleaned and all debris has been removed.
- E. Whenever pipe laying is not in progress, the open ends of the pipe shall be closed with a watertight plug or by other means approved by the City of Kingston
- F. Wherever pipe must be deflected from a straight line, the pipe shall not exceed the deflection recommended by the pipe manufacturer and shall be approved by the City of Kingston. Bend fittings shall be used when the deflection of the pipe is greater than allowed by the pipe manufacturer or when determined by the City of Kingston.
- G. No pipe shall be installed in water or when it is the opinion of the City of Kingston that the trench is unsuitable.
- H. Thrust blocks shall be installed wherever the force main changes direction (at all Mechanical Joint Fittings), at dead ends or any other place recommended by the City of Kingston.
- I. Air valves shall be located at all high points on the pipeline or as directed by the City of Kingston.
- J. Install tracing tape saying "Sewer Below" 2 feet above Force Main when backfilling the ditch.
- K. If at the end of a Sewer Force Main, a valve and flushing station all made of stainless steel, schedule 80 PVC, ductile iron or HDPE shall be installed in a box approved by the City of Kingston. Flushing station shall be supported with thrust blocking. Manhole or Box lid will have the City of Kingston Sewer on top.
- L. Each service line off the main will be installed back to the property lot line. At the property line there shall be a check valve and ball valve installed covered with a box approved by the City of Kingston. Box will have sewer marked on top. The end of the box is designated as the end of the public sewer service by the City of Kingston. From the box on to the customer shall be the expense and operation of the property owner.

PART 5 AIR RELEASE VALVES

5.1 PRODUCTS

- A. Air release valve shall be A.R.I. D-025 series or equivalent. These valves shall have standard metal body-baked epoxy coating or plastic body with a vacuum guarding out only attachment. The valve shall be placed in a jumbo meter box or manhole cone section with manhole lid.

5.2 INSTALLATION

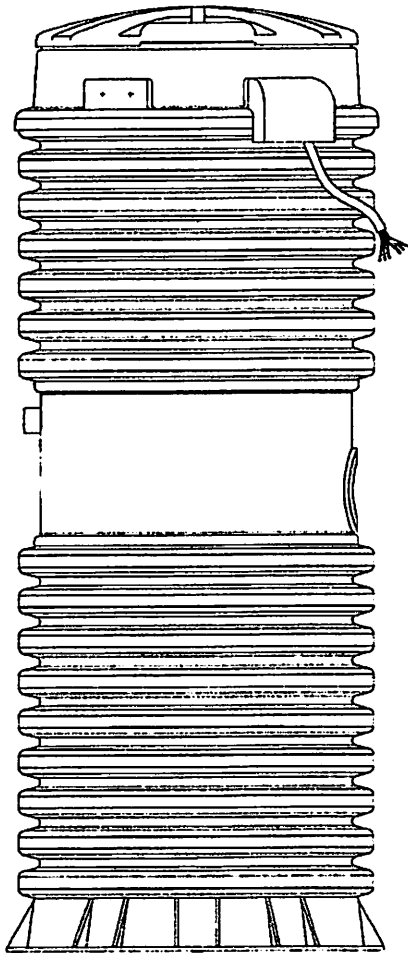
- A. Air valves shall be located at all high points on the pipeline or as directed by the City of Kingston.

CITY OF KINGSTON STANDARD SEWER SPECIFICATIONS

PART 6 PRESSURE TEST

6.1 AIR TEST

- A. All newly installed and backfilled pipe shall be subjected to a leakage test, conducted in the presence of the City of Kingston.
- B. Test Pressure shall be 150 percent of systems estimated operating pressure estimated by the City of Kingston.
- C. The force main shall be filled with water; the specified test pressure shall be applied with a pump connected to the pipe in a manner satisfactory to the City of Kingston. Contractor shall furnish the pump, pipe, connections, gauges, and all necessary apparatus.
- D. The leakage test shall be conducted at the specified test pressure for two hours with no loss to pass.



**Grinder Pump Station
Specifications**

**Semi-Positive
Displacement Type**

GRINDER PUMP STATION SPECIFICATIONS

PART 1 GENERAL

1.1 GENERAL DESCRIPTION

- A. The MANUFACTURER and/or SUPPLIER shall furnish complete factory-built and tested Wetwell or Wetwell/Drywell Grinder Pump Station(s), each consisting of grinder pump(s) suitably mounted in a basin constructed of polyethylene (HDPE), NEMA 6P electrical quick disconnect (EQD), pump removal system, stainless steel discharge assembly/shut-off valve, anti siphon valve/check valve, each assembled in the basin, electrical alarm panel and all necessary internal wiring and controls. Component type grinder pump systems that require field assembly will not be acceptable due to the potential problems that can occur during field assembly. All components and materials shall be in accordance with section 2.0 of this Product Specification. For ease of serviceability, all pump, motor/grinder units shall be of like type and horsepower throughout the system. Only grinder pumps will be allowed, and no STEP pump systems will be allowed. The customer shall own, operate, and maintain all sewer facilities from the box that houses the ball valve/check valve to the structure to be served.

1.2 SUBMITTALS

- A. The MANUFACTURER and/or SUPPLIER shall furnish equipment specifications and detailed drawings of all equipment-products to be furnished including dimensional data and materials of construction.

1.3 MANUFACTURER and/or SUPPLIER

- A. Grinder pump stations, complete with all appurtenances, form an integral system. The **CONTRACTOR** shall be responsible for the satisfactory operation. The equipment specified shall be a product of a company experienced in the design and manufacture of grinder pumps for specific use in low pressure sewage systems. The company shall submit detailed installation and user instructions for its product, submit evidence of an established service program including complete parts and service manuals, and be responsible for maintaining a continuing inventory of grinder pump replacement parts. The **MANUFACTURER-SUPPLIER** shall provide, upon request, a reference and contact list from ten of its largest contiguous grinder pump installations of the type of grinder pumps described within this specification.
- B. The **MANUFACTURER** of the grinder pump station shall be Environment One Corporation.

1.4 OPERATING CONDITIONS

- A. The pumps shall be capable of delivering 15 GPM against a rated total dynamic head of 0 feet (0 PSIG), 11 GPM against a rated total dynamic head of 92 feet (40 PSIG), and 7.8 GPM against a rated total dynamic head of 185 feet (80 PSIG). The pump(s) must also be capable of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in-line piping or valving be allowed to create a false apparent head.

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

1.5 WARRANTY

- A. The grinder pump **MANUFACTURER** shall provide a part(s) and labor warranty on the complete station and accessories, including, but not limited to, the panel for a period of 60 months / 63 months after receipt of shipment. Any manufacturing defects found during the warranty period will be reported to the **MANUFACTURER** by the **OWNER** and will be corrected by the **MANUFACTURER** at no cost to the **OWNER**.

