



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES

William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

November 14, 2023

Honorable Gary Jacobs
Mayor, Town of Centerville
e-copy: mayor@centervilletn.org
P.O. Box 238
Centerville, TN 37033

Subject: **Corrected (Minor Modified) NPDES Permit No. TN0024937**
Town of Centerville
Centerville, Hickman County, Tennessee

Dear Mayor Jacobs:

In accordance with the provisions of "The Tennessee Water Quality Control Act" (Tennessee Code Annotated, Sections 69-3-101 through 69-3-120) the above referenced NPDES Permit is hereby minor modified by the Division of Water Resources. The continuance and/or reissuance of this NPDES Permit is contingent upon your meeting the conditions and requirements as stated therein.

When setting this permit up for reporting via NetDMR, we realized we omitted the limit table for influent monitoring in Part 1 of the permit issued to you under cover dated October 30, 2023. This corrected permit includes that limit table on Page 2. The Division apologizes for the error and any inconvenience it has caused.

Please be advised that a petition for permit appeal may be filed, pursuant to T.C.A. Section 69-3-105, subsection (i), by the permit applicant or by any aggrieved person who participated in the public comment period or gave testimony at a formal public hearing whose appeal is based upon any of the issues that were provided to the commissioner in writing during the public comment period or in testimony at a formal public hearing on the permit application.

Additionally, for those permits for which the department gives public notice of a draft permit, any permit applicant or aggrieved person may base a permit appeal on any material change to conditions in the final permit from those in the draft, unless the material change has been subject to additional opportunity for public comment.

Any petition for permit appeal under this subsection (i) shall be filed with the Technical Secretary of the Water Quality, Oil and Gas Board within thirty (30) days after public notice of the commissioner's decision to issue or deny the permit. A copy of the filing should also be sent to TDEC's Office of General Counsel.

TDEC has activated a new email address to accept appeals electronically. If you wish to file an appeal, you may do so by emailing the appeal and any attachments to TDEC.Appeals@tn.gov. If you file an appeal electronically, you do not have to send a paper copy. If you have questions about your electronic filing, you can call (615) 532-0131. Electronic filing is encouraged, but not required.

If you have questions, please contact the Columbia Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Mr. Wade Murphy at (615) 532-0666 or by E-mail at Wade.Murphy@tn.gov.

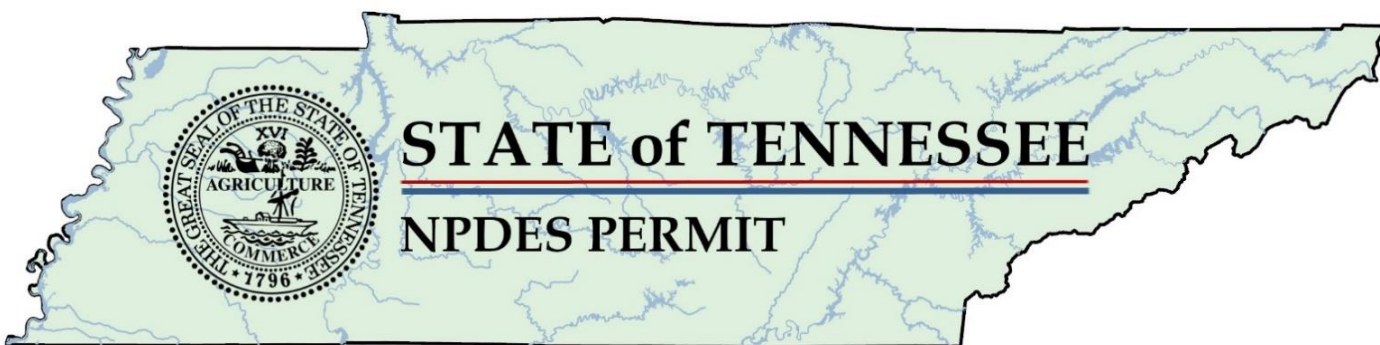
Sincerely,



Vojin Janjić
Manager, Water-Based Systems

Enclosure

cc: Mr. Chad Dotson, Wastewater Manager, Centerville STP, wwtp@centervilletn.org
Mr. Ricky Chandler, Collections Coordinator, Town of Centerville, rchandler@centervilletn.org
EFO-Columbia-DWR, dewitt.logsdon@tn.gov
Permit File



**Authorization to Discharge Under the
National Pollutant Discharge Elimination System (NPDES)
Permit Number TN0024937**

Issued by
**Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102**

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Permittee: **Town of Centerville
Centerville STP**

is authorized to discharge: Treated domestic wastewater from Outfall 001
from a facility located at: 110 Lawson Street, Centerville, Hickman County, Tennessee
to receiving waters named: Duck River at mile 71.5
in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on: **November 01, 2023 (Corrected at Issuance)**

This permit shall expire on: **October 31, 2028**

Issuance date: **November 14, 2023**



for Jennifer Dodd
Director

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PART 1

1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS

1.1.1. Numeric Limitations

Town of Centerville is authorized to discharge treated municipal wastewater from Outfall 001 to Duck River at mile 71.5 from a treatment facility with a design capacity of 0.75 MGD. Discharge from Outfall 001 shall be limited and monitored by the permittee as specified below:

| External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year | | | | | | | |
|---|------------------------------|------------------|--------------|-------------|--------------------|-----------------------------|-------------------------|
| <u>Code</u> | <u>Parameter</u> | <u>Qualifier</u> | <u>Value</u> | <u>Unit</u> | <u>Sample Type</u> | <u>Monitoring Frequency</u> | <u>Statistical Base</u> |
| 00300 | Oxygen, dissolved (DO) | >= | 1.0 | mg/L | Grab | Five Per Week | Instantaneous Minimum |
| 00310 | BOD, 5-day, 20 C | <= | 30 | mg/L | Composite | Three Per Week | Monthly Average |
| 00310 | BOD, 5-day, 20 C | <= | 40 | mg/L | Composite | Three Per Week | Weekly Average |
| 00310 | BOD, 5-day, 20 C | <= | 45 | mg/L | Composite | Three Per Week | Daily Maximum |
| 00310 | BOD, 5-day, 20 C | <= | 188 | lb/d | Composite | Three Per Week | Monthly Average |
| 00310 | BOD, 5-day, 20 C | <= | 250 | lb/d | Composite | Three Per Week | Weekly Average |
| 00400 | pH | >= | 6.0 | SU | Grab | Five Per Week | Minimum |
| 00400 | pH | <= | 9.0 | SU | Grab | Five Per Week | Maximum |
| 00530 | Total Suspended Solids (TSS) | <= | 30 | mg/L | Composite | Three Per Week | Monthly Average |
| 00530 | Total Suspended Solids (TSS) | <= | 40 | mg/L | Composite | Three Per Week | Weekly Average |
| 00530 | Total Suspended Solids (TSS) | <= | 45 | mg/L | Composite | Three Per Week | Daily Maximum |
| 00530 | Total Suspended Solids (TSS) | <= | 188 | lb/d | Composite | Three Per Week | Monthly Average |
| 00530 | Total Suspended Solids (TSS) | <= | 250 | lb/d | Composite | Three Per Week | Weekly Average |
| 00545 | Settleable Solids | <= | 1.0 | mL/L | Grab | Weekly | Daily Maximum |
| 00600 | Nitrogen, total (as N) | Report | - | mg/L | Composite | Quarterly | Daily Maximum |
| 00600 | Nitrogen, total (as N) | Report | - | lb/d | Composite | Quarterly | Daily Maximum |



| | | | | | | | |
|-------|--|--------|-----|---------|------------|----------------|------------------------|
| 00665 | Phosphorus, total (as P) | Report | - | mg/L | Composite | Quarterly | Daily Maximum |
| 00665 | Phosphorus, total (as P) | Report | - | lb/d | Composite | Quarterly | Daily Maximum |
| 50050 | Flow | Report | - | MGD | Continuous | Daily | Monthly Average |
| 50050 | Flow | Report | - | MGD | Continuous | Daily | Daily Maximum |
| 50060 | Chlorine, total residual (TRC) | <= | 2.0 | mg/L | Grab | Five Per Week | Daily Maximum |
| 51040 | E. coli | <= | 487 | #/100mL | Grab | Three Per Week | Daily Maximum |
| 51040 | E. coli | <= | 126 | #/100mL | Grab | Three Per Week | Monthly Geometric Mean |
| TAA3B | LC50 Static 48Hr Acute Ceriodaphnia | > | 1.6 | % | Grab | Annual | Minimum |
| TAA6C | LC50 Static 48Hr Acute Pimephales promelas | > | 1.6 | % | Grab | Annual | Minimum |

External Outfall, Number: 001, Monitoring: Percent Removal, Season: All Year

| Code | Parameter | Qualifier | Value | Unit | Sample Type | Monitoring Frequency | Statistical Base |
|-------|-----------------------|-----------|-------|------|-------------|----------------------|-------------------------|
| 81010 | BOD, 5-day, % removal | >= | 85 | % | Composite | Three Per Week | Monthly Average Minimum |
| 81010 | BOD, 5-day, % removal | >= | 40 | % | Composite | Three Per Week | Daily Minimum |
| 81011 | TSS, % removal | >= | 85 | % | Composite | Three Per Week | Monthly Average Minimum |
| 81011 | TSS, % removal | >= | 40 | % | Composite | Three Per Week | Daily Minimum |

Influent Structure, Number: INF1, Monitoring: Raw Sewage Influent, Season: All Year

| <u>Code</u> | <u>Parameter</u> | <u>Qualifier</u> | <u>Value</u> | <u>Unit</u> | <u>Sample Type</u> | <u>Monitoring Frequency</u> | <u>Statistical Base</u> |
|-------------|------------------------------|------------------|--------------|-------------|--------------------|-----------------------------|-------------------------|
| 00310 | BOD, 5-day, 20 C | Report | - | mg/L | Composite | Three Per Week | Monthly Average |
| 00310 | BOD, 5-day, 20 C | Report | - | mg/L | Composite | Three Per Week | Daily Maximum |
| 00530 | Total Suspended Solids (TSS) | Report | - | mg/L | Composite | Three Per Week | Monthly Average |
| 00530 | Total Suspended Solids (TSS) | Report | - | mg/L | Composite | Three Per Week | Daily Maximum |
| 50050 | Flow | Report | - | MGD | Continuous | Daily | Monthly Average |
| 50050 | Flow | Report | - | MGD | Continuous | Daily | Daily Maximum |

General [MyTDEC Forms](#) Report Requirements*

| | |
|--|------------------------------------|
| Bypass of Treatment Facility | See Section 1.3.5.1. and 2.3.5. |
| Anticipated Bypass of Treatment Facility | See Section 1.3.5.1. and 2.3.5. |
| Five-day Follow-up Noncompliance Report | See Sections 1.3.5.1. and 2.3.1.a. |
| Scheduled Reporting | See Section 2.3.1.b. |

* Each event shall be reported via MyTDEC Forms.



Notes:

The permittee shall achieve 85 % removal of BOD₅ and TSS on a monthly average basis. The permittee shall report all instances of releases, sanitary sewer overflows and/or bypasses. See **Part 2.3.2(a)** for the definition of sanitary sewer overflow and **Part 1.3.5** for reporting requirements.

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

Unless elsewhere specified, summer months are May through October; winter months are November through April.

See **Part 1.2.3** for test procedures.

See **Part 3.4** for biomonitoring test and reporting requirements.

See below for percent removal calculations.

The permittee may collect more samples than specified as the monitoring frequency in the permit. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an *E. coli* group concentration of less than 1 per 100 mL shall be considered as having a concentration of 1 per 100 mL. In addition, the concentration of the *E. coli* group in any individual sample shall not exceed a specified maximum amount.

Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR § 136 as amended, so long as the requirements of Tennessee Rule [0400-40-03-.05\(8\)](#) are met. The method detection limit (MDL) should be determined in accordance with 40 CFR § 136 as amended, Appendix B. The MDL for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the MDL and have it available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

For BOD₅ and TSS, the treatment facility shall demonstrate a minimum of 85% removal efficiency on a monthly average basis. This is calculated by determining an average of all daily influent concentrations and comparing this to an average of all daily effluent concentrations. The formula for this calculation is as follows:

$$\left(1 - \frac{\text{average of daily effluent concentrations}}{\text{average of daily influent concentrations}}\right) * 100\% = \% \text{ removal}$$

This treatment facility will also demonstrate 40% daily minimum removal of BOD₅ and TSS based on each daily composite sample. The formula for this calculation is as follows:

$$\left(1 - \frac{\text{daily effluent concentration}}{\text{daily influent concentration}}\right) * 100\% = \% \text{ removal}$$

Each daily load is calculated by multiplying the day's sample concentration (mg/L) by the effluent flow rate (MGD) for the day the sample was collected and the conversion factor 8.34 lbs/gal.

$$Load = \left(\frac{Effluent}{Concentration} \right) * \left(\frac{Effluent flow for the day the}{day the sample was collected} \right) * (8.34)$$

1.1.2. Collection System Requirements

Town of Centerville is authorized to operate a sewage collection system. Operation and discharges from the collection system shall be limited and monitored by the permittee as specified below:

| Code | Monitoring | Parameter | Qualifier | Value | Unit | Sample Type | Monitoring Frequency | Statistical Base |
|-------|-------------|------------------|-----------|-------|----------|-------------|----------------------|------------------|
| 51925 | Dry Weather | SSO, Dry Weather | <= | 0 | occur/mo | Occurrences | Continuous | Monthly Total |
| 51926 | Wet Weather | SSO, Wet Weather | <= | 0 | occur/mo | Occurrences | Continuous | Monthly Total |

Report via NetDMR. See sections 1.3.1. and 1.3.5.2.

| Collection System MyTDEC Forms Report Requirements* | |
|---|----------------------------------|
| Sanitary Sewer Overflow (SSO, Dry Weather) | See Section 1.3.5.1. |
| Sanitary Sewer Overflow (SSO, Wet Weather) | See Section 1.3.5.1. |
| Release (Dry Weather) | See Section 1.3.5.1. |
| Release (Wet Weather) | See Section 1.3.5.1. |
| Five-day Follow-up Noncompliance Report | See Sections 1.3.5.1. and 2.3.1. |

* Each event shall be reported via MyTDEC Forms.