PART 2 PRODUCT

2.1 PUMP

- A. The pump shall be a custom designed, integral, vertical rotor, motor driven, solids handling pump of the **progressing cavity type** with a single mechanical seal. Double radial O-ring seals are required at all casting joints to minimize corrosion and create a protective barrier. All pump castings shall be cast iron, fully epoxy coated to 8-10 mil Nominal dry thickness, wet applied. The rotor shall be through-hardened, highly polished, precipitation hardened stainless steel. The stator shall be of a specifically compounded ethylene propylene synthetic elastomer. This material shall be suitable for domestic wastewater service. Its physical properties shall include high tear and abrasion resistance, grease resistance, water and detergent resistance, temperature stability, excellent aging properties, and outstanding wear resistance. Buna-N is not acceptable as a stator material because it does not exhibit the properties as outlined above and required for wastewater service.

2.2 GRINDER

- A. The grinder shall be placed immediately below the pumping elements and shall be direct-driven by a single, one-piece motor shaft. The grinder impeller (cutter wheel) assembly shall be securely fastened to the pump motor shaft by means of a threaded connection attaching the grinder impeller to the motor shaft. Attachment by means of pins or keys will not be acceptable. The grinder impeller shall be a one-piece, 4140 cutter wheel of the rotating type with inductively hardened cutter teeth. The cutter teeth shall be inductively hardened to Rockwell 50 – 60c for abrasion resistance. The shredder ring shall be of the stationary type and the material shall be white cast iron. The teeth shall be ground into the material to achieve effective grinding. The shredder ring shall have a staggered tooth pattern with only one edge engaged at a time, maximizing the cutting torque. These materials have been chosen for their capacity to perform in the intended environment as they are materials with wear and corrosive resistant properties.
- B. This assembly shall be dynamically balanced and operate without objectionable noise or vibration over the entire range of recommended operating pressures. The grinder shall be constructed so as to minimize clogging and jamming under all normal operating conditions including starting. Sufficient vortex action shall be created to scour the tank free of deposits or sludge banks which would impair the operation of the pump. These requirements shall be accomplished by the following, in conjunction with the pump:
 - 1. The grinder shall be positioned in such a way that solids are fed in an upward flow direction.

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

2. The maximum flow rate through the cutting mechanism must not exceed 4 feet per second. This is a critical design element to minimize jamming and as such must be adhered to.
 3. The inlet shroud shall have a diameter of no less than 5 inches. Inlet shrouds that are less than 5 inches in diameter will not be accepted due to their inability to maintain the specified 4 feet per second maximum inlet velocity which by design prevents unnecessary jamming of the cutter mechanism and minimizes blinding of the pump by large objects that block the inlet shroud.
 4. The impeller mechanism must rotate at a nominal speed of no greater than 1800 rpm.
- C. The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable amount of "foreign objects," such as paper, wood, plastic, glass, wipes, rubber and the like, to finely-divided particles which will pass freely through the passages of the pump and the 1-1/4" diameter stainless steel discharge piping.

2.3 ELECTRIC MOTOR

- A. As a maximum, the motor shall be a 1 HP, 1725 RPM, 240 Volt 60 Hertz, 1 Phase, capacitor start, ball bearing, air-cooled induction type with Class F insulation, low starting current not to exceed 30 amperes and high starting torque of 8.4 foot pounds. The motor shall be press-fit into the casting for better heat transfer and longer winding life. Inherent protection against running overloads or locked rotor conditions for the pump motor shall be provided by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. The motor protector shall be specifically investigated and listed by Underwriters Laboratories Inc. for the application. Non-capacitor start motors or permanent split capacitor motors will not be accepted because of their reduced starting torque and consequent diminished grinding capability. The wet portion of the motor armature must be 300 Series stainless steel. To reduce the potential of environmental concerns, the expense of handling and disposing of oil, and the associated maintenance costs, oil-filled motors will not be accepted. Pump operation during instances of potentially damaging high current or low voltage conditions shall be inhibited by an in-pump electrical monitoring system that has been investigated and listed by Underwriters Laboratories Inc. for the application. Motor start shall be controlled by a DC driven electromechanical relay integrated within the control compartment of the pump. Electrical monitoring shall ensure the relay operates reliably. AC Mechanical contactors for motor start are susceptible to damage from short cycling and will not be accepted.

2.4 MECHANICAL SEAL

- A. The pump/core shall be provided with a mechanical shaft seal to prevent leakage between the motor and pump. The seal shall have a stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless-steel spring.

2.5 TANK

- A. High Density Polyethylene Construction. The tank shall be either a Wetwell or Wetwell/Drywell design made of high-density polyethylene, with a grade selected to

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

provide the necessary environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth to promote scouring. The corrugations of the outside wall are to be a minimum amplitude of 1-1/2" to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be 0.250" thick (minimum). All seams created during tank construction are to be thermally welded and factory tested for leak tightness. The tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure.

- B. For **Wetwell/Drywell** configurations the tank shall be furnished with one EPDM grommet fitting to accept a 4.50" OD DWV or Schedule 40 pipe. The tank capacities shall be as shown on drawings.
- C. The Drywell accessway shall be an integral extension of the Wetwell assembly and shall include a lockable cover assembly providing low profile mounting and watertight capability. The accessway design and construction shall enable field adjustment of the station height in increments of 4" or less without the use of any adhesives or sealants requiring cure time before installation can be completed.
- D. The station shall have all necessary penetrations molded in and factory sealed. To ensure a leak free installation no field penetrations will be acceptable.
- E. All discharge piping shall be constructed of 304 stainless steel. The discharge shall terminate outside the accessway bulkhead with a stainless steel, 1-1/4" Female NPT fitting. The discharge piping shall include a stainless-steel ball valve rated for 235 psi WOG; PVC ball valves or brass ball/gate will not be accepted. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.
- F. The accessway shall include a single NEMA 6P Electrical Quick Disconnect (EQD) for all power and control functions, factory installed with accessway penetrations warranted by the manufacturer to be watertight. The EQD will be supplied with 32', 25' of useable Electrical Supply Cable (ESC) outside the station, to connect to the alarm panel. The ESC shall be installed in the basin by the manufacturer. Field assembly of the ESC into the basin is not acceptable because of potential workmanship issues. The EQD shall require no tools for connecting, seal against water before the electrical connection is made, and include radial seals to assure a watertight seal regardless of tightening torque. Plug-type connections of the power cable onto the pump housing will not be acceptable due to the potential for leaks and electrical shorts. A junction box shall not be permitted in the accessway due to the large number of potential leak points. The EQD shall be so designed to be conducive to field wiring as required. The accessway shall also include an integral 2-inch vent to prevent sewage gases from accumulating in the tank.
- G. **Wetwell** designed stations will be **High Density Polyethylene Construction** of a grade selected for environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth to promote scouring. Corrugations of the outside wall are to be of a minimum amplitude of 1-1/2" to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be a minimum .250 inch thick. All seams created during tank construction are to be

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

thermally welded and factory tested for leak tightness. Tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station components must function normally when exposed to maximum external soil and hydrostatic pressure.

- H. The tank shall be furnished with a factory installed PVC inlet flange to accept a 4.50" OD (4" DWV or SCH 40) inlet pipe.
- I. The tank shall include a lockable cover assembly providing low profile mounting and watertight capability. The cover shall be high density polyethylene, green in color, with a load rating of 150 lbs per square foot. The cover assembly shall also include an integral 2-inch vent to prevent sewage gases from accumulating in the tank. The accessway design and construction shall facilitate field adjustment of station height in increments of 3" or less without the use of any adhesives or sealants requiring cure time before installation can be completed.
- J. The power and control cable shall connect to the pump by means of the provided NEMA 6P Electrical Quick Disconnect (EQD) and shall enter the tank through a factory installed watertight strain relief connector. An electrical junction box shall not be permitted in the tank.
- K. The station shall have all necessary penetrations factory sealed and tested. No field penetrations shall be acceptable.

2.6 CHECK VALVE

- A. The pump discharge shall be equipped with a factory installed, gravity operated, flapper-type integral check valve built into the stainless-steel discharge piping. The check valve will provide a full-ported passageway when open and shall introduce a friction loss of less than 6 inches of water at maximum rated flow. Moving parts will be made of a 300 Series stainless steel and fabric reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly providing a maximum degree of freedom to assure seating even at a very low backpressure. The valve body shall be an injection molded part made of an engineered thermoplastic resin. The valve shall be rated for continuous operating pressure of 235 psi. Ball-type check valves are unacceptable due to their limited sealing capacity in slurry applications.

2.7 ANTI-SIPHON VALVE

- A. The pump discharge shall be equipped with a factory-installed, gravity-operated, flapper-type integral anti-siphon valve built into the stainless-steel discharge piping. Moving parts will be made of 300 Series stainless steel and fabric-reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly, providing a maximum degree of freedom to ensure proper operation even at a very low pressure. The valve body shall be injection-molded from an engineered thermoplastic resin. Holes or ports in the discharge piping are not acceptable anti-siphon devices due to their tendency to clog from the solids in the slurry being pumped. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the pump discharge piping.

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

2.8 CORE UNIT

- A. The grinder pump station shall have a cartridge type, easily removable core assembly (No rail assemblies) consisting of pump, motor, grinder, all motor controls, check valve, anti-siphon valve, level controls, electrical quick disconnect and wiring. The watertight integrity of each core unit shall be established by a 100 percent factory test at a minimum of 5 PSIG.

2.9 CONTROLS

- A. All necessary motor starting controls shall be located in the cast iron enclosure of the core unit secured by stainless steel fasteners. Locating the motor starting controls in a plastic enclosure is not acceptable. The wastewater level sensing controls shall be housed in a separate enclosure from motor starting controls. The level sensor housing must be sealed via a radial type seal; solvents or glues are not acceptable. The level sensing control housing must be integrally attached to pump assembly so that it may be removed from the station with the pump and in such a way as to minimize the potential for the accumulation of grease and debris accumulation, etc. The level sensing housing must be a high-impact thermoplastic copolymer over-molded with a thermo plastic elastomer. The use of PVC for the level sensing housing is not acceptable.
- B. Non-fouling wastewater level controls for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air column connected to a pressure switch. The air column shall be integrally molded from a thermoplastic elastomer suitable for use in wastewater and with excellent impact resistance. The air column shall have only a single connection between the water level being monitored and the pressure switch. Any connections are to be sealed radially with redundant O-rings. The level detection device shall have no moving parts in direct contact with the wastewater and shall be integral to the pump core assembly in a single, readily-exchanged unit. Depressing the push to run button must operate the pump even with the level sensor housing removed from the pump.
- C. All fasteners throughout the assembly shall be 300 Series stainless steel. High-level sensing will be accomplished in the manner detailed above by a separate air column sensor and pressure switch of the same type. Closure of the high-level sensing device will energize an alarm circuit as well as a redundant pump-on circuit. For increased reliability, pump ON/OFF and high-level alarm functions shall not be controlled by the same switch. Float switches of any kind, including float trees, will not be accepted due to the periodic need to maintain (rinsing, cleaning) such devices and their tendency to malfunction because of incorrect wiring, tangling, grease buildup, and mechanical cord fatigue. To assure reliable operation of the pressure switches, each core shall be equipped with a factory installed equalizer diaphragm that compensates for any atmospheric pressure or temperature changes. Tube or piping runs outside of the station tank or into tank-mounted junction boxes providing pressure switch equalization will not be permitted due to their susceptibility to condensation, kinking, pinching, and insect infestation. The grinder pump will be furnished with a 6 conductor 14-gauge, type SJOW cable, pre-wired and watertight to meet UL requirements with a **FACTORY INSTALLED NEMA 6P EQD** half attached to it.

2.10 STAINLESS STEEL CURB STOP/CHECK VALVE ASSEMBLY (UNILATERAL)

- A. The curb stop shall be pressure-tight in both directions. The ball valve actuator shall include position stop features at the fully opened and closed positions. The curb stop/check valve assembly shall be designed to withstand a working pressure of 235 psi.
- B. The stainless-steel check valve shall be integral with the curb stop valve. The check valve will provide a full-ported 1-1/4" passageway and shall introduce minimal friction loss at maximum rated flow. The flapper hinge design shall provide a maximum degree of freedom and ensure seating at low back pressure.
- C. **Curb Boxes (Supplied by others)** – Curb boxes shall be constructed of ABS, conforming to ASTM-D 1788. All components shall be inherently corrosion-resistant to ensure durability in the ground.
- D. **High Density Polyethylene Pipe (Supplied by others)** – Pipe shall have a working pressure of 160 psi minimum and shall be classified SDR per ASTM D 3035.
- E. **Pipe Dimensions** – The SDR (Standard Dimension Ratio) of the pipe supplied shall be as specified by the **SPECIFYING ENGINEER**. SDR 7, 9 and 11 fittings are available from the **MANUFACTURER**.
- F. **Factory Test** – The stainless steel, combination curb stop/check valve component shall be 100 percent hydrostatically tested to 150 psi in the factory.