1.1.3. Narrative Conditions

The permittee shall submit a written technical evaluation of the need to revise local limits within 120 days of the effective date of this permit to the state pretreatment program coordinator. The evaluation shall include the most recent pass-through limits proposed by the Division and should be submitted to the following email address: DWRWaterCompliance@tn.gov.

The permittee shall submit the results of an Industrial Waste Survey (IWS) to the Division of Water Resources, Pretreatment Section within 120 days of the effective date of this permit, unless such a survey has been submitted within 3 years of the effective date. If an IWS has been submitted within the past 3 years, the permittee shall notify the Division of the date when the IWS was previously submitted to the Division. The IWS shall be submitted to the following email address: DWRWater.Compliance@tn.gov.



The authorized discharge shall not:

- Result in distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character as may be detrimental to fish and aquatic life.
- Result in total suspended solids, turbidity, or color in such amounts or character that will result in any objectionable appearance to the receiving water, considering the nature and location of the water.
- Contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner that prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, Tennessee Code Annotated (Tenn. Code Ann.) §68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, Tenn. Code Ann. §68-46-101 et. seq.

1.2. MONITORING PROCEDURES

1.2.1. Representative Sampling

Samples and measurements taken in compliance with the monitoring requirements specified herein shall be representative of the volume and nature of the monitored discharge and shall be taken after treatment and prior to mixing with uncontaminated stormwater runoff or the receiving stream. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed and calibrated by a qualified source at least once every 12 months¹, and maintained to ensure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

Composite samples must be proportioned by flow at the time of sampling. Aliquots may be collected manually or automatically. The sample aliquots must

¹ The Division expects for permittees to meet EPA's guidance on proper operation and maintenance of flow measurement devices, as stated in the [NPDES Compliance Inspection Manual](#).



be maintained at $\leq 6^{\circ}\text{C}$ during the composting period, or as otherwise specified in 40 CFR §136 or in the method.

Samples and measurements taken in compliance with the monitoring requirements specified above shall be representative of the volume and nature of the monitored discharge, and shall be taken at the following location(s):

Influent samples must be collected prior to mixing with any other wastewater being returned to the head of the plant, such as sludge return. Those systems with more than one influent line must collect samples from each and proportion the results by the flow from each line.

Effluent samples must be representative of the wastewater being discharged and collected prior to mixing with any other discharge or the receiving stream. This can be a different point for different parameters but must be after all treatment for that parameter or all expected changes. Specifically:

- a) The chlorine residual must be measured after the chlorine contact chamber and any dechlorination. It may be to the advantage of the permittee to measure at the end of any long outfall lines.
- b) Samples for *E. coli* can be collected at any point between completion of disinfection and the actual discharge.
- c) The dissolved oxygen (DO) can drop in the outfall line; therefore, DO measurements are required at the discharge end of outfall lines greater than one mile long. Systems with outfall lines less than one mile may measure dissolved oxygen as the wastewater leaves the treatment facility. For systems with dechlorination, DO must be measured after this step and as close to the end of the outfall line as possible.
- d) Total suspended solids (TSS) and settleable solids can be collected at any point after the final clarifier.
- e) Biomonitoring tests (if required) shall be conducted on final effluent.

1.2.2. Sampling Frequency

The permittee should report "No Discharge" on Discharge Monitoring Reports (DMRs) only if a permitted outfall does not discharge at any time during the monitoring period. If the outfall discharges effluent at any time during the



monitoring period, the permittee must provide at least one sampling result from the effluent of that outfall.

If the required monitoring frequency is once per month or 1/month, the monitoring period is one month. If the discharge occurs during only one day in that period, the permittee must sample on that day and report the results of analyses accordingly.

1.2.3. Test Procedures

- a) Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.
- b) Unless otherwise noted in the permit, all pollutant parameters shall be determined using sufficiently sensitive methods in Title 40 CFR § 136, as amended, and promulgated pursuant to Section 304 (h) of the Act. The chosen methods must be sufficiently sensitive as required in state rule 0400-40-03-.05(8).
- c) If the minimum level of quantification (ML) for all methods available in accordance with 40 CFR § 136 are above the stated permit limit or applicable water quality criteria for that parameter, then the method with the lowest ML shall be used.
- d) Where the analytical results are below the method detection limit (MDL), the permittee shall report the actual laboratory MDL and ML values. See **Section 1.3.6.** for instructions regarding reporting less than detection.
- e) When there is no analytical method that has been approved under 40 CFR §136 or required under 40 CFR chapter I, subchapter N or O, and a specific method is not otherwise required by the Director, the permittee may use any suitable method but shall provide a description of the method. When selecting a suitable method, factors such as a method's precision, accuracy, or resolution must be considered when assessing the performance of the method.
- f) All sampling for total mercury at the municipal wastewater plant (including application, pretreatment, etc.) shall use Methods 1631, 245.7, or any additional method in 40 CFR § 136 with a maximum detection limit of 5 ng/L.



1.2.4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- i. The date, exact place, and time of sampling or measurements;
- ii. The individual(s) who performed the sampling or measurements;
- iii. The date analyses were performed;
- iv. The individual(s) who performed the analyses;
- v. The laboratory where the analyses were performed;
- vi. The analytical techniques or methods used; and
- vii. The results of such analyses.

1.2.5. Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

1.3. REPORTING

1.3.1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly on Discharge Monitoring Reports (DMRs) using EPA's [NetDMR](#) website. The first DMR is due on the 15th of the month following permit effectiveness. Subsequent DMRs shall be submitted through NetDMR no later than 15 days after the completion of the reporting period. In compliance with the Federal NPDES Electronic Reporting Rule, DMRs may not be submitted via email under any circumstances.

Discharge Monitoring Reports and any other information or report must be signed and certified by a responsible corporate officer as defined in Tennessee Rules, Chapter [0400-40-05-.07\(2\)\(i\)](#), a general partner or proprietor, a principal municipal executive officer or ranking elected official, or his or her duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

In the event that electronic reporting is unavailable, the permittee shall comply with reporting conditions provided in **Section 1.7**.



1.3.2. Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR § 136, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or other reporting form specified by the Commissioner. Such increased frequency shall also be indicated.

1.3.3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in § 69-3-115 of the Tennessee Water Quality Control Act.

1.3.4. Monthly Report of Operation

Monthly Operational Reports (MORs) shall be submitted by the 15th day of the month following data collection. Reports shall be submitted by one of the following methods, presented below in order of preference:

- 1) Using [MyTDEC Forms](#), if available.
- 2) Submitting both a signed and certified copy in pdf format, uploaded as an attachment to NetDMR, *and* a copy of the native format spreadsheet file emailed to DWRWW.Report@tn.gov and TDEC.Nashville.EFO@tn.gov.
- 3) Submitting signed and certified forms to the EFO at the following address:

*STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Columbia Environmental Field Office
1421 Hampshire Pike
Columbia, Tennessee 38401*

1.3.5. Sanitary Sewer Overflow, Release, and Bypass Reporting

1.3.5.1. Event Report Requirements

For the purpose of this section, “events” are known as instances of sanitary sewer overflows, releases, upsets, and bypasses. These events shall be reported through [MyTDEC Forms](#) according to the following conditions:



- a) Events that are not a threat to human health and the environment shall be reported using MyTDEC Forms no later than 15 days following the completion of the DMR reporting period.
- b) Events that could cause a threat to human health or the environment, as defined in **Section 2.3.1.a.**, shall be reported using MyTDEC Forms no later than 5 days after becoming aware of the non-compliance.

In both cases, the event report must contain the following:

- i. Start date;
- ii. Estimated duration in hours;
- iii. Estimated volume in gallons;
- iv. Type of event;
- v. Type of structure (e.g., manhole);
- vi. Types of human health and environmental impacts;
- vii. Location (i.e., latitude and longitude);
- viii. The name of receiving water (if applicable);
- ix. Description of the cause;
- x. The steps being taken to correct, reduce, eliminate, and prevent recurrence of the noncompliance; and
- xi. The next downstream pump/lift station using the permittee's naming conventions.

In the event that MyTDEC Forms is not functioning, the permittee shall comply with reporting conditions provided in **Section 1.7**.

1.3.5.2. DMR Report Requirements

On the DMR, the permittee must separately report:

- i. The total number of wet-weather sanitary sewer overflows for the reporting month; and
- ii. The total number of dry-weather sanitary sewer overflows for the reporting month.

On the DMR, sanitary sewer overflows are coded "SSO, Dry Weather" and "SSO, Wet Weather". Each discrete location of a sanitary sewer overflow shall be reported as a separate value.



1.3.6. Reporting Less Than Detection; Reporting Significant Figures

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the minimum level (ML) of 40 CFR § 136 approved analytical methods, compliance will be demonstrated when a non-detect result is obtained using the most sensitive method available. The results of non-detect analyses, in this case, shall be reported as Below Detection Limit (BDL) or "NODI = B" in NetDMR. Reporting examples are provided below.

Reporting Example 1: If the permit limit is 0.02 mg/L with a method detection limit (MDL) of 0.05 mg/L and no detection is shown, the permittee must report "BDL" or "NODI = B" on DMRs in NetDMR. Whenever "BDL" or "NODI = B" is reported, the actual MDL must be reported in the DMR comments or in an attachment submitted in NetDMR.

Reporting Example 2: If the permit limit is 0.02 mg/L with an MDL of 0.05 mg/L and detection is shown, the actual detected value must be reported.

Reporting Example 3: If the permit limit is 0.02 mg/L with an MDL of 0.01 mg/L and no detection is shown, the permittee must report less than MDL (<0.01 mg/L in this case).

For purposes of calculating averages, zero may be assigned for values less than the MDL, the numeric value of the MDL may be assigned for values between the MDL and the ML. If the average value is less than the MDL, the permittee must report "less than {numeric value of the MDL}" and if the average value is less than the ML, the permittee must report "less than {numeric value of the ML}." If a value is equal to or greater than the ML, the permittee must report and use the actual value. The resulting average value must be compared to the compliance level, the ML, in assessing compliance.

Reported results are to correspond to the number of significant figures (decimal places) set forth in the permit conditions. The permittee shall round values, if allowed by the method of sample analysis, using a uniform rounding convention adopted by the permittee.

1.3.7. Outlier Data

Outlier data include analytical results that are probably false. The validity of results is based on operational knowledge and a properly implemented quality assurance program. False results may include laboratory artifacts, potential sample tampering, broken or suspect sample containers, sample contamination or similar demonstrated quality control flaw.



Outlier data are identified through a properly implemented quality assurance program, and according to ASTM standards (e.g. Grubbs Test, 'h' and 'k' statistics). Furthermore, outliers should be verified, corrected, or removed based on further inquiries into the matter. If an outlier was verified (through repeated testing and/or analysis), it should remain in the preliminary data set. If an outlier resulted from a transcription or similar clerical error, it should be corrected and subsequently reported.

Therefore, only if an outlier was associated with problems in the collection or analysis of the samples and as such does not conform with the Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR §136), can it be removed from the data set and not reported on DMRs. Otherwise, all results (including monitoring of pollutants more frequently than required at the location(s) designated, using approved analytical methods as specified in the permit) should be included in the calculation and reporting of the values required in the DMR form. The permittee should use the "comment" section in NetDMR to explain any potential outliers or dubious results.

1.4. COMPLIANCE WITH SECTION 208

The limits and conditions in this permit shall require compliance with an area-wide waste treatment plan (208 Water Quality Management Plan) where such approved plan is applicable.

1.5. REOPENER CLAUSE

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 307(a)(2), and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation, or sludge disposal requirement so issued or approved:

- a) Contains different conditions or is otherwise more stringent than any condition in the permit; or
- b) Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.



1.6. SCHEDULE OF COMPLIANCE

Full compliance and operational levels shall be attained from the effective date of this permit, except for conditions under compliance schedules. See **Section 1.1.** for numeric and narrative requirements.

1.7. ELECTRONIC REPORTING

This permit requires the submission of forms developed by the Director in order for a person to comply with certain requirements, including, but not limited to, making reports, submitting monitoring results, and applying for permits. The Director may make these forms available electronically and, if submitted electronically, then that electronic submission shall comply with the requirements of Chapter [0400-01-40](#). Electronic submission is required when available unless waived by the Commissioner in accordance with 40 C.F.R. § 127.15.

In the event of large-scale emergencies and/or prolonged electronic reporting system outages, an episodic electronic reporting waiver may be granted by the Commissioner in accordance with 40 CFR § 127.15. A request for a deadline extension or episodic electronic reporting waiver should be submitted to DWRWater.Compliance@tn.gov, in compliance with the Federal NPDES Electronic Reporting Rule.

If an episodic electronic reporting waiver is granted, reports with wet-ink original signatures shall be mailed to the following address:

*STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
COMPLIANCE & ENFORCEMENT UNIT
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102*

For purposes of determining compliance with this permit, data provided to the Division electronically is legally equivalent to data submitted on signed and certified forms. A copy must be retained for the permittee's files.



PART 2

2. GENERAL PERMIT REQUIREMENTS

2.1. GENERAL PROVISIONS

2.1.1. Duty to Comply

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

2.1.2. Duty to Reapply

The permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Division Director no later than 180 days prior to the expiration date. Such forms shall be properly signed and certified.