2.11 ALARM PANEL

- A. Each grinder pump station shall include a NEMA 4X, UL-listed alarm panel suitable for wall or pole mounting. The NEMA 4X enclosure shall be manufactured of thermoplastic polyester to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock, preventing access to electrical components, and creating a secured safety front to allow access only to authorized personnel. The Simplex enclosures shall not exceed 10.5" W x 14" H x 7" D, or 12.5" W x 16" H x 7.5" D if certain options are included.
- B. The alarm panel shall contain one 15-amp, double-pole circuit breaker for the pump core's power circuit and one 15-amp, single-pole circuit breaker for the alarm circuit. The panel shall contain a push-to-run feature, an internal run indicator, and a complete alarm circuit. All circuit boards in the alarm panel are to be protected with a conformal coating on both sides and the AC power circuit shall include an auto resetting fuse.
- C. The alarm panel shall include the following features: external audible and visual alarm; push-to-run switch; push-to-silence switch; redundant pump start; and high level alarm capability. The alarm sequence is to be as follows when the pump and alarm breakers are on:
 - 1. When liquid level in the sewage wet-well rises above the alarm level, the contacts on the alarm pressure switch activate, audible and visual alarms are activated, and the redundant pump starting system is energized.
 - 2. The audible alarm may be silenced by means of the externally mounted, push-

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

to-silence button.

3. Visual alarm remains illuminated until the sewage level in the wet-well drops below the "off" setting of the alarm pressure switch.
4. The visual alarm lamp shall be inside a red, oblong lens at least 3.75" L x 2.38" W x 1.5" H. Visual alarm shall be mounted to the top of the enclosure in such a manner as to maintain NEMA 4X rating. The audible alarm shall be externally mounted on the bottom of the enclosure, capable of 93 dB @ 2 feet. The audible alarm shall be capable of being deactivated by depressing a push-type switch that is encapsulated in a weatherproof silicone boot and mounted on the bottom of the enclosure (push-to-silence button).
5. The entire alarm panel, as manufactured and including any of the following options shall be listed by Underwriters Laboratories, Inc.

2.12 SERVICEABILITY

- A. The grinder pump core, including level sensor assembly, shall have two lifting hooks complete with lift-out harness connected to its top housing to facilitate easy core removal when necessary. Rail assemblies and not allowed due to maintenance and replacement costs. The level sensor assembly must be easily removed from the pump assembly for service or replacement. All mechanical and electrical connections must provide easy disconnect capability for core unit removal and installation. Each EQD half must include a water-tight cover to protect the internal electrical pins while the EQD is unplugged. A pump push-to-run feature will be provided for field trouble shooting. The push-to-run feature must operate the pump even if the level sensor assembly has been removed from the pump assembly. All motor control components shall be mounted on a readily replaceable bracket for ease of field service.

2.13 OSHA CONFINED SPACE

- A. All maintenance tasks for the grinder pump station must be possible without entry into the grinder pump station (as per **OSHA 1910.146**, permit-required confined spaces). *"Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space."*

2.14 SAFETY

- A. The grinder pump shall be free from electrical and fire hazards as required in a residential environment. As evidence of compliance with this requirement, the completely assembled and wired grinder pump station shall be listed by Underwriters Laboratories, Inc. to be safe and appropriate for the intended use. UL listing of components of the station, or third-party testing to UL standard are not acceptable.
- B. The grinder pump shall meet accepted standards for plumbing equipment for use in or near residences, shall be free from noise, odor, or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low pressure sewer system applications. As evidence of compliance with this

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

requirement, the grinder pump shall bear the seal of NSF International. Third-party testing to NSF standard is not acceptable.

PART 3 EXECUTION

3.1 FACTORY TEST

- A. Each grinder pump shall be submerged and operated for 1.5 minutes (minimum). Included in this procedure will be the testing of all ancillary components such as, the anti-siphon valve, check valve, discharge assembly and each unit's dedicated level controls and motor controls. All factory tests shall incorporate each of the above listed items. Actual appurtenances and controls which will be installed in the field shall be particular to the tested pump only. A common set of appurtenances and controls for all pumps is not acceptable. Certified test results shall be available upon request showing the operation of each grinder pump at two different points on its curve. Additional validation tests include: integral level control performance, continuity to ground and acoustic tests of the rotating components.
- B. The **UTILITY** reserves the right to inspect such testing procedures at the **GRINDER PUMP MANUFACTURER'S** facility.
- C. All completed stations shall be factory leak tested to assure the integrity of all joints, seams and penetrations. All necessary penetrations such as inlets, discharge fittings and cable connectors shall be included in this test along with their respective sealing means (grommets, gaskets etc.).

3.2 CERTIFIED SERVICE PROGRAM

- A. The grinder pump **MANUFACTURER** shall provide a program implemented by the **MANUFACTURER'S** personnel as described in this specification to certify the service company as an authorized serviced center. As evidence of this, the **MANUFACTURER** shall provide, when requested, sufficient evidence that they have maintained their own service department for a minimum of 30 years and currently employ a minimum of five employees specifically in the service department.
- B. As part of this program, the **MANUFACTURER** shall evaluate the service technicians as well as the service organization annually. The service company will be authorized by the **MANUFACTURER** to make independent warranty judgments. The areas covered by the program shall include, as a minimum:
 - 1. Pump Population Information — The service company will maintain a detailed database for the grinder pumps in the territory that tracks serial numbers by address.
 - 2. Inventory Management — The service company must maintain an appropriate level of inventory (pumps, tanks, panels, service parts, etc.) including regular inventory review and proper inventory labeling. Service technicians will also maintain appropriate parts inventory and spare core(s) on service vehicles.

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

3. Service Personnel Certification — Service technicians will maintain their level-specific certification annually. The certifications are given in field troubleshooting, repair, and training.
4. Service Documentation and Records — Start up sheets, service call records, and customer feedback will be recorded and available by the service company.
5. Shop Organization — The service company will keep its service shop organized and pumps will be tagged with site information at all times. The shop will have all required equipment, a test tank, and cleaning tools necessary to service pumps properly.

3.3 DELIVERY

- A. All grinder pump units will be delivered to the job site 100 percent completely assembled, including testing, ready for installation. Grinder pump stations will be individually mounted on wooden pallets.