2.1.3. Proper Operation and Maintenance

- a) The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances, including but not limited to collection and conveyance systems) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Low pressure pumps, low pressure tanks, septic tank effluent pumps (STEP), STEP tanks, and septic tank effluent gravity tanks are integral to the treatment and conveyance of sewage in a low-pressure system design, and shall be owned or under control of the municipality, other body of government, public utility district, or a privately-owned public utility demonstrating lawful jurisdiction over the service area. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
- b) Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT, or other technology based effluent limitations such as those established in Tennessee Rule [0400-40-05-.09](#).



2.1.4. Duty to Provide Information

The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

2.1.5. Right of Entry

The permittee shall allow the Director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials, to:

- a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records shall be kept under the conditions of this permit;
- b) Have access to and copy, at reasonable times, any records that shall be kept under the conditions of this permit;
- c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d) Sample or monitor at reasonable times for the purposes of assuring permit compliance or as otherwise authorized by the Director.

2.1.6. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the Division's offices or via the Department's [dataviewer webpage](#). As required by the Federal Act, effluent data shall not be considered confidential.

2.1.7. Treatment Facility Failure (Industrial Sources)

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

2.1.8. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to



private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

2.1.9. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

2.1.10. Other Information

If the permittee becomes aware of failure to submit any relevant facts in a permit application, or of submission of incorrect information in a permit application or in any report to the Director, then the permittee shall promptly submit such facts or information.

2.2. CHANGES AFFECTING THE PERMIT

2.2.1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as defined in Rule [0400-40-05-02](#);
- b) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit nor to notification requirements under 40 CFR § 122.42(a)(1); or
- c) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices.

2.2.2. Permit Modification, Revocation, or Termination

- a) This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR § 122.62 and § 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended. Causes for such permit action include but are not limited to the following:
 - i. Violation of any terms or conditions of the permit;



- ii. Obtaining a permit by misrepresentation or failure to disclose fully all relevant facts; and
 - iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.
- b) The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.
- c) If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the Director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit for the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.
- d) The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

2.2.3. Change of Ownership

Except as provided in Tennessee Rule Chapter [0400-40-05-.06\(5\)](#)(a) or (b), this permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect permit limits and conditions contained in the permit) by the permittee if:

- a) The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;
- b) The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and
- c) The permittee shall provide the following information to the Director in the permittee's formal notice of intent to transfer ownership:



- i. The permit number of the subject permit;
- ii. The effective date of the proposed transfer;
- iii. The name, address, and contact information of the transferor;
- iv. The name, address, and contact information of the transferee;
- v. The names of the responsible parties for both the transferor and transferee;
- vi. A statement that the transferee assumes responsibility for the subject permit;
- vii. A statement that the transferor relinquishes responsibility for the subject permit;
- viii. The signatures of the responsible parties for both the transferor and transferee pursuant to the signatory requirements of subparagraph (i) of Rule [0400-40-05-.07\(2\)](#); and
- ix. A statement regarding any proposed modifications to the facility, its operations, or any other changes, which might affect the permit, limits and conditions contained in the permit.

2.2.4. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice, the original address of the permittee will be assumed to be correct.

2.3. NONCOMPLIANCE

2.3.1. Reporting of Noncompliance

a) 24-hour Reporting:

In the case of any noncompliance, or any release (whether or not caused by improper operation and maintenance), which could cause a threat to human health or the environment, the permittee shall:

- i. Report the noncompliance or release to the Commissioner within 24 hours from the time the permittee becomes aware of the circumstances. Such noncompliance or release includes, but is not limited to, any unanticipated bypass exceeding any effluent limitation, any upset exceeding any effluent limitation, and violations of any maximum daily effluent limitation identified in the permit as requiring 24-hour reporting. (The EFO should be contacted for names and phone numbers of the environmental response team.)



- ii. Submit a written report within five days of the time the permittee becomes aware of the noncompliance. The permittee shall provide the following information:
 - 1. A description of and the cause of the noncompliance or release;
 - 2. The period of noncompliance or release, including start and end dates and times i.e. duration or, if not corrected, the anticipated time the noncompliance or release is expected to continue;
 - 3. The steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance or release; and
 - 4. For POTWs or domestic wastewater treatment plants, reporting any dry weather overflow, wet weather overflow, dry weather release, wet weather release, combined sewer overflow, or bypass, this written report must also include the following:
 - I. Type of event;
 - II. Type of sanitary sewer overflow, release, or bypass structure (e.g., manhole, combined sewer overflow outfall);
 - III. Estimated volume (gallons);
 - IV. Types of human health and environmental impacts;
 - V. Location (latitude and longitude);
 - VI. Estimated duration (hours);
 - VII. The next downstream pump station (for sanitary sewer overflows and releases only); and
 - VIII. The name of receiving water (if applicable).
 - iii. Industrial dischargers that do not treat domestic waste shall comply with subpart a) ii. 4. of this subparagraph with respect to bypasses only.
 - iv. For sanitary sewer overflows, releases, bypasses, upsets and washouts, the report required by a) ii. Shall be submitted electronically via MyTDEC Forms.
- b) Other Noncompliance.
- i. All permittees shall report each instance of noncompliance or any release (whether or not caused by improper operation and maintenance), not reported under sub-part a) at the time of submitting the next routine



monitoring report, including all information required by sub-parts a) ii. 1-3.

- ii. In addition to the information required by part i of this sub-part, POTWs and domestic wastewater treatment plants shall submit a written report containing the information required by sub-part a) ii. 4. If these events are caused by an extreme weather event, the Commissioner may provide a written waiver of some or all of these reporting requirements.
- iii. In addition to the information required by sub-part i, industrial dischargers shall submit a written report of bypasses containing the information required by sub-part a) i. 4. This part does not relieve industrial dischargers from any applicable reporting requirements of 40 C.F.R. Part 117 (2021) and 40 C.F.R. Part 302 (2021).

2.3.2. Sanitary Sewer Overflows and Releases

- a) For publicly owned treatment works (POTW) or domestic wastewater treatment plants, sanitary sewer overflows, including dry-weather overflows and wet weather overflows, are prohibited.
- b) Releases caused by improper operation and maintenance, which is to be determined by the Commissioner based on the totality of the circumstances, are prohibited.
- c) The permittee shall operate the collection, transmission, and treatment system so as to avoid sanitary sewer overflows and releases due to improper operation or maintenance. A “release” may be due to improper operation or maintenance of the collection system or may be due to other cause(s).
- d) The permittee shall take all reasonable steps to minimize any adverse impact associated with sanitary sewer overflows and releases.
- e) No new or additional flows shall be added upstream of any point in the collection, transmission, or treatment system that experiences greater than 5 sanitary sewer overflows and/or releases per year² or would otherwise

² This includes dry weather overflows, wet weather overflows, dry weather releases and wet weather releases.



overload any portion of the system. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after:

- 1) An authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem;
- 2) The correction work is underway; and
- 3) The cumulative, peak-design flows potentially added from new connections and line extensions upstream of any chronic sanitary sewer overflow or release point are less than or proportional to the amount of inflow and infiltration removal documented upstream from that point.

The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment to the permittee's DMR and uploaded to NetDMR. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

- f) In the event that chronic sanitary sewer overflows or releases have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium of the actions identified in this paragraph, the permittee may request a meeting with Division EFO staff to petition for a waiver based on mitigating evidence.
- g) For industrial dischargers, the discharge of pollutants from any location other than a permitted outfall is prohibited.

2.3.3. Upset

- a) An upset shall constitute an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;



- iii. The permittee submitted information required under "Reporting of Noncompliance" within 24 hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and
 - iv. The permittee complied with any remedial measures required under "Adverse Impact".
- b) In any enforcement proceeding, the permittee seeking to establish the affirmative defense of an upset has the burden of proof.

2.3.4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.3.5. Bypass

- a) Bypasses (see subpart 4.1) are prohibited unless all the following conditions are met:
- i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;
 - ii. There are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
 - a. For anticipated bypass, the permittee submits prior notice, if possible at least ten days before the date of the bypass, or
 - b. For unanticipated bypass, the permittee submits notice of an unanticipated bypass within 24 hours from the time that the permittee becomes aware of the bypass.
- b) Bypasses that do not cause effluent limitations to be exceeded may be allowed only if the bypass is necessary for essential maintenance to assure efficient operation. The permittee must sample and report the discharge during each



bypass to demonstrate that the bypass does not cause effluent limitations to be exceeded.

2.3.6. Washout

- a) For domestic wastewater plants only, a "*washout*" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decreases due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to inflow and infiltration.
- b) A washout is prohibited. If a washout occurs the permittee must report the incident to the Division in the appropriate EFO within 24 hours by telephone. A written submission must be provided within five days. The washout must be noted on that month's DMR. Each day of a washout is a separate violation.

2.4. LIABILITIES

2.4.1. Civil and Criminal Liability

Except as provided in permit conditions for "*Bypass*" (**Section 2.3.5**), "*Sanitary sewer overflows and Releases*" (**Section 2.3.2**), and "*Upset*" (**Section 2.3.3**), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including, but not limited to, fish kills and losses of aquatic life and/or wildlife as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2.4.2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or the Federal Water Pollution Control Act, as amended.



PART 3

3. PERMIT SPECIFIC REQUIREMENTS

3.1. CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a certified wastewater treatment operator, and the collection system shall be operated under the supervision of a certified collection system operator in accordance with the Water Environmental Health Act of 1984.

3.2. POTW PRETREATMENT PROGRAM GENERAL PROVISIONS

As an update of information previously submitted to the Division, the permittee will undertake the following activity:

- a) The permittee has been delegated the primary responsibility and therefore becomes the "Control Authority" for enforcing the 40 CFR § 403 General Pretreatment Regulations. Where multiple plants are concerned the permittee is responsible for the Pretreatment Program for all plants within its jurisdiction. The permittee shall implement and enforce the Industrial Pretreatment Program in accordance with the Tennessee Water Quality Control Act § 69-3-123 through 69-3-128, Rule [0400-40-14](#), and the legal authorities, policies, procedures, and financial provisions contained in its approved Pretreatment Program, except to the extent this permit imposed stricter requirements. Such implementation shall require but not limit the permittee to do the following:
 - i. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user (IU), whether the IU is in compliance with the pretreatment standards;
 - ii. Require development, as necessary, of compliance schedules for each IU for the installation of control technologies to meet applicable pretreatment standards;
 - iii. Require all industrial users to comply with all applicable monitoring and reporting requirements outlined in the approved pretreatment program and IU permit;
 - iv. Maintain and update, as necessary, records identifying the nature and character of industrial user discharges, and retain such records for a minimum of three (3) years;



- v. Obtain appropriate remedies for noncompliance by an IU with any pretreatment standard and/or requirement;
 - vi. Publish annually, pursuant to Rule [0400-40-14-.08\(6\)\(b\)8](#), a list of industrial users that have significantly violated pretreatment requirements and standards during the previous twelve-month period;
 - vii. Maintain an adequate revenue structure for continued operation of the pretreatment program;
 - viii. Update its Industrial Waste Survey at least once every five years. Results of this update shall be submitted to the Division of Water Resources, Pretreatment Section within 120 days of the effective date of this permit, unless such a survey has been submitted within 3 years of the effective date; and
 - ix. Submit a written technical evaluation of the need to revise local limits within 120 days of the effective date of this permit to the state pretreatment program coordinator. The evaluation shall include the most recent pass-through limits proposed by the Division. The technical evaluation shall be based on practical and specialized knowledge of the local program and not be limited by a specified written format.
- b) The permittee shall enforce Rule [0400-40-14-.05](#), "prohibited discharges". Pollutants introduced into the POTW by a non-domestic source shall not cause pass through or interference as defined in Rule [0400-40-14-.03](#). These general prohibitions and the specific prohibitions in this section apply to all non-domestic sources introducing pollutants into the POTW whether the source is subject to other National Pretreatment Standards or any state or local pretreatment requirements.

Specific prohibitions: Under no circumstances shall the permittee allow introduction of the following wastes into the POTW:

- i. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than 140°F or 60°C using the test methods specified in 40 CFR § 261.21;
- ii. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0 unless the system is specifically designed to accommodate such discharges;
- iii. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;



- iv. Any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW;
 - v. Heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40°C (104°F) unless the Division, upon request of the POTW, approves alternate temperature limits;
 - vi. Any priority pollutant in amounts that will contaminate the treatment works sludge;
 - vii. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
 - viii. Pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems; or
 - ix. Any trucked or hauled pollutants, except at discharge points designated by the POTW.
- c) The permittee shall notify the Division of any of the following changes in user discharge to the system no later than 30 days prior to change of discharge:
- i. New introductions into such works of pollutants from any source which would be a new source as defined in Section 306 of the Act if such source were discharging pollutants;
 - ii. New introductions of pollutants into such works from a source which would be subject to Section 301 of the "Federal Water Quality Act as Amended" if it were discharging such pollutants; or
 - iii. A substantial change in volume or character of pollutants being introduced into such works by a source already discharging pollutants into such works at the time this permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the POTW, and on any anticipated impact on the effluent discharged from such works. If this discharge necessitates a revision of the current NPDES permit or pass-through guidelines, discharge by this source is prohibited until the Tennessee Division of Water Resources gives final authorization.

d) Reporting Requirements:

Upon notification, all semi-annual must be submitted electronically through [MyTDEC Forms](#) portal. Prior to electronic reporting approval, the report shall

be submitted to the Division's Central Office and a copy to the appropriate EFO no later than the 28th day of the month following each reporting period. Large programs with more than 20 SIUs will be granted an additional 15 days for report submittal.

The permittee shall provide a semiannual report briefly describing the permittee's pretreatment program activities over the previous six-month period. Reporting periods shall end on the last day of the months of March and September. For Control Authorities with multiple STPs, one report should be submitted with a separate Form 1 for each STP. Prior to approval of electronic reporting, each report shall conform to the format set forth in the State POTW Pretreatment Semiannual (or Annual) Report Package which contains information regarding:

- i. An updated listing of the permittee's industrial users;
- ii. Results of sampling of the influent and effluent of the wastewater treatment plant. At least once each reporting period, the permittee shall analyze the wastewater treatment plant influent and effluent for the following pollutants, using the prescribed sample types:

| Pollutant | Sample Type |
|------------------|--------------------------------------|
| chromium (III) | 24-hour composite |
| chromium (VI) | Per method requirements ³ |
| copper | 24-hour composite |
| lead | 24-hour composite |
| nickel | 24-hour composite |
| zinc | 24-hour composite |
| cadmium | 24-hour composite |
| mercury | Per method requirements ³ |
| silver | 24-hour composite |
| total phenols | grab |
| cyanide | grab |

If any particular pollutant is analyzed more frequently than is required, the permittee shall report the maximum and average values on the semiannual or annual report. All upsets, interferences, and pass-through violations must also be reported on the semiannual or annual report, along with the actions that were taken to determine the causes of the incidents and the steps that have been taken to prevent the incidents from recurring.

³ When a composite sample would compromise sample integrity, refer to 40 CFR § 136.3 Table II, including footnotes.



At least once during the term of this permit, the permittee shall analyze the effluent from the STP (and report the results in the next regularly scheduled report) for the following pollutants:

| | | |
|----------------|-----------------------|-----------------------------------|
| chromium III | cyanide | phthalates, sum of the following: |
| chromium VI | silver | bis (2-ethylhexyl) phthalate |
| copper | benzene | butyl benzylphthalate |
| lead | carbon tetrachloride | di-n-butylphthalate |
| nickel | chloroform | diethyl phthalate |
| zinc | ethylbenzene | 1,2 trans-dichloroethylene |
| cadmium | methylene chloride | tetrachloroethylene |
| mercury | naphthalene | toluene |
| phenols, total | 1,1,1 trichloroethane | trichloroethylene |

- iii. Compliance with categorical and local standards, and review of industrial compliance, which includes a summary of the compliance status for all permitted industries. Also included is information on the number and type of major violations of pretreatment regulations, and the actions taken by the POTW to obtain compliance. The effluent from all significant industrial users must be analyzed for the appropriate pollutants at least once every 12 months;
- iv. A list of industries in significant non-compliance as published in local newspapers in accordance with the requirements set forth in Rule [0400-40-14-.08\(6\)\(b\)8](#);
- v. A description of all substantive changes made to the permittee's pretreatment program. Any such changes shall receive prior approval. Substantive changes include, but are not limited to, any change in any ordinance, major modification in the program's administrative structure, local limits, or a change in the method of funding the program; and
- vi. A summary of the permittee's industrial user inspections, which includes information on the number and type of industry inspected. All significant industrial users must be inspected at least once every twelve months.

3.3. BIOSOLIDS MANAGEMENT PRACTICES

All sludge and/or biosolids use or disposal must comply with 40 CFR § 503 *et seq.* Biosolids shall be sampled and analyzed at a frequency dependent on the amount used annually.



Any facility that land applies non-exceptional quality biosolids must obtain an appropriate permit from the Division in accordance with Chapter [0400-40-15](#).

- a) Reopener: If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2) of the Clean Water Act.
- b) Notice of change in sludge disposal practice: The permittee shall give prior notice to the Director of any change planned in the permittee's sludge disposal practice. If land application activities are suspended permanently and sludge disposal moves to a municipal solid waste landfill, the permittee shall contact the local Division of Solid Waste Management office address for other permitting and approvals.

*STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF SOLID WASTE MANAGEMENT
Columbia Environmental Field Office
1421 Hampshire Pike
Columbia, Tennessee 38401
(931)380-3371*

3.4. BIOMONITORING REQUIREMENTS, ACUTE

The permittee shall conduct a 48-hour static acute toxicity test on two test species on samples of final effluent from Outfall 001. The test species to be used are Water Fleas (*Ceriodaphnia dubia*) and Fathead Minnows (*Pimephales promelas*).

The measured endpoint for toxicity will be the concentration causing 50% lethality (LC₅₀) of the test organisms. The LC₅₀ shall be determined based on a 50% lethality as compared to the controls, and as derived from linear interpolation.



Tests shall be conducted and results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

| Serial Dilutions for Whole Effluent Toxicity (WET) Testing | | | | | |
|---|---------------|------------------------------|------------------|------------------|----------------|
| 4 X PL | 2 X PL | Permit Limit (PL) | 0.50 X PL | 0.25 X PL | Control |
| % effluent | | | | | |
| 6.4 | 3.2 | 1.6 | 0.8 | 0.4 | 0 |

The dilution/control water used will be moderately hard water as described in [*Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*](#), EPA-821-R-02-012 (or the most current edition). An acute standard reference toxicant quality assurance test shall be conducted with each species used in the toxicity tests and the results submitted with the discharge monitoring report. Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the LC₅₀ is less than or equal to the permit limit indicated for each outfall in the above table(s).

All tests will be conducted using four separate grab samples of final effluent, to be used in four separate tests, and shall be collected at evenly spaced (6-hour) intervals over a 24-hour period. If in any control, more than 10% of the test organisms die in 48 hours, the test (control and effluent) is considered invalid and the test shall be repeated within two (2) weeks. Furthermore, if the results do not meet the acceptability criteria in the above-referenced *Methods for Measuring the Acute Toxicity* document, or if the required concentration-response review fails to yield a valid relationship per guidance contained in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein shall be conducted yearly (1/yr) for Outfall 001 and begin no later than 270 days from the effective date of this permit.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same



serial dilutions as presented in the corresponding table(s) above. The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation.

In the event of 2 consecutive test failures or 3 test failures within a 12-month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the Division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months. Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary, to conduct further analyses. The final determination of any extension period will be made at the discretion of the Division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.

Test procedures, quality assurance practices and determination of effluent lethality values will be made in accordance with [*Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*](#), EPA-821-R-02-012, or the most current edition. Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analysis shall be compiled in a report also written in accordance with the *Methods for Measuring the Acute Toxicity* document above.

A copy of the biomonitoring report (including any follow-up reports) shall be submitted to the Division as an attachment to the monthly DMR in NetDMR.



3.5. PLACEMENT OF SIGNS

The permittee shall place and maintain a sign at each outfall and any sanitary sewer overflow/release point in the collection system or the nearest publicly accessible location. For the purposes of this requirement, any point that has had a total of 5 or more overflows plus releases in the previous 12 months must be so posted. Signs at locations that are posted at the permit effective date must be maintained. Signs for locations identified during the permit term must be placed within 60 days of the event triggering the requirement.

The sign(s) should be clearly visible to the public from the bank and the receiving stream. The *minimum* sign size should be two feet by two feet (2' x 2') with one-inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following are given as examples of the minimal amount of information that must be included on the signs:

NPDES Permitted Municipal/Sanitary Outfall:

TREATED MUNICIPAL/SANITARY WASTEWATER
Town of Centerville
Centerville STP
(931) 729-4246
NPDES Permit NO. TN0024937
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Columbia

Unpermitted release/sanitary sewer overflow point:

UNTREATED WASTEWATER DISCHARGE POINT
Town of Centerville
Centerville STP
(931) 729-4246
NPDES Permit No. TN0024937
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Columbia



The permittee may request the removal of signs for unpermitted release/sanitary sewer overflows points only. This request should be sent to Division EFO staff detailing the work that has been completed to rectify the cause(s) contributing to sanitary sewer overflows and releases at that location. In no case will approval to remove the signs be granted if either a sanitary sewer overflow or release has occurred at that location in the previous 12 months.



PART 4

4. DEFINITIONS AND ACRONYMS

All terminology not specifically defined herein shall be defined in accordance with the Water Quality Control Act of 1977, T.C.A. Title 69, Chapter 3, Part 1 and Tennessee Rule 0400-40-05. The following terms have the meanings given below unless otherwise specified.

4.1. DEFINITIONS

For the purposes of this permit, **annually** is defined as a monitoring frequency of once every 12 months beginning with the effective date of this permit, so long as the following set of measurements for a given 12 month period are made approximately 12 months subsequent to that time.

Biosolids are treated sewage sludge that have contaminant concentrations less than or equal to the contaminant concentrations listed in Table 1 of subparagraph (3)(b) of Rule [0400-40-15-.02](#), meet any one of the ten vector attraction reduction options listed in part (4)(b)1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 of Rule [0400-40-15-.04](#), and meet either one of the six pathogen reduction alternatives for Class A listed in part (3)(a)3, 4, 5, 6, 7, or 8, or one of the three pathogen reduction alternatives for Class B listed in part (3)(b)2, 3, or 4 of Rule [0400-40-15-.04](#).

Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

A **calendar day** means the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

Combined sewer overflow or "CSO" means a discharge from a combined sewer system (CSS) at a point prior to the publicly owned treatment works (POTW) treatment plant headworks.

Combined sewer system or "CSS" means a wastewater collection system owned by a State or municipality which was originally designed to convey sanitary wastewaters (domestic, commercial, and industrial wastewaters) and stormwater through a single-pipe system into a publicly owned treatment works (POTW) treatment plant headworks.



A **composite sample** means a combination of not less than eight influent or effluent portions (aliquots), collected over a 24-hour period. Under certain circumstances a lesser time period may be allowed, but in no case less than eight hours. A sufficient volume of sample to perform all required analyses plus any additional amount for quality control must be obtained. For automatic samplers that use a peristaltic pump, a minimum 100 ml aliquot must be obtained.

The **daily maximum amount** means the total amount of any pollutant in the discharge by weight during any calendar day.

The **daily maximum concentration** is a limitation on the average concentration in units of mass per volume (e.g. milligrams per liter) of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily maximum concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily maximum concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

Degradation means the alteration of the properties of waters by the addition of pollutants, withdrawal of water, or removal of habitat, except those alterations of a short duration.

De Minimis is degradation of a small magnitude, as provided in this paragraph:

(a) Discharges and withdrawals:

1. Subject to the limitation in part 3 of this subparagraph, a single discharge other than those from new domestic wastewater sources will be considered de minimis if it uses less than five percent of the available assimilative capacity for the substance being discharged.

(Note: Consistent with T.C.A. § 69-3-108, special consideration will be given to bioaccumulative substances to confirm the effect is de minimis, even if they are less than five percent of the available assimilative capacity.)

2. Subject to the limitation in part 3 of this subparagraph, a single water withdrawal will be considered de minimis if it removes less than five percent of the 7Q10 flow of the stream.
3. If more than one activity described in part 1 or 2 of this subparagraph has been authorized in a segment and the total of the authorized and proposed impacts uses no more than 10% of the assimilative capacity, or 7Q10 low flow, they are presumed to be de minimis. Where the total of



the authorized and proposed impacts uses 10% of the assimilative capacity, or 7Q10 low flow, additional degradation may only be treated as de minimis if the Division finds on a scientific basis that the additional degradation has an insignificant effect on the resource.

- (b) Habitat alterations authorized by an Aquatic Resource Alteration Permit (ARAP) are de minimis if the Division finds that the impacts, individually and cumulatively, are offset by impact minimization and/or in-system mitigation, provided however, in Outstanding National Resource Waters (ONRWs) the mitigation must occur within the ONRW.

Discharge or **discharge of a pollutant** refers to the addition of pollutants to waters from a source.

A **dry weather overflow** means a sanitary sewer overflow that is not directly related to a rainfall event.

An **ecoregion** is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

The **geometric mean** of any set of values means the n^{th} root of the product of the individual values where n is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero shall be considered to be one.

A **grab sample** means a single sample collected at a particular time.

IC₂₅ means the inhibition concentration in which at least a 25% reduction in reproduction and/or growth in test organisms occurs.

Industrial discharger means those industries identified in the standard industrial classification manual, Bureau of the Budget, 1987, as amended and supplemented, under the category "Division D - Manufacturing" and such other classes of significant waste producers as the Board or Commissioner deems appropriate.

Industrial wastes means any liquid, solid, or gaseous substance, or combination thereof, or form of energy including heat, resulting from any process of industry, manufacture, trade, or business or from the development of any natural resource.



The ***instantaneous maximum concentration*** means the concentration, in units of mass per volume, of any pollutant parameter in a grab sample taken at any point in time.

The ***instantaneous minimum concentration*** means the minimum concentration, in units of mass per volume, of a pollutant parameter in a grab sample taken at any point in time.

LC₅₀ means the concentration that causes at least 50% lethality of the test organisms.

Major facility means a municipal or domestic wastewater treatment plant with a design capacity of one million gallons per day or greater; or any other facility or activity classified as such by the Commissioner.

Minor facility means any facility that is not a major facility.

The ***monthly average amount*** means the arithmetic mean of all the measured daily discharges by weight during the calendar month when the measurements were made.

The ***monthly average concentration***, means the arithmetic mean of all samples collected in a one calendar-month period, expressed in units of mass per volume of any pollutant other than bacteria.

National Pollutant Discharge Elimination System or ***NPDES*** means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the federal CWA. The term includes an "approved program."

New or increased discharge is a new discharge of pollutants to waters of the state or an increase in the authorized loading of a pollutant above either (1) numeric effluent limitations established in a National Pollutant Discharge Elimination System permit for that discharge, or (2) if no such limitations exist, the actual discharges of that pollutant.

New source means any building, structure, facility, area, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced after the publication of state or federal regulations prescribing a standard of performance.



Nitrate (as N) means nitrate reported as nitrogen.

A **one-week period** (or **calendar-week**) means the period from Sunday through Saturday. For weekly average reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

Owner or **operator** means any person who owns, leases, operates, controls, or supervises a source.

Person means an individual, association, partnership, corporation, municipality, state or federal agency, or an agent or employee thereof.

Point source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant means sewage, industrial wastes, or other wastes.