3.4 INSTALLATION

- A. The tanks, pumps and alarm panels must be installed per **MANUFACTURER** written installation instructions.
- B. The Uni-Lateral assembly per the specifications is required to be installed in the pipe lateral outside the home between the pump discharge and the street main on all installations.
- C. An alarm device per the specifications is required on every installation, there shall be **NO EXCEPTIONS**. It will be the responsibility of the **CONTRACTOR** and the **UTILITY** to coordinate with the individual property owner(s) to determine the optimum location for the Alarm Panel.
- D. The **CONTRACTOR** shall mount the alarm device in a conspicuous location, as per national and local codes. The alarm panel will be connected to the grinder pump station by a length of 6-conductor type TC cable as shown on the contract drawings. The power and alarm circuits must be on separate power circuits. The grinder pump stations will be provided with 32 feet, 25 feet of useable, electrical supply cable to connect the station to the alarm panel. This cable shall be supplied with a **FACTORY INSTALLED** EQD half to connect to the mating EQD half on the core.
- E. All restoration will be the responsibility of the **CONTRACTOR**. The properties shall be restored to their original condition in all respects, including, but not limited to, curb and sidewalk replacement, landscaping, loaming and seeding, and restoration of the traveled ways.

3.5 START-UP AND FIELD TESTING

- A. The **MANUFACTURER** shall provide the services of qualified factory trained technician(s) who shall inspect the placement and wiring of each station, perform field tests as specified herein, and instruct the **OWNER'S** personnel in the operation and maintenance of the equipment before the stations are accepted by the **OWNER**.

CITY OF KINGSTON GRINDER PUMP STATION SPECIFICATIONS

PART 4 OWNERSHIP

4.1 GENERAL

- A. Kingston ends their responsibility of all grinder pump installations at the box that houses the ball valve and check valve for all grinder pump installations. The grinder pump, controls, and all other components of the installation past the ball valve/check valve box shall be the responsibility of the property owner to operate and maintain.

END OF SECTION

Septage Receiving Control Program Policy



City of Kingston Wastewater Treatment Plant
1503 James Ferry Road
Kingston, TN 37763
865-376-2901

1.0 Purpose

The Septage Receiving Control Program Policy provides the structure to ensure Septic Waste Haulers (users) have measures in place to prevent or reduce the potential of unwanted discharge to the sanitary sewer and environment. The Septic Waste Receiving Facility (SWRF) was constructed in order to protect water resources by providing a convenient, easy to use service for the disposal and subsequent treatment of residential septic wastes, from within the City of Kingston limits, and to integrate these wastes into the treatment process safely while minimizing odor.

This policy was developed in order to:

- Prevent substances from potentially causing the following issues:
 - Adverse affects on worker health and safety,
 - Pass-through of pollutants to the Tennessee and Clinch Rivers,
 - Interference with plant operations at the Kingston WWTP
 - Contamination of municipal sludge at the Kingston WWTP.

2.0 Scope and Applicability

2.1 Scope

This policy addresses requirements relating to the Septage Receiving Control Program of the City of Kingston. This policy includes instructions for users who dispose residential septage waste at the Kingston WWTP.

2.2 Applicability

This policy applies to all users utilizing the Kingston Septic Receiving Station (KSRS).

3.0 Definitions and Acronyms

3.1 Definitions

Acceptable Waste: Only septage from domestic sanitary septic tanks and step system wastes may be discharged to the KSRS.

City: The City of Kingston or its designee.

Control Authority: The City of Kingston.

Holding Tank Sewage: Any wastewater from holding tanks such as septic tanks, sealed vaults, and step-system tanks.

Industrial or Commercial User: Any user who discharges industrial or commercial wastewater from industrial or commercial processes, not to include sanitary waste.

Publicly Owned Treatment Works: A domestic sewage treatment facility that is financed and operated by a state or municipality through public taxation.

Septage: The partially treated waste contained in a septic tank is called septage. It generally consists of all the household wastes that are disposed of through a home's plumbing system that neither drain out into the soil nor are converted to gases by the special bacteria in the tank.

Septic Waste Haulers (Users): Companies that have obtained the proper septic disposal permit to enter the KSRS.

Septic Receiving Station: The receiving facility located on the City of Kingston Wastewater Treatment Plant's property designated for receiving trucked and hauled septage into the POTW.

Spill or Slug Discharge : Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch, which has a reasonable potential to cause interference or pass-through or in any other way violate any permit standards of the City of Kingston NPDES permit.

3.2 Acronyms

KSRS – Kingston Septic Receiving Station

KWWTP – Kingston Wastewater Treatment Plant

NPDES – National Pollutant Discharge Elimination System

POTW – Publicly Owned Treatment Works

4.0 Roles and Responsibilities

4.1 Authority

This policy was developed under the authority of the City of Kingston.

4.2 Operations Division

The KWWTP will be responsible to perform random sampling of discharge from septic hauling trucks on a periodic basis.

5.0 Requirements

5.1 Permit Requirements

Users applying for a permit must provide the following to the Division:

- Completed and signed Trucked and Hauled Septage Information Form
- Certificate of Liability Insurance (KWWTP as certificate holder)
- Completed and signed Septic Waste Fleet Vehicle Identification Form
- Copy of current vehicle registration (one for each vehicle)
- Copy of current vehicle insurance card (one for each vehicle)

The Septic Waste Receiving Facility Operation Guidelines and User Expectations, Trucked and Hauled Septage Information Form, Septic Waste Fleet Vehicle Identification Form, and a copy of the Septic Waste Receiving Ticket are attached to this document.

5.2 Pre-Inspection Requirement

Each vehicle must have a pre-inspection PRIOR to accepting septage. KWWTP personnel will be required to make sure each vehicle is empty of any septage. After the inspection is completed, a SEPTIC WASTE RECEIVING TICKET will be issued.

5.3 Cleanup

The user is responsible for cleaning the KSRS area immediately after each use. Yard hydrants are provided for this function.

Failure to clean up is a violation of the permit and may result in enforcement actions.

5.4 Spill Management

The user assumes complete responsibility for their employees while at the KWWTP and will be solely responsible for any accidents or spillage that may occur during the course of transporting and disposal operations at the KWWTP. The user will clean up any spills immediately.

It is the responsibility of the user to provide all necessary resources to clean up spills. Should a small spill occur, yard hydrants are available to spray materials to the vehicle pad drain. The user must provide a garden hose for this operation. Garden hoses must not be left at the facility or they will be removed. In the event of a large spill, the user must make an immediate effort to stop the source of the spill and prevent any spilled wastes or liquids from leaving the facility site or entering storm drains. Immediately after controlling/containing a large spill, the user must notify the KWWTP Operations, so an assessment can be made regarding clean-up activities.