Pollution means such alteration of the physical, chemical, biological, bacteriological, or radiological properties of the waters of this state including, but not limited to, changes in temperature, taste, color, turbidity, or odor of the waters that will:

- (a) Result or will likely result in harm, potential harm, or detriment to the public health, safety, or welfare;
- (b) Result or will likely result in harm, potential harm, or detriment to the health of animals, birds, fish, or aquatic life;
- (c) Render or will likely render the waters substantially less useful for domestic, municipal, industrial, agricultural, recreational, or other reasonable uses; or
- (d) Leave or likely leave the waters in such condition as to violate any standards of water quality established by the Board.

Quarter means any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.



Rainfall event means any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

Rationale or **fact sheet** means a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency's permit decision.

A **reference site** means the least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

A **reference condition** is a parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

Release means the flow of sewage from any portion of the collection or transmission system owned or operated by a publicly owned treatment works (POTW) or a domestic wastewater treatment plant, other than through permitted outfalls, that does not reach waters. In addition, a "release" includes a backup into a building or private property that is caused by blockages, flow conditions, or other malfunctions originating in the collection or transmission system owned or operated by the permittee. A "release" does not include:

- (a) Backups into a building or private property caused by blockages or other malfunctions originating in a private lateral;
- (b) Events caused by vandalism;
- (c) Events caused by lightning strike;
- (d) Events caused by damage due to third parties working on other utilities in the right of way, e.g., cross bore from telecommunications line; or
- (e) Events that are directly incidental to planned, preventative, or predictive maintenance provided the site is under the direct control of a certified operator or contractor, public access is restricted, and the site is disinfected.

Sanitary sewer overflow or SSO means an unpermitted discharge of wastewater from the collection or treatment system of a publicly owned treatment works



(POTW) or a domestic wastewater treatment plant other than through a permitted outfall.

Schedule of compliance means a schedule of remedial measures including an enforceable sequence of actions or operations leading to compliance with an effluent limitation, condition of a permit, other limitation, prohibition, standard, or regulation. This term includes, but is not limited to, schedules authorized by national effluent limitations guidelines or by Tennessee's water quality standards.

The term ***semi-annually***, for the purposes of this permit, means the same as once every 6 months. Measurements of the limited effluent parameters may be made any time during a 6 month period beginning from the effective date of this permit, so long as the second set of measurements for a given 12 month period are made approximately 6 months subsequent to that time, if feasible.

Severe property damage, when used to consider the allowance of a bypass, means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

Sewage means water-carried waste or discharges from human beings or animals, from residences, public or private buildings, or industrial establishments, or boats, together with such other wastes and ground, surface, storm, or other water as may be present

Sewerage system means the conduits, sewers, and all devices and appurtenances by means of which sewage and other waste is collected, pumped, treated, or disposed.

Sludge or ***sewage sludge*** is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

Source means any activity, operation, construction, building, structure, facility, or installation from which there is or may be the discharge of pollutants.



Standard of performance means a standard for the control of the discharge of pollutants that reflects the greatest degree of effluent reduction that the Commissioner determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants.

Stream means a surface water that is not a wet weather conveyance.

Subecoregion is a smaller, more homogenous area that has been delineated within an ecoregion.

Total dissolved solids or **TDS** means nonfilterable residue.

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

The term **washout** is applicable to domestic wastewater activated sludge plants and means a loss of mixed liquor suspended solids (MLSS) of 30.00% or more from the aeration basin(s).

Waters means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof, except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

Watercourse means a man-made or natural hydrologic feature with a defined linear channel that discretely conveys flowing water, as opposed to sheet-flow.

Weekly average amount means the arithmetic mean of all the measured daily discharges by weight during the calendar week when the measurements were made.

Weekly average concentration means the arithmetic mean of all the concentrations expressed in units of mass per volume of any pollutant measured in a calendar week.



Wet weather conveyance means, notwithstanding any other law or rule to the contrary, man-made or natural watercourses, including natural watercourses that have been modified by channelization:

- (a) That flow only in direct response to precipitation runoff in their immediate locality;
- (b) Whose channels are at all times above the groundwater table;
- (c) That are not suitable for drinking water supplies; and
- (d) In which hydrological and biological analyses indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months.

Wet weather overflow means a sanitary sewer overflow that is directly related to a specific rainfall event.

Wet weather release means a release that is directly related to a specific rainfall event.

4.2. ACRONYMS AND ABBREVIATIONS

| | |
|---------------------|---|
| 1Q10 – | 1-day minimum, 10-year recurrence interval |
| 30Q5 – | 30-day minimum, 5-year recurrence interval |
| 7Q10 – | 7-day minimum, 10-year recurrence interval |
| BAT – | best available technology economically achievable |
| BCT – | best conventional pollutant control technology |
| BDL – | below detection limit |
| BOD ₅ – | five-day biochemical oxygen demand |
| BPT – | best practicable control technology currently available |
| CBOD ₅ – | five-day carbonaceous biochemical oxygen demand |
| CEI – | compliance evaluation inspection |
| CFR – | code of federal regulations |
| CFS – | cubic feet per second |
| CFU – | colony forming units |
| CIU – | categorical industrial user |
| CSO – | combined sewer overflow |
| DMR – | discharge monitoring report |



| | |
|--------------------|--|
| D.O. – | dissolved oxygen |
| <i>E. coli</i> – | <i>Escherichia coli</i> |
| EPA – | Environmental Protection Agency |
| EFO – | environmental field office |
| GPM – | gallons per minute |
| IC ₂₅ – | inhibition concentration causing 25% reduction in survival, reproduction, and growth of the test organisms |
| IU – | industrial user |
| IWS – | industrial waste survey |
| LB (lb) – | pound |
| LC ₅₀ – | acute test causing 50% lethality |
| MDL – | method detection limit |
| MGD – | million gallons per day |
| mg/L – | milligrams per liter |
| ML – | minimum level of quantification |
| mL – | milliliter |
| MLSS – | mixed liquor suspended solids |
| MOR – | monthly operating report |
| NODI – | no discharge code in NetDMR |
| NPDES – | national pollutant discharge elimination system |
| PL – | permit limit |
| POTW – | publicly owned treatment works |
| SAR – | semi-annual report [pretreatment program] |
| SIU – | significant industrial user |
| SSO – | sanitary sewer overflow |
| STP – | sewage treatment plant |
| TBEL – | technology-based effluent limit |
| TCA – | Tennessee code annotated |
| TDEC – | Tennessee Department of Environment and Conservation |
| TIE/TRE – | toxicity identification evaluation/toxicity reduction evaluation |
| TMDL – | total maximum daily load |
| TRC – | total residual chlorine |
| TSS – | total suspended solids |
| WQBEL – | water quality-based effluent limit |



4.3. RESOURCES, HYPERLINKS, AND WEB PAGES

Clean Water Act NPDES Electronic Reporting (eReporting) Information

<https://www.epa.gov/compliance/npdes-ereporting>

Electronic Code of Federal Regulations (eCFR), Title 40 (40 CFR § 1 through § 1099)

https://www.ecfr.gov/cgi-bin/text-idx?SID=75202eb5d09974cab585afeea981220b&mc=true&tpl=/ecfrbrowse/Title40/40chapt_erl.tpl

Electronic Reporting (NetDMR) Waiver Request

https://www.tn.gov/content/dam/tn/environment/water/documents/wr_ereporting_waiver.pdf

Low Flow Statistics Tools: A How-To Handbook for NPDES Permit Writers (EPA)

https://www.epa.gov/sites/production/files/2018-11/documents/low_flow_stats_tools_handbook.pdf

Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (EPA)

https://www.epa.gov/sites/production/files/2015-08/documents/acute-freshwater-and-marine-wet-manual_2002.pdf

NetDMR Login

<https://cdxnodengn.epa.gov/net-netdmr/>

NetDMR, MyTDEC Forms, & Electronic Reporting Information

<https://www.tn.gov/environment/program-areas/wr-water-resources/netdmr-and-electronic-reporting.html>

NPDES Compliance Inspection Manual (EPA)

<https://www.epa.gov/sites/production/files/2017-01/documents/npdesinspect.pdf>

NPDES Electronic Reporting Rule

<https://www.federalregister.gov/documents/2015/10/22/2015-24954/national-pollutant-discharge-elimination-system-npdes-electronic-reporting-rule>

Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys (QSSOP)

https://www.tn.gov/content/dam/tn/environment/water/documents/DWR-PAS-P-01-Quality_System_SOP_for_Macroinvertebrate_Stream_Surveys-081117.pdf

Rules of the TN Department of Environment and Conservation, Chapter 0400-40

<https://publications.tnsosfiles.com/rules/0400/0400-40/0400-40.htm>



Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA)

https://www.epa.gov/sites/production/files/2015-08/documents/short-term-chronic-freshwater-wet-manual_2002.pdf

TDEC Water Quality Rules, Reports, and Publications

<https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html>

Technical Support Document for Water Quality-based Toxics Control (EPA)

<https://www3.epa.gov/npdes/pubs/owm0264.pdf>

Tennessee Nutrient Reduction Framework

https://www.tn.gov/content/dam/tn/environment/water/tmdl-program/wr-ws_tennessee-draft-nutrient-reduction-framework_030315.pdf

Tennessee Plant Optimization Program (TNPOP)

<https://www.tn.gov/environment/program-areas/wr-water-resources/tn-plant-optimization-programs/tnpop.html>

Tennessee Water Resources Data and Map Viewers

<https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-resources-data-map-viewers.html>

USGS StreamStats

https://www.usgs.gov/mission-areas/water-resources/science/streamstats-streamflow-statistics-and-spatial-analysis-tools?qt-science_center_objects=0#qt-science_center_objects

USGS SWToolbox

<https://www.usgs.gov/software/swtoolbox-software-information>

RATIONALE

**Town of Centerville
Centerville STP
NPDES Permit No. TN0024937
Permit Writer: Wade Murphy**

1. PERMIT STATUS & PUBLIC PARTICIPATION

| | |
|----------------------------------|-----------|
| Permit Type: | Municipal |
| Classification: | Minor |
| Previous Issuance Date: | 29-JAN-19 |
| Previous Expiration Date: | 31-OCT-23 |
| Previous Effective Date: | 01-FEB-19 |

As provided under Rule 0400-40-05-.06, this permit allows 30 days for public comment on the proposed permit. The 30-day public comment period begins the date this permit is placed on public notice. The public notice document for this permit can be found at the Division's [Water Notices and Hearings website](#) under "Permit Public Notices".

| | |
|-----------------------------|--------------------|
| Public Notice Date: | September 26, 2023 |
| Comment Period Ends: | October 26, 2023 |

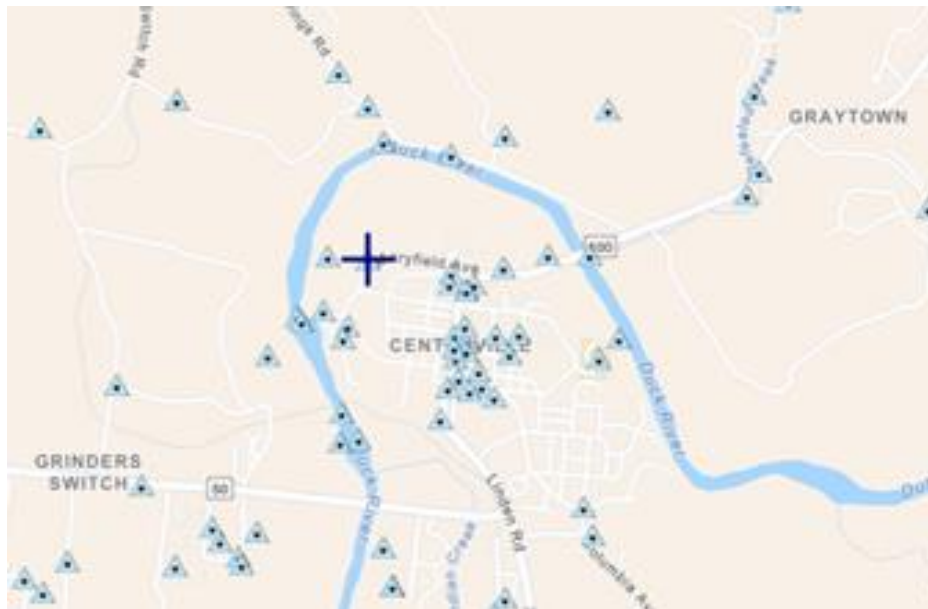
Those wishing to make a formal comment on the proposed permit may submit comments electronically to Water.Permits@tn.gov, or by mail to:

*Division of Water Resources - Water Based Systems Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, TN 37243-1102*

The public may also request a public hearing on a proposed permit by submitting such a request in writing during the public comment period specified above. The request should indicate the interest of the party filing it and the reasons why a hearing is warranted. A request for public hearing should be submitted as soon as practicable to the addresses provided above. Questions regarding the draft permit may be directed to 1-888-891-TDEC.

2. FACILITY INFORMATION

| | |
|------------------------------------|--|
| Permittee Name: | Town of Centerville |
| Project Name: | Centerville STP |
| Location: | 110 Lawson Street, Centerville, Hickman County, Tennessee |
| Contact: | Honorable Gary Jacobs - Mayor (931) 729-4246 mayor@centervilletn.org |
| Design Flow Rate: | 0.75 MGD |
| Percentage Industrial Flow: | Approximately 30% of actual average flow of 0.27 MGD |
| Certified Operator Grades: | STP: III; CS: I; Date Rated: 10/11/00 |
| Treatment Description: | Activated sludge plant with chlorination |



3. RECEIVING STREAM INFORMATION

| | | | | |
|--------------------------------|--|-------------------|--------------------------------|-------------------|
| Receiving Waterbody: | Duck River at mile 71.5 | | | |
| Watershed Group: | Duck-Lower | | | |
| Hydrocode: | 06040003 | | | |
| Low Flow: | 1Q10 = 154 MGD (239CFS); 30Q5 = 224 MGD (346 CFS) | | | |
| Low Flow Reference: | USGS HydrologicToolbox, Gage Station 03601990 | | | |
| Stream Designated Uses: | <i>Domestic Water Supply</i> | <i>Industrial</i> | <i>Fish & Aquatic Life</i> | <i>Recreation</i> |
| | | X | X | X |
| | <i>Livestock & Wildlife</i> | <i>Irrigation</i> | <i>Navigation</i> | <i>Trout</i> |
| | X | X | | |

In this permit, USGS Gage Station 03601990, located just upstream of the outfall at Highway 100, provides sufficient data to characterize the low flow of the receiving stream. Gage data from 2001 through 2022 was analyzed with Hydrologic Toolbox and used to calculate the 1Q10 and 30Q5 flows above. The drainage area for the gage (2,048 square miles) and the outfall (2,050 square miles) are almost identical, so this permit just uses the Hydrologic Toolbox outputs. Appendix 5 **below** details the Hydrologic Toolbox outputs used for this calculation.

4. NEW PERMIT LIMITATIONS AND COMPLIANCE SCHEDULE SUMMARY

- a) The units for *E. coli* have been standardized to number per 100 mL (#/100 mL). Previously, the Division used either MPN/100 mL or CFU/100 mL. The identification of one of these two units indirectly created a requirement for a specific type of testing methodology. By utilizing #/100 mL unit, permittees are provided the flexibility to select the 40 CFR § 136 method that is most suitable for their operations. The limit value (number) will remain the same as the limit units are functionally equivalent.

The permit requires a sufficiently sensitive test method to be used in analysis for mercury. Section 1.2.3. has been revised to read, "All sampling for total mercury (application, pretreatment, etc.) shall use Methods 1631, 245.7 or any additional method in 40 CFR § 136 with a maximum detection limit of 5 ng/L."

Language throughout the permit has been updated to reflect the eReporting phase 2 requirements in 40 CFR § 127. This includes (but is not limited to) detailing specific data elements that are required to be reported for sanitary

sewer overflows, releases and bypasses as well as pretreatment program information.

b) Compliance Schedule Summary

| Description of Report to be Submitted | Reference Section in Permit |
|---|-----------------------------|
| Monthly Discharge Monitoring Reports | 1.3.1. |
| Monthly Operational Reports | 1.3.4. |
| Bypass and Sanitary sewer overflow and Release Report | 1.3.5.1. |
| Industrial Waste Survey Report within 120 days of the effective permit date | 3.2. |
| Technical review of the need to recalculate local limits within 120 days of the permit effective date | 3.2. |
| Biomonitoring Report beginning within 270 days of the effective permit date | 3.4. |

- c) For comparison, this rationale contains a table depicting the previous permit limits and effluent monitoring requirements in [Appendix 1](#).

5. PREVIOUS PERMIT TERM REVIEW

A review of the permittee's Discharge Monitoring Reports (DMRs) from September 2020 through August 2023 reveals that the facility consistently meets the numerical effluent limits in the NPDES permit but routinely has sanitary sewer overflows. Of the 30 overflows reported during the summarized reporting period, 26 events, or 87%, are associated with wet weather causes. A summary of data reported on DMRs during the previous permit term is located in [Appendix 2](#).

The Division personnel from the Columbia Environmental Field Office performed a Compliance Evaluation Inspection (CEI) of the permittee's facility on August 18, 2020, a Compliance Sampling Inspection (CSI) on June 2, 2023, a Pretreatment Compliance Inspection (PCI) on May 25, 2022, and a Pretreatment Technical Visit (TAV) on May 31, 2023. Mr. DeWitt Logsdon conducted the inspections and found the facility to comply with the permit and program requirements. The Division suggested on the most recent visit that Mr. Dotson arrange for a backup person to submit discharge monitoring reports electronically to TDEC.

6. PROPOSED EFFLUENT LIMITS AND RATIONALE

| PARAMETERS | MONTHLY AVERAGE CONCENTRATION (MG/L) | MONTHLY AVERAGE AMOUNT (LB/DAY) | WEEKLY AVERAGE CONCENTRATION (MG/L) | WEEKLY AVERAGE AMOUNT (LB/DAY) | DAILY MAXIMUM CONCENTRATION (MG/L) | DAILY MINIMUM PERCENT REMOVAL | RATIONALE |
|--------------------------|---|--|---|---|--|--|--|
| BOD ₅ | 30 | 188 | 40 | 250 | 45 | 40 | Rule 0400-40-05-.09 |
| Total Suspended Solids | 30 | 188 | 40 | 250 | 45 | 40 | Rule 0400-40-05-.09 |
| Dissolved Oxygen | 1.0 (daily minimum) instantaneous | — | — | — | — | — | D.O. protection, Refer to 6.1 below |
| Total Chlorine Residual | — | — | — | — | 2.0 | — | Refer to 6.5 below |
| Total Nitrogen | — | — | — | — | Report (qtr max.) | Report (qtr load) | Refer to 6.6 below |
| Total Phosphorus | — | — | — | — | Report (qtr max.) | Report (qtr load) | Refer to 6.6 below |
| <i>E. coli</i> (#/100mL) | 126/100 mL | — | — | — | 487/100 mL | — | Rule 0400-40-03-.03 , Refer to 6.7 below |
| Settleable Solids (mL/L) | — | — | — | — | 1.0 | — | Rule 0400-40-05-.09 |
| pH (standard units) | 6.0 -9 .0 | — | — | — | — | — | Rule 0400-40-03-.03 |
| Flow (MGD): | | | | | | | |
| Influent | Report | — | — | — | Report | — | Used to quantify pollutant load |
| Effluent | Report | — | — | — | Report | — | Used to quantify pollutant load |
| Whole Effluent Toxicity: | | | | | | | |
| 48 hour LC ₅₀ | 1.6% per sample | — | — | — | — | — | Refer to 6.8 below |
| | | | | | | | |
| | Monthly Total | | Refer to 7 below | | | | |
| Dry Weather | Sanitary sewer overflows | 0 | Refer to 7 below | | | | |
| Wet Weather | Sanitary sewer overflows | 0 | Refer to 7 below | | | | |

Note: Weekly limitations on BOD₅ and TSS concentrations are given as required per 40 CFR 133.102(a)(2) or 133.102(a)(4)(2) & 133.102 (b)(2) respectively; daily BOD₅ and TSS limitations are authorized by T.C.A. 0400-40-05-.09; monthly and weekly mass loads are limited per 40 CFR 122.45(f) and based on the design flow as per 40 CFR 122.45(b); monthly average percent removal rates for BOD₅ and TSS are required per 40 CFR 133.102(a)(3) or 133.102(a)(4)(iii) and 133.102 (b)(3) respectively. A minimum 40% daily removal rate is required as equivalent to a daily mass load limitation.

6.1. CONVENTIONAL PARAMETERS

6.1.1. CBOD₅ and Dissolved Oxygen

Biochemical oxygen demand, or BOD, is a measure of the oxygen used when biological processes break down organic pollutants in wastewater. The amount of oxygen used is more specifically referred to as the five-day biochemical oxygen demand, or BOD₅. This parameter is used in the wastewater industry to measure both the strength of wastewater and the performance of wastewater treatment processes.

Limits on the oxygen demand remaining in the treated wastewater is often necessary to prevent pollutants in the wastewater from driving oxygen in the receiving stream down below the levels necessary to support fish and aquatic life. Additionally, the breakdown of ammonia into other forms of nitrogen also requires oxygen and therefore exerts an oxygen demand on receiving wastewaters.

For this facility, the monthly average BOD₅ limit of 30 mg/L is a technology-based effluent limit for conventional secondary treatment plants ([0400-40-05-.09](#)).

The dissolved oxygen effluent limitation of 1.0 mg/L is a practical limit achievable by the facility rather than a water-quality based limit necessary to protect fish and aquatic life. A minimum oxygen level of 1.0 mg/L is necessary in a treatment system to prevent nuisance conditions associated with anaerobic environments.

6.1.2. Total Suspended Solids (TSS)

Total Suspended Solids is a general indicator of the quality of a wastewater and will be limited in this permit. The technology-based TSS limit for conventional treatment plants is provided in Tennessee Rule [0400-40-05-.09\(1\)\(a\)](#).

| TSS - Conventional Secondary Treatment Plants | | | |
|--|-----------------------|----------------------|------------------------|
| <i>Monthly Average</i> | <i>Weekly Average</i> | <i>Daily Maximum</i> | <i>Monthly Average</i> |
| 30 mg/L | 40 mg/L | 45 mg/L | 85 % Removal |



6.1.3. Percent Removal

The treatment facility is required to remove 85 % of the BOD₅ and TSS that enter the facility on a monthly basis. This is part of the minimum requirement for all municipal treatment facilities contained in Code of Federal Regulations (CFR) 40 § 133.102. The reasons stated by the EPA for these requirements are to achieve these two basic objectives:

- i. To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems; and
- ii. To help prevent intentional dilution of the influent wastewater as a means of meeting permit limits.

The treatment facility is required to remove 40 % of the BOD₅ and TSS that enter the facility on a daily basis. This percent removal will be calculated three times per week and recorded on the Monthly Operation Report. The number of excursions (days when BOD₅ and/or TSS removal is less than 40%) will be reported on the Discharge Monitoring Report.

6.1.4. Settleable Solids

The settleable solids limit of 1.0 ml/L is a technology-based limit established in Rule [0400-40-05-.09](#).

6.2. FLOW

Monitoring of flow quantifies the load of pollutants to the stream. Flow shall be reported in million gallons per day (MGD) and monitored at the time of sample collection.

6.3. PH

According to the State of Tennessee Water Quality Standards [Chapter [0400-40-03-.03\(3\)\(b\)](#)], the pH for the protection of Fish and Aquatic Life shall not fluctuate more than 1.0 unit over a period of 24 hours and shall not be outside the following ranges: 6.0 – 9.0 standard units (SU) in wadeable streams and 6.5 – 9.0 SU in larger rivers, lakes, reservoirs, and wetlands. Considering that the receiving stream will provide some buffering capacity, effluent limitation for pH will be retained in a range 6.0 to 9.0. The sample type will be grab.

6.4. AMMONIA (NH₃-N)

To assess ammonia toxicity impacts, the state utilizes Tennessee Rules, Chapter [0400-40-03-.03-3\(3\)\(j\)](#), dated September 11, 2019, to derive allowable instream protection values protective of chronic and acute exposures to a continuous

discharge. A mass balance equation with the treatment facility, stream flows, and these allowable values determines the monthly average and daily maximum permit limits.

The temperature used in calculations is determined based on measured ambient instream temperature or is estimated according to Tennessee's Three Grand Divisions as follows: East (winter 15°C, summer 25°C), Middle (winter 17°C, summer 27°C), and West (winter 20°C, summer 30°C). This calculations use an 8 pH because the average of ambient monitoring sampling results upstream of the outfall location is 7.7 SU.

Using temperature and pH values, the criterion continuous concentration (CCC) and criterion maximum concentration (CMC) values are calculated using the following equations:

$$CCC = 0.8876 * \left(\frac{0.0278}{1 + 10^{7.688 - pH}} + \frac{1.1994}{1 + 10^{pH - 7.688}} \right) * (2.126 * 10^{0.028 * (20 - MAX(T, 7))})$$

and

$$CMC = MIN \left\{ \left(\frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}} \right), \left(0.7249 * \left(\frac{0.0114}{1 + 10^{7.204 - pH}} + \frac{1.6181}{1 + 10^{pH - 7.204}} \right) * (23.12 * 10^{0.036 * (20 - T)}) \right) \right\}$$

The determined CCC and CMC values are then used in the mass balance equation as follows:

$$CCC = \frac{Q_s C_s + Q_{STP} C_{STP}}{Q_s + Q_{STP}} \quad \text{or} \quad C_{STP} = \frac{CCC(Q_s + Q_{STP}) - (Q_s C_s)}{Q_{STP}}$$

where:

| | | |
|------------------|---|---|
| CCC | = | Criteria continuous concentration (mg/L) |
| Q _s | = | 7Q10 flow of receiving stream (MGD) |
| Q _{STP} | = | Design flow of STP (MGD) |
| C _s | = | Assumed/Measured instream NH ₃ (mg/L) |
| C _{STP} | = | Allowable STP discharge of NH ₃ (mg/L) |

See below for calculations:

| CCC Calculation: Chronic Limits | | | |
|---|---|--|----------------------|
| Winter | | Summer | |
| Temp (°C)= | 17 | Temp (°C)= | 27 |
| pH= | 8 | pH= | 8 |
| MAX Expression | 17.0000 | MAX Expression | 27.0000 |
| Winter CCC= | 0.94 | Summer CCC= | 0.49 |
| CCC - Continuous Chronic Criterion Allowable instream NH3 concentration [mg/l] | | | |
| CCC= | <div>$\frac{(\text{Critical Low Flow [MGD]} * \text{Background Ammonia [mg/L]}) + (\text{Design Flow [MGD]} * \text{Effluent Concentration [mg/L]})}{(\text{Critical Low Flow [MGD]} + (\text{Design Flow [MGD]}))}$</div> | | |
| where: | 154 | Critical Low Flow [MGD] (1Q10 value) | |
| | 0.1 | Background Ammonia Concentration [mg/L] * | |
| | 0.75 | WWTP Design Flow or long-term average flow [MGD] | |
| Therefore, the Allowable Effluent Concentrations and corresponding Amounts in winter and summer are: | | | |
| Winter | | Summer | |
| 174.01 | Concentration [mg/L] | 81.565 | Concentration [mg/L] |
| 1088.4 | Amount [lb/day] | 510.2 | Amount [lb/day] |
| * In the absence of measured data, an assumed background concentration of 0.1 mg/L is used based on an Agreed Wasteload Allocation Modeling Methodology between the EPA and State of TN | | | |

| CMC Calculation: Acute Limits | | | |
|---|---|--|----------------------|
| Winter | | Summer | |
| Temp (°C)= | 17 | Temp (°C)= | 27 |
| pH= | 8 | pH= | 8 |
| MAX Expression | 17.0000 | MAX Expression | 27.0000 |
| Winter CMC= | 5.01 | Summer CMC= | 2.19 |
| CMC - Continuous Maximum Criterion Allowable instream NH3 concentration [mg/l] | | | |
| CMC= | <div><div>(Critical Low Flow [MGD] * Background Ammonia [mg/L]) + (Design Flow [MGD] * Effluent Concentration [mg/L])</div><div>(Critical Low Flow [MGD] + (Design Flow [MGD]))</div></div> | | |
| where: | 154 | Critical Low Flow [MGD] (7Q10 value) | |
| | 0.1 | Background Ammonia Concentration [mg/L] | |
| | 0.75 | WWTP Design Flow or long-term average flow [MGD] | |
| Therefore, the Allowable Effluent Concentrations and corresponding Amounts in winter and summer are: | | | |
| Winter | | Summer | |
| 1012.51 | Concentration [mg/L] | 430.406 | Concentration [mg/L] |
| 6333.3 | Amount [lb/day] | 2692.2 | Amount [lb/day] |
| * In the absence of measured data, an assumed background concentration of 0.1 mg/L is used based on an Agreed Wasteload Allocation Modeling Methodology between the EPA and State of TN | | | |

The permittee does not have reasonable potential to discharge ammonia at these concentrations. The application characterizes effluent ammonia as less than 1.0 mg/L and total nitrogen as less than 5.0 mg/L indicating that the biological treatment process nitrifies ammonia and denitrifies nitrogen compounds. This permit does not propose to include any ammonia monitoring or limiting.