5.5 Training

All user employees intending to use the KSRS must receive training upon hiring. Training shall include proper KWWTP access, discharge, cleanup, response to a spill, routine inspections, and maintenance to prevent spills or non-customary discharges.

5.6 Inspections and Maintenance

The user is responsible for routine inspection and maintenance of the discharge equipment including tanks, connections, hoses, piping, and any other physical equipment as appropriate. The user is responsible for supplying the correct size and length of hose to ensure proper, spill-free discharge.

5.7 Record Keeping

Users of the KSRS are required to submit a Septic Waste Receiving Ticket for each load discharged at the time of discharge. A copy of this form is attached to this document.

5.8 Sampling

Plant personnel collect random waste discharge samples and inspect user equipment throughout the year to determine compliance with this policy. Refusal of random sampling shall mean any denial of sampling of waste intended to be discharged or discharged at the KSRS. Intent to discharge occurs upon arrival at the KWWTP gate.

REFUSAL OF RANDOM SAMPLING WILL RESULT IN TERMINATION OF THE PERMIT.

6.0 Security

The SWRF is under 24-hour camera surveillance.

7.0 Enforcement

The user must comply with all conditions of the permit. Any violation may result in the immediate suspension and/or revocation of the permit, and the imposition of civil and/or criminal penalties as provided for in the City Municipal Code or Clean Water Act. If the POTW is fined by the State or Federal government for violation of their NPDES permit or violation of water quality standards as the result of a spill from or caused by a user, the fine, including POTW legal, sampling, analytical testing costs and other related costs, shall be charged to the responsible user. Additional measures may be required beyond those described in this policy to adequately control discharges to the KSRS. Nothing in this policy shall be construed so as to relieve the user from civil or criminal penalties for noncompliance.

8.0 References

Kingston Municipal Code 18-200

9.0 Review and Revision Schedule

This policy shall be reviewed and revised, if necessary, every year or earlier if necessary.



SEPTIC WASTE RECEIVING FACILITY

Operation Guidelines and User Expectations

The Kingston Septic Receiving Station (KSRS) was constructed to protect water resources by providing a convenient, easy to use service for the disposal and subsequent treatment of residential septic wastes and to integrate these wastes into the treatment process safely and with a minimum of odor.

ACCEPTABLE WASTES

Only septage from domestic sanitary septic tanks within the Kingston City limits may be discharged to the KSRS.

DISCHARGE OF INDUSTRIAL OR COMMERCIAL WASTE (grease traps, sand traps or other non-domestic sources) THROUGH THE SEPTAGE WASTE PROGRAM IS PROHIBITED. FAILURE TO COMPLY WILL RESULT IN TERMINATION OF THE PERMIT AND POSSIBLE MONETARY PENALTY.

LOCATION

The KSRS is located immediately behind the lab building at the City of Kingston Wastewater Treatment Plant (KWWTP), 1503 James Ferry Road, Kingston, TN 37763. The KSRS is accessed by users through an operated gate.

HOURS

The KSRS hours of operation are 7:30 a.m. to 3:00 p.m., Monday through Friday. Time of entry into the KWWTP is recorded on a computer for record keeping and security purposes.

USER ACCESS

After obtaining the proper septic disposal permit an access card(s) will be issued, free of charge, and assigned to each vehicle that will be using the facility. Each individual driver must use the access card assigned to the vehicle to enter the disposal site. The access card provides information for billing purposes; therefore, must be used as required.

DRIVERS ENTERING WITHOUT USING THE CORRECT ACCESS CARD, WILL BE ISSUED AN INITIAL WARNING LETTER. ADDITIONAL OFFENSE MAY RESULT IN TERMINATION OF THE PERMIT AND/OR MONETARY PENALTY.

Access cards are not transferable between vehicles. All original issue of cards, replacement of lost cards, or conversion of card assignment (i.e. vehicle replacement) will be done at the KWWTP. Excessive replacement of cards may warrant an additional charge.

DISCHARGE PROCEDURES AND RESPONSIBILITIES

Only One (1) vehicle may discharge wastes at a time. Wastes are discharged into the discharge basin

Users of the SWRF are responsible for supplying the correct size and length of hose to ensure proper, spill-free discharge.

Spill Management

It is the responsibility of the user to provide all necessary resources for clean-up of spills. Should a small spill occur, yard hydrants are available to hose materials to the wash down drain. Users must provide their own garden hose for this function. Garden hoses must not be left at the facility or they will be removed.

In the event of a large spill, users must make an immediate effort to stop the source of the spill and prevent any spilled wastes or liquids from leaving the facility site or entering storm drains. It is recommended (though not required) that all vehicles carry a large squeegee and several absorbent mats or socks. Immediately after controlling/contained a large spill, the user must notify an KWWTP personnel so an assessment can be made regarding clean-up routines and prevention of waterway contamination. Plant staff will request information regarding the spill for inclusion in incident reports. Plant management may also assign plant personnel to assist clean-up efforts in some instances.

RECORD KEEPING

Users of the KSRS are required to submit a "Septic Waste Receiving Ticket" for each load discharged at the time of discharge. Completed forms must be turned in to KWWTP personnel. This information is collated with computer data for billing and record keeping purposes.

SAMPLING PROGRAM

Plant personnel will collect random waste discharge samples and inspect user equipment throughout the year. Sampling is done to ensure the waste is in compliance with disposal permit conditions. Plant personnel also reserve the right to monitor the collection process at any time.

REFUSAL OF RANDOM SAMPLING WILL RESULT IN TERMINATION OF THE PERMIT.

SECURITY

The KSRS access gate is to remain closed at all times. In the event of gate malfunction or other problems, users are required to call the KWWTP Administration Building, 865-376-2901, and report to staff or leave a message.

ENFORCEMENT

The Permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of the Kingston Municipal Code (Title 18 Chapter 2). Any violation may result in the immediate suspension and/or revocation of the permit, and the imposition of civil and/or criminal penalties as provided for in the Municipal Code or Federal Water Pollution Control Act.

1. KSRS permits are non-transferable and may be revoked at the Manager's discretion.
2. Damages and Penalties for Violations of the Clean Water Act (CWA) Statutes and Regulations include:
2.1 Penalties for Falsification of Reports, CWA Section 309(C)(4)

Section 309 (C)(4) of Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, at seq., provides that any person who knowingly makes any false

statement, representation, or certification in any record or other document submitted or required to be maintained under a permit, including monitoring reports of compliance or noncompliance, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under a permit shall, upon conviction, be punished by a fine of up to \$10,000 per violation, or by imprisonment for not more than two years, or by both.

2.2 Administrative Penalties, CWA Section 309(g)

This part applies to each statutory provision under the laws administered by the Environmental Protection Agency concerning the maximum civil monetary penalty which may be assessed in administrative proceedings. The penalty amounts set forth in this part apply to all violations under the applicable statutes and regulations which occur after March 15, 2004.

Class I –

\$11,000 per violation/maximum \$32,500 per violation

Class II –

\$11,000 per violation/maximum \$157,500 per violation

2.3 Judicial Civil Penalties, CWA Section 309(d)

This part applies to each statutory provision under the laws administered by the Environmental Protection Agency concerning the maximum civil monetary penalty which may be assessed in judicial civil proceedings.

The penalty amounts set forth in this part apply to all violations under the applicable statutes and regulations which occur after March 15, 2004.

\$32,500 per day per violation

3. Damages and Penalties for Violations of Permit Conditions

The City Municipal Code provides that any person who violates any condition of the Permit or Wastewater Utility Ordinance shall be subject to a fine of not more than \$5,000 and/or one (1) year in jail for each violation. Each day in which any such violation shall continue shall be deemed a separate offense.

4. Suspension and Severance of Service

Failure to comply with permit conditions will result in termination of the disposal permit and possible monetary penalty.

5. Civil and Criminal Liability

Nothing in the permit shall be construed so as to relieve the Permittee from civil or criminal penalties for noncompliance.

6. Specific Performance

The permit shall be specifically enforceable by any party hereto.

7. Federal and/or State Laws

Nothing in the permit shall be construed so to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable federal and/or state law or regulations.



CITY OF KINGSTON
WASTEWATER TREATMENT PLANT

1503 James Ferry Road

Kingston, TN 37763

Phone (865) 376-2901

Fax (865) 376-2687

SEPTIC WASTE RECEIVING TICKET

Waste Characterization

<i>Name of Customer</i>		<i>Customer Signature</i>
<i>Address</i>		<i>Customer Phone Number</i>
<i>Type of Waste</i>		
<i>Date of Pickup</i>	<i>Time of Pickup</i>	<i>Number of Gallons</i>

Driver Certification

I certify the above information is an accurate representation of the waste on this load.

<i>Name of Septic hauler</i>		
<i>Date of Discharge</i>	<i>Time of Discharge</i>	<i>Number of Gallons</i>
<i>Truck Year, Make</i>		<i>Truck</i>
<i>Name of Driver (please print)</i>		<i>Driver Signature</i>

NOTES:

OFFICE USE ONLY:

☐ Vehicle pre Inspection	☐ Post KSRS Inspection	☐ KSRS Clean/No Spill
---	---	--

**CITY OF KINGSTON
WASTEWATER TREATMENT PLANT
900 Waterford Place
Kingston, TN 37763
WWTP (865) 376-2901
Billing (865) 376-2323**



SEPTIC WASTE FLEET VEHICLE IDENTIFICATION FORM

COMPANY		DATE	
MAILING ADDRESS			
CONTACT		PHONE	FAX
EMAIL			

VEHICLE INFORMATION

[illegible]



Neighbors Helping Neighbors

Creation

The Neighbors Helping Neighbors program was created and adopted by the Kingston Water Board On May 13, 2014 to provide temporary financial assistance with water and sewer bills to individuals and families who are customers of the Kingston Water Department.

Operation of Program

Water and Sewer customers had and may have future opportunities to voluntarily contribute \$1.00 per month, payable as an added surcharge to their regular bill. Contributions received were accounted for in accordance with generally accepted accounting procedures and placed in an account titled "Water and Sewer Assistance Program". Only contributed funds were placed in the account. These funds shall be used solely to provide financial assistance to Kingston water and sewer customers and for no other purpose. The Water Department must receive advanced authorization from the customer, in writing, prior to adding a surcharge to any account. Upon request by the customer, the surcharge will be removed at the next billing cycle.

Creation of Review Committee

A Review Committee shall be created to review all applications submitted, determine the applicant's eligibility for assistance and/or adjustment and thereafter grant or deny the application. The Committee shall consist of the City Manager, The Utility Director, and the Finance Director. The Committee will review applications upon receipt. All votes to provide assistance must be unanimous.

Application for Financial Assistance

Any residential customer of the Kingston Water Department shall be eligible to make application for financial assistance through the Neighbors Helping Neighbors program. The application will require the applicant to provide updated contact information, income and expense verification and a statement outlining the need for assistance. All applications will be kept on file and will remain confidential.

Eligibility for Financial Assistance

To be eligible for assistance, the following criteria must be met:

- Applicant must be the account holder
- Applicant must not have received assistance through this program in the last 12 months
- Applicant must agree to pay any balance due above and beyond the amount of

assistance approved prior to receiving relief. If the remaining amount exceeds \$200 the applicant will be allowed to split the amount into two consecutive monthly payments above and beyond their regular bill, with the understanding that failure to pay as promised will disqualify them from any future assistance.

Application for Catastrophic Leak Adjustment

Any customer of the Kingston Water Department may submit an application for consideration of a catastrophic leak adjustment. A catastrophic leak is defined as a verified water loss event resulting in an unusually high bill that exceeds \$5,000 per occurrence.

To be considered for this adjustment, the applicant must:

- File a claim with Water Leak Relief and the utility receives the maximum benefit of \$5,000 or
- pay the initial \$5,000 if the customer had previously decided to opt-out of the Water Leak Relief Insurance;
- Provide documentation verifying the existence and repair of the leak (e.g., plumber invoice, repair receipt, or written statement of repair);
- Demonstrate that the leak was unintentional and not due to negligence;
- Submit a completed catastrophic leak adjustment application within a reasonable timeframe following the billing date; and
- Allow inspection by Water Department personnel if deemed necessary.

The Review Committee shall evaluate catastrophic leak applications separately from standard assistance requests. Approval, partial approval, or denial shall be determined on a case-by-case basis, taking into account:

- The severity and circumstances of the leak
- Available program funds

Approval of a catastrophic leak adjustment does not guarantee full forgiveness of the billed amount. Any remaining balance after adjustment must be paid in accordance with terms established by the Review Committee.