6.5. CHLORINATION

The total residual chlorine (TRC) limit is derived using the mass balance formula and the EPA acute instream protection value of 0.019 mg/L for fish and aquatic life. Applying this formula yields the following calculation for the TRC daily maximum limit:

$$\frac{0.019 (Q_d + Q_s)}{Q_d} = \text{Limit (mg/L)} = \frac{0.019(.75 + 154)}{.75} = 3.92 \text{ mg/L} \approx 2.0 \text{ mg/L}$$

Where:

| | | |
|------------|---|--|
| 0.019 mg/L | = | acute instream protection value |
| 154 | = | Q _s – 1Q10 flow of receiving stream (MGD) |
| 0.75 | = | Q _d – design flow of STP (MGD) |

Similarly, the chronic instream protection value of 0.011 mg/L for fish and aquatic life is applied to the mass balance formula to determine the monthly average limit for TRC. Previous permits do not contain rationale for omitting this limit and may have utilized the belief that chlorine’s reactivity with other compounds will ensure it does not remain in solution long enough to result in chronic exposure to fish and aquatic life. The best way to reflect that chronic exposure to harmful levels of chlorine is not occurring is reporting successful operation of the de-chlorination technology in compliance with the monthly average limit. This added limit does not entail additional sampling but rather calculation of a monthly average value based on the sampling results in consideration of the method detection limit of the test method.

$$\frac{0.011 (Q_d + Q_s)}{Q_d} = \text{Limit (mg/L)} = \frac{0.011(.75 + 154)}{.75} = 2.270 \text{ mg/L} \approx 2.0 \text{ mg/L}$$

These calculations show that the effluent limit of 2.0 mg/L, based on good operational practices, is more stringent than the calculated water quality-based effluent limit. Therefore, the 2.0 mg/L limit applies and only as a daily maximum.

6.6. TOTAL NITROGEN AND TOTAL PHOSPHORUS

Nutrients are naturally occurring and essential components of healthy aquatic systems. Excessive amounts of nutrients, however, can impact water quality. The enrichment of a waterbody with nutrients, called eutrophication, can result in dense, rapidly multiplying growths, or blooms, of algal species and other nuisance aquatic plants. These have potential for negatively impacting the habitat for fish and aquatic life and degrading the water quality for drinking water supply and recreation uses. These impacts can present both locally from an individual activity and much further downstream from the cumulative impact of multiple activities. The Division has therefore developed and begun to implement a strategy to accomplish long-term nutrient reduction in Tennessee waters. The strategy, referred to as the [Tennessee Nutrient Reduction Framework](#) (NRF), contains proposed rationale and the methodology for implementing the strategy within a watershed area. Consequently, the Framework considers impacts from both point and non-point sources of nutrients and recommends possible reduction goals for both point and non-point sources. The NRF approach to nutrient reduction is intended to utilize an adaptive management approach in consideration of the facts presenting within a watershed and reevaluation of the effectiveness of progress being made. Regular reassessments of goals and action plans will be conducted by reviewing monitoring data, modeling results and other measures of success. As additional data becomes available (such as WWTP effluent characterization and instream water quality data), model results can be re-evaluated.

Therefore, for purposes of implementing this strategy, the Division is imposing a minimum of quarterly effluent characterization for total nitrogen and total phosphorus on all discharges of treated domestic wastewater. These values will be used to reevaluate the nutrient loads from discharges within a watershed over time for comparison with those loads from non-point sources.

In coordination with the NRF and in recognition that meeting nutrient limits may require changes in plant operations, the Division has created the Tennessee Plant Optimization Program (TNPOP), which is a free program created to provide technical assistance and other resources to participating wastewater treatment plants. TNPOP can help wastewater treatment plants optimize energy use and nutrient removal, which can result in cost and energy savings. Interested facilities should visit the Division's [TNPOP website](#) for a program description, frequently asked questions, and information on how to apply.



6.7. E. COLI

Disinfection of wastewater is required to protect the receiving stream from pathogenic microorganisms. *E. coli* is used as an indicator organism as a measure of the bacteriological health of a receiving stream and the effectiveness of disinfection. Both the geometric mean and daily maximum are limited for *E. coli* in accordance with Rule [0400-40-03-.03](#). The *E. coli* daily maximum limit of 487 colony forming units per 100 mL applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colony forming units per 100 mL applies to all other recreational waters. The units for *E. coli* have been standardized to #/100 mL, which is functionally equivalent to colony forming units.

6.8. BIOMONITORING

The Division evaluates all dischargers for reasonable potential to exceed the narrative water quality criterion “no toxics in toxic amounts”. The Division has determined that for municipal facilities with stream dilutions of less than 500 to 1, any of the following conditions may demonstrate reasonable potential to exceed this criterion:

- i. Toxicity is suspected or demonstrated;
- ii. A pretreatment program is required; or
- iii. The design capacity of the facility is greater than 1.0 MGD.

The whole effluent toxicity tests have all yielded results of greater than the highest dilution in the set of test serial dilutions (i.e. >12.8%). This scenario demonstrates absence of reasonable potential for toxics in toxic amounts since Centerville can never be 12.8 % of the stream at 0.75 MGD unless the stream low flow is 58 MGD or less. Therefore, this permit will continue to impose only annual whole effluent toxicity testing so that the permittee will have the four minimum analyses needed to complete the next application for permit renewal. Because the low flow of the river is more than 200 times the POTW design flow, the permit continues to impose acute whole effluent toxicity testing rather than chronic testing. However, this permit proposes a less stringent compliance concentration on the basis of an increased low flow value.

Since the receiving stream is the facility’s water source, the following equations are used to determine whole effluent toxicity limits.

$$Dilution\ Factor = \frac{Stream\ Low\ Flow}{Design\ Flow} = \frac{154}{.75} = 205$$

$$LC_{50} \% \geq \frac{100\%}{0.3 * Dilution Factor} \geq \frac{100\%}{0.3 * 205} \geq 1.6\%$$

Where:

| | |
|------------------|---|
| 154 | = 1Q10 Low Flow (MGD) |
| 0.75 | = Design Flow Capacity (MGD) |
| 0.3 | = Conversion factor to toxic units, acute |
| LC ₅₀ | = Lethality concentration to 50% of organisms |

6.9. METALS AND TOXICS

Pass-through limitations for heavy metals and other toxic substances have been recalculated as part of the permit issuance process and/or due to changes in industrial waste contribution to the POTW. This POTW is required to implement/maintain a pretreatment program. More frequent monitoring will be required in the permit if:

- The reported concentrations approach or exceed calculated allowable values;
- Significant amounts of particular pollutants are present which may impact the treatment process sludge character or the receiving stream; or
- Minimum information is lacking to accurately calculate water quality protection values, in which case additional stream monitoring may also be required.

A summary of the semi-annual report data does not indicate that the potential exists for the water quality criteria for any parameter to be exceeded. [Appendix 3](#) lists the metal and toxic parameter calculations and the procedure used to derive the results.

6.10. VOLATILE ORGANIC, ACID-EXTRACTABLE, AND BASE-NEUTRAL COMPOUNDS

The Division evaluated effluent concentrations of volatile organic, acid-extractable, and base-neutral compounds and antimony, arsenic, beryllium, selenium and thallium for potential to violate water quality criteria using the following mass balance equation:

$$C_m = \frac{Q_s C_s + Q_w C_w}{Q_s + Q_w}$$

Where:

| | | |
|----------------|---|---|
| C _m | = | resulting instream concentration after mixing |
| C _w | = | concentration of pollutant in wastewater |
| C _s | = | stream background concentration |

Q_w = wastewater flow (STP Design flow)
 Q_s = stream low flow

To protect water quality: $C_w \leq C_a$

Where: $C_a = \frac{(S_A)[C_m(Q_s + Q_w) - Q_s C_s]}{Q_w}$

C_a = STP allowable effluent concentration
 S_A = the percent Stream Allocation

The reasonable potential evaluation uses the following assumptions and procedures:

- a) Stream background concentrations, C_s , for all volatile organic, acid-extractable, and base-neutral compounds equal zero unless actual stream data exists to show otherwise. Due to the volatility and reactivity of volatile compounds, the background concentrations used for reasonable potential calculations is always assumed to be below detection.
- b) The stream allocation, S_A , is determined based on the size of a receiving stream in accordance with guidance provided in the Division's Reasonable Potential Analysis Procedures and is shown on the Reasonable Potential Spreadsheet in the Appendices.
- c) A mass balance equation uses the STP design flow, the receiving stream critical low flow (7Q10 or 1Q10), the state water quality numeric criteria, and the stream allocation safety factor to derive the allowable effluent concentrations.
- d) When pollutants have potential to violate standards because the concentrations are below detection limits but could be above the allowable water quality-based effluent concentrations, the pollutants are handled one of three (3) ways:
 - i. Additional testing of detected and non-detected pollutants is required if contributing industrial processes are likely to contain them and available analysis results were not performed using sufficiently sensitive methods as required by state rule 0400-40-03-.05(8).
 - ii. If sufficiently sensitive methods have been used with no detection shown and the contributing industrial processes do not reasonably contain that pollutant, the division drops the pollutant from further consideration.



- iii. Pollutants detected at levels high enough to violate standards are limited in the permit to the allowable concentration, C_w, based on STP design flow.

Calculations for this permit have been done using a standardized spreadsheet, titled "WQ Based Effluent Calculations - Other Compounds", and are located in [Appendix 4](#). All metals other than antimony, arsenic, beryllium, selenium, and thallium have been evaluated using procedures described in the rationale, or fact sheet, section headed, "METALS AND TOXICS".

The evaluation indicates that volatile organic, acid-extractable, and base-neutral compounds and antimony, arsenic, beryllium, selenium, and thallium do not exhibit the potential to violate water quality criteria and thus will not be given effluent limitations and monitoring requirements in the permit.

7. COLLECTION SYSTEMS

7.1. COLLECTION SYSTEM CERTIFIED OPERATOR

The collection system shall be operated under the supervision of a Grade I certified collection system operator in accordance with the Water Environmental Health Act of 1984.

7.2. COLLECTION SYSTEM OPERATION

For the purposes of demonstrating proper operation of the collection, transmission and treatment system, the permit treats releases separately from sanitary sewer overflows and bypass. State regulations at [0400-40-05-.07\(2\)](#) establish "standard conditions". These standard conditions include [0400-40-05-.07\(2\)\(n\)](#) that sets forth specific language prohibiting sanitary sewer overflows (defined in the regulations as a "discharge") and standard conditions in [0400-40-05-.07\(2\)\(l\)](#) and (m) pertaining to bypass. While the regulations prohibit sanitary sewer overflow (*i.e.*, discharges that reach or are likely to reach receiving waters) it does not prohibit "releases" that do not reach or are not likely to reach receiving waters. However, releases that do not reach receiving waters may be indicative of other problems, such as improper operation and maintenance of the sewer system. Whether another violation occurs or whether, for example, there is an unavoidable accident (see, e.g., § 69-3-114(a)), will involve case-specific evaluations. Regardless, the permit assures, without waiving rights to pursue other violations associated with a release, as applicable, that the permittee would, at a minimum be reporting and responding to releases. Any release potentially warrants permittee mitigation of human health risks via direct or indirect contact



and may demonstrate a hydraulic problem in the system that warrants permittee consideration as part of proper operation and maintenance of the system.

Proper operation and maintenance of the collection system may include, but is not limited to:

1. A comprehensive collection system map showing all drainage areas, manholes, pump stations (number and size of pumps), flow meters, chronic sanitary sewer overflow and release locations, miles of collection system, material and diameter of construction, and other relevant system elements.
2. Rainfall data at location(s) using method(s) representative of precipitation within the collection system area.
3. Flow meters at locations in the collection system that would enable drainage area analysis and prioritization based on the amount of inflow and infiltration (I/I) observed.
4. A collection system hydraulic model that predicts I/I problems in response to rainfall events and the effects of new conditions.