If approved the amount exceeding \$5,000 may be adjusted based on a normal 3-month average

Catastrophic Leak Adjustment-How It Works

1. Start with the Total Bill

Determine the full amount of the water/sewer bill resulting from the leak

2. Apply the First \$5000 Responsibility

The first \$5000 of the bill is the customer's responsibility

- This amount may be covered by the Water Leak Relief Policy (if the customer is enrolled),
Or
- Paid directly by the customer (if not enrolled)

3. Calculate the Remaining Balance

Subtract \$5000 from the total bill

Remining Balance=Total Bill-\$5000

4. Subtract the Customer's Normal Usage

Determine the customer's average bill over the previous three months

Subtract this average from the remaining balance:

Adjusted Balance=Remaining Balance-3-month Average Bill

5. Determine Final Responsibilities

- a. The **customer** pays:
 - i. Their normal 3-month average bill
- b. The **Neighbors Helping Neighbors** Catastrophic Leak Programs pays:
 - i. The remaining adjusted balance

SIMPLE SUMMARY

If a leak causes a \$12,000 bill and the customer's average bill is \$200

- $\$12,000 - \$5,000 = \$7,000$
- $\$7,000 - \$200.00 = \$6,800$

Customer pays:\$200

Neighbors Helping Neighbors pays: \$6,800

A catastrophic leak adjustment shall be limited to one occurrence per customer within a 12-month period, unless otherwise approved by unanimous vote of the Review Committee

Payment of Assistance

Upon approval from the Relief Committee, the approved amount will be debited from the Water and Sewer Assistance Program fund and applied to the customer's account. The amount of assistance will be determined at the sole discretion of the Review Committee on a case-by-case basis. There is no right to assistance and continuation of this program will be contingent on the availability of sufficient funds



Neighbors Helping Neighbors Financial Assistance Application

The City of Kingston is proud to be part of the community we serve and offer a program to help pay part of the cost of water service for low-income customers or those experiencing a financial hardship

Program Summary: The City of Kingston Water & Sewer Department's "Neighbors Helping Neighbors" program provides temporary financial assistance with water and sewer bills to individuals and families who are customers of the Kingston Water Department.

Program Guidelines:

- The KWD bill must be in applicants name or provide written authorization allowing a person or agency to apply on his/her behalf
- Applicant must live at the address where the assistance will be received
- The house or apartment must have an individual water meter.
- Applicant household must meet the program income guidelines described in this application. For verification of income, we accept the prior year tax return, SSI letter or proof of ACH deposit, or two most recent pay stubs.
- Applicant may not be claimed as a dependent on another person's income tax return other than spouse.
- Applicant must agree to pay any balance due above and beyond the amount of assistance approved prior to receiving relief. If the remaining amount exceeds \$200 the applicant will be allowed to split the amount into two consecutive monthly payments above and beyond their regular bill, with the understanding that failure to pay as promised will disqualify them from any future assistance.
- Applicant may receive assistance one time in a twelve-month period
- Applicant must notify KWD if household no longer qualifies for the Neighbor Helping Neighbor program.

Number of Persons in Household	Annual income (based on total gross income of not more than)
1-2	\$29,863.00
3	\$37,702.00
4	\$45,540.00
5	\$53,378.00
6	\$61,217.00
Each additional person add:	\$5,680.00

***Based on Federal Poverty Levels for Tennessee Residents*

Return completed application and all required documents to:
Kingston Water Department
900 Waterford Place
Kingston, TN 37763



Neighbors Helping Neighbors Financial Assistance Application

Customer Information: (Please print clearly)

Name: _____ Account Number: _____

Home Address: _____

Mailing Address: _____

Telephone Number: _____ Email: _____

Number of persons in household: _____

Total Gross Annual Household Income: _____

Household Income Eligibility (Please include documentation for all checked)

You must report all income sources for all persons who reside in this household. Check all income sources that apply in the list below and attach documentation for each.

- ☐ Pensions
- ☐ Social Security
- ☐ SSDI
- ☐ Wages and/or profits from self-employment
- ☐ Rental or Royalty income
- ☐ Disability or Workers Compensation Payments
- ☐ Scholarships, Grants or other aid for living expenses
- ☐ Insurance or Legal settlements
- ☐ Spousal or child support
- ☐ Other Income
- ☐ Statement explaining need for assistance

Statement explaining need for assistance:

Declaration:

I certify under penalty of perjury that the information on this declaration is truthful and correct. I agree to provide proof of income. Although this declaration is valid for twelve months, I will notify KWD of any changes that may affect my eligibility for assistance.

I understand that my application will not be accepted if I do not include all documentation of income requested above.

Applicant's Signature: _____

Processing time for applications is 3-4 weeks and if approved, the credit will appear on your next billing statement.

Office Use Only

Recommended Adjustment Amount: _____

- | | | |
|--------------------------------|-------|------------------|
| ☐ Approved | _____ | Utility Director |
| ☐ Denied | _____ | Finance Director |
| Date: _____ | _____ | City Manager |



Neighbors Helping Neighbors Catastrophic Leak Adjustment Application

Customer Information: (Please print clearly)

Name: _____ Account Number: _____

Home Address: _____

Mailing Address: _____

Telephone Number: _____ Email: _____

Any customer of the Kingston Water Department may submit an application for consideration of a catastrophic leak adjustment. A catastrophic leak is defined as a verified water loss event resulting in an unusually high bill that exceeds \$5,000 per occurrence.

To be considered for this adjustment, the applicant must:

- File a claim with Water Leak Relief and the utility receives the maximum benefit of \$5,000 or
- pay the initial \$5,000 if the customer had previously decided to opt-out of the Water Leak Relief Insurance;
- Provide documentation verifying the existence and repair of the leak (e.g., plumber invoice, repair receipt, or written statement of repair);
- Demonstrate that the leak was unintentional and not due to negligence;
- Submit a completed catastrophic leak adjustment application within a reasonable timeframe following the billing date; and
- Allow inspection by Water Department personnel if deemed necessary.

The Review Committee shall evaluate catastrophic leak applications separately from standard assistance requests. Approval, partial approval, or denial shall be determined on a case-by-case basis, taking into account:

- The severity and circumstances of the leak
- Available program funds

- Approval of a catastrophic leak adjustment does not guarantee full forgiveness of the billed amount. Any remaining balance after adjustment must be paid in accordance with terms established by the Review Committee.
- If approved the amount exceeding \$5,000 may be adjusted based on a normal 3-month average
- A catastrophic leak adjustment shall be limited to one occurrence per customer within a 12-month period, unless otherwise approved by unanimous vote of the Review Committee

I certify I have satisfied all prerequisites listed above to be considered for a catastrophic leak adjustment

Applicant's Signature: _____ **Date:** _____

Office Use Only

Time-Frame of Leak: _____

Date Repaired: _____

- ☐ Water Leak Relief Claim Filed/Settled/Payment Remitted
- ☐ Self Pay of \$5,000 (if customer opted out of Water Leak Relief Coverage)
- ☐ Repair Documentation Received

Recommended Adjustment: _____

Approved _____ Denied _____ Date: _____

_____, Utility Director

_____, Finance Director

_____, City Manager