When determining if a location experiences chronic sanitary sewer overflows or releases, the term “event(s)” includes dry weather overflows, wet weather overflows, dry weather releases and wet weather releases.

7.3. LOW PRESSURE SYSTEM OWNERSHIP/CONTROL

On May 15, 2022, Tennessee Rule 0400-40-05 became effective. In those rules, clarifying language was added regarding low pressure systems. The Board received a comment during the rulemaking process noting that the inclusion of ownership or control of low pressure systems in Tennessee Rule 0400-40-06 governing land based disposal systems should be included Tennessee Rule 0400-40-05 which governs discharging systems. The response to that comment is included below to provide direction to municipal agencies in implementing this condition of the permit.

The Board agrees, and has added the following to Rule 0400-40-05-.07(2)(c) concerning proper operation and maintenance, “Low pressure pumps, low pressure tanks, septic tank effluent pumps (STEP), STEP tanks, and septic tank effluent gravity tanks are integral to the treatment and conveyance of sewage in a low-pressure system design, and shall be owned or under control of the municipality, other body of government, public utility district, or a privately-owned public utility demonstrating lawful jurisdiction over the service area.” This permit condition is not applicable to pumps and appurtenances that are service lines to

other than a low-pressure public system. This condition applies to sewer projects or extensions that are approved for construction after the effective date of the permit.

While the Board encourages direct ownership of the low pressure pumps and tanks, it does recognize that in some cases, operational control without direct asset ownership may suffice. The Board acknowledges that operational control may be implemented collectively by multiple local agencies. Operational control for privately-owned low pressure pumps and appurtenances appropriately includes the following:

- *Legal mechanism e.g. local regulations, ordinance, plumbing codes, resolution etc. that provides the authority to:*
 - *Deny the use of low pressure pumps and tanks*
 - *Establish and enforce design standards*
 - *Access the site and equipment (including inspection)*
 - *Obtain remedies for non-compliance*
 - *Conduct an emergency response*
- *Plans review process to ensure compliance with the locally established design standards (including inspection of installation)*
- *Construction, inspection, and approval process*
- *Preventative and emergency maintenance program*

In addition, all components of the sewerage system must be owned by a municipality, other body of government, public utility district, or a privately-owned public utility demonstrating lawful jurisdiction over the service area in accordance with Rule 0400-40-16-.02(8).

8. OTHER PERMIT REQUIREMENTS AND CONDITIONS

8.1. CERTIFIED WASTEWATER TREATMENT OPERATOR

The waste treatment facilities shall be operated under the supervision of a Grade III certified wastewater treatment operator in accordance with the Water Environmental Health Act of 1984. Operator grades are under jurisdiction of the Water and Wastewater Operators Certification Board. This NPDES permit is under jurisdiction of the Tennessee Board of Water Quality, Oil and Gas. Operator grades are rated and recommended by the Division of Water Resources pursuant to Rule [0400-49-01](#) and are included in this fact sheet for reference. The grades are intentionally not specified in the permit so that the operation certification board can authorize changes in grade without conflicting with this permit.



8.2. PRETREATMENT PROGRAM

The Town of Centerville has an approved pretreatment program.

At least once each reporting period, all permittees with approved pretreatment programs are required to analyze the STP influent and effluent for the following pollutant parameters: chromium (III), chromium (VI), copper, lead, nickel, zinc, silver, cadmium, mercury, total phenols, and cyanide. These pollutants were selected because, historically, they are the ones that tend to be predominant in industrial wastewaters. Other pollutants may be added to the list, as required.

During preparation of this permit, data from ten previous semiannual reports were analyzed. If any particular value of a pollutant equals or exceeds 85% of the pass-through limit, the pollutant was added to the list of those that are required to be sampled. Based on our review of the semiannual reports and other documents, sampling for additional pollutants is not required at this time.

Narrative conditions will be included for conducting and submitting an industrial waste survey and the local limits evaluation.

8.3. BIOSOLIDS MANAGEMENT PRACTICES

The Clean Water Act (CWA) requires that any NPDES permit issued to a publicly owned treatment works or any other treatment works treating domestic sewage shall comply with 40 CFR § 503, the federal regulation governing the use and disposal of sewage sludge. It is important to note that “biosolids” are sewage sludge that have been treated to a level so that they can be land applied.

The language in **section 3.3.** of the permit, relative to biosolids management, a CWA requirement, allows the “permitting authority” under 40 CFR § 503.9(p) to be able to enforce the provisions of § 503. The “permitting authority” relative to Part 503 is either a state that has been delegated biosolids management authority or the applicable EPA Region; for Tennessee it is EPA Region 4.

Tennessee regulates the land application of non-exceptional quality biosolids under state rules, Chapter [0400-40-15](#). The state rules became effective on June 30, 2013. Under these state rules, all facilities that land apply non-exceptional quality biosolids must obtain a biosolids permit from the division. The land application of non-exceptional quality biosolids under state rules is regulated through either a general permit or by an individual permit. Questions about the division’s biosolids regulations and permitting program should be directed to the State Biosolids Coordinator at:

*Division of Water Resources
State Biosolids Coordinator
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102
615-532-0625*

8.4. PERMIT TERM

In order to meet the target reissuance date for the Duck-Lower watershed and following the directives for the Watershed Management Program initiated in January 1996, the permit will be issued to expire in 2028.

8.5. ELECTRONIC REPORTING

The [NPDES Electronic Reporting Rule \(eRule\)](#), which became effective on December 21, 2016, replaces most paper-based reporting requirements with electronic reporting requirements. NetDMR allows NPDES permittees to submit DMRs electronically to EPA through a secure internet application and has been approved by Tennessee as the official electronic reporting tool for DMRs. This permittee has had a NetDMR subscriber agreement in place since April 2016.

Monitoring results shall be recorded monthly and submitted monthly using Discharge Monitoring Reports (DMRs) based on the effluent limits in **section 1.1** of the permit. DMRs and DMR attachments, including laboratory data and sanitary sewer overflow reports, shall be submitted electronically in [NetDMR](#) or other electronic reporting tool approved by the State, no later than the 15th of the month following the end of the monitoring period. All NPDES program reports must be signed and certified by a responsible official or a duly authorized representative, as defined in 40 CFR § 122.22.

According to 40 CFR § 127.15, states have the flexibility to grant temporary or episodic waivers from electronic reporting to NPDES permittees who are unable to meet the electronic reporting requirements. To obtain an electronic reporting waiver, an [electronic reporting waiver request](#) must be submitted by email to DWRwater.compliance@tn.gov or by mail to the following address:

*Division of Water Resources
Compliance and Enforcement Unit – NetDMR Waivers
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, TN 37243-1102*



For contact and training information about NetDMR electronic reporting, visit the Division's website [here](#).

The permit language has been modified to accommodate the implementation of the MyTDEC Forms electronic reporting tool. For more information, visit EPA's website on [eReporting requirements](#).

8.6. ANTIDegradation STATEMENT / WATER QUALITY STATUS

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter [0400-40-03-.06](#). It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.

Stream determinations for this permit action are associated with the waterbody segment identified by the Division as segment ID# TN06040003009_1000.

The Division has made a determination of the receiving waters associated with the subject discharge(s) and has found the river to be an exceptional Tennessee water. The Division assesses the entire Lower Duck River from Tennessee River (Kentucky Lake) to beginning of Upper Duck Watershed at River Mile 137.7 including the unnamed tributaries in Tennessee National Wildlife Refuge as exceptional due to being USFWS Critical Habitat for the Fluted Kidneyshell (*Ptychobranhus subtentum*) and Slabside Pearlymussel (*Pleuroaia dolabelloides*) from Ky Lake to Flat Ck (216 RM) as well as Federal endangered Clubshell, Pygmy Madtom, Birdwing Pearlymussel, Oyster Mussel. State threatened Coppercheek Darter and Water Stitchwort presenting in the reach. No permanent degradation of water quality above the level of *de minimis* will be allowed unless the applicant demonstrates to the Division that the degradation is for necessary economic or social development and will not interfere with or become injurious to any existing uses. The specific requirements for this demonstration are described in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06(4).

The Division has made a water quality assessment of the receiving waters associated with the subject discharge(s) and has found the receiving stream to be neither an exceptional nor outstanding national resource water. Additionally, the Division assesses the Duck River between the Piney River and Lick Creek to not have quality supporting its recreational use due to pathogens (*E. coli*) attributed to grazing in riparian zones.

Total Maximum Daily Loads (TMDLs) have been developed and approved for this waterbody segment on the following parameters and dates:

Parameter:

E.coli

TMDL Approval Date:

August 18, 2023

The proposed terms and conditions of this permit comply with the wasteload allocations of these TMDLs.

STPs are sources of pathogens, but must meet water quality standards at the end of the discharge pipe by disinfecting the effluent.

On April 27, 2023, the permittee submitted an update to its analysis of reasonable alternatives to the continued treated wastewater discharge into the Duck River at mile 71.5, as required for Exceptional Tennessee Waters by Rule [0400-40-03-.06\(c\)](#). The mayor reaffirmed that the practice of discharging treated effluent continues to be the most economical and feasible alternative due to lack of land available for land application and the distance and cost to pump raw sewage elsewhere for treatment.

The Division agrees with the permittee's alternatives analysis.

APPENDIX 1 –PREVIOUS PERMIT LIMITS

| PARAMETERS | MONTHLY AVERAGE CONCENTRATION (MG/L) | MONTHLY AVERAGE AMOUNT (LB/DAY) | WEEKLY AVERAGE CONCENTRATION (MG/L) | WEEKLY AVERAGE AMOUNT (LB/DAY) | DAILY MAXIMUM CONCENTRATION (MG/L) | DAILY MINIMUM PERCENT REMOVAL | MEASUREMENT FREQUENCY |
|---|--|--|---|---|--|--|--------------------------|
| BOD ₅ | 30 | 188 | 40 | 250 | 45 | 40 | 3/week |
| Total Suspended Solids | 30 | 188 | 40 | 250 | 45 | 40 | 3/week |
| Dissolved Oxygen (mg/L) | 1.0 (daily minimum) instantaneous | — | — | — | — | — | 5/week |
| Total Chlorine Residual (mg/L) | — | — | — | — | 2.0 (daily maximum) | — | 5/week |
| Total Nitrogen | — | — | — | — | Report | Report | 1/quarter |
| Total Phosphorus | —t | — | — | — | Report | Report | 1/quarter |
| <i>E. coli</i> (colonies/100ml) | 126/100 ml | — | — | — | 487/100 ml | — | 3/week |
| Settleable Solids (ml/l) | — | — | — | — | 1.0 (daily maximum) | — | 1/week |
| pH (standard units) | 6.0-9.0 | — | — | — | — | — | 5/week |
| Flow (MGD): | | | | | | | |
| Influent | Report | — | — | — | Report | — | 7/week |
| Effluent | Report | — | — | — | Report | — | 7/week |
| Whole Effluent Toxicity: | | | | | | | |
| 48 hour LC ₅₀ | 1.7% per sample | — | — | — | — | — | 1/year |
| Sanitary Sewer Overflows, Total Occurrences | | | Report | | | | continuous |
| Dry Weather Overflows, Total Occurrences | | | Report | | | | continuous |
| Bypass of Treatment, Total Occurrences | | | Report | | | | continuous |



APPENDIX 2 – DMR SUMMARY

| | Flow (MGD) | | Biochemical Oxygen Demand | | | Suspended Solids | | | Effluent (mg/l) | | | | | | | | | | Overflow and Bypass | |
|----------------|-----------------|-----------|---------------------------|-----------------|-----------|------------------|----------|-----------------|-----------------|---------|---------------|------------------|-----|-----------------|-----------|---------|-----------|-----------------|---------------------|-----------|
| | | | Influent | Effluent (mg/l) | | % | Influent | Effluent (mg/l) | | % | Settleable | pH | | Cl ₂ | Nutrients | | D.O. | E. coli | | |
| | Monthly Average | Daily Max | (mg/l) | Monthly Average | Daily Max | Removal | (mg/l) | Monthly Average | Daily Max | Removal | Solids (ml/l) | (std. units) Min | Max | Daily Max | TN mg/L | TP mg/L | Daily Min | Monthly Average | | Daily Max |
| | Report | Report | Report | | | 85 | Report | | | 85 | 1.0 | 6.0 | 9.0 | | | | 1.0 | 126 | | 487 |
| Limits | | | | | | | | | | | | | | | | | | | | |
| Summer | | | | 30 | 45 | | | 30 | 45 | | | | | 2.00 | | | | | | |
| Winter | | | | 30 | 45 | | | 30 | 45 | | | | | 2.00 | | | | | | |
| Average | 0.305 | 0.626 | 276 | 3 | 6 | 99 | 177.8 | 4 | 8 | 98 | 0.1 | 6.5 | 7.0 | 1.88 | 2.0 | 1.3 | 4.7 | 31 | 153 | |
| Maximum | 0.560 | 1.300 | 380.8 | 5 | 16 | 100 | 307.5 | 7 | 19 | 99 | 0.3 | 6.9 | 7.4 | 2.00 | 5.0 | 3.2 | 7.2 | 81 | 2420 | |
| Minimum | 0.165 | 0.229 | 167.4 | 2 | 3 | 97 | 95.5 | 2 | 3 | 95 | 0.1 | 5.5 | 6.5 | 1.41 | 0.9 | 0.1 | 2.8 | 10 | 54 | |
| + = Exceedence | | | | | | | | | | | | 1 | | | | | | | 1 | 30 |

Date

| | | | | | | | | | | | | | | | | | | | | |
|--------|-------|-------|-------|-----|----|------|-------|---|----|------|------|-------|-----|------|--------|--------|-----|------|------|----|
| Sep/20 | 0.344 | 0.739 | 237.6 | 2.3 | 4 | 99 | 146.2 | 4 | 10 | 97.3 | 0.2 | 6.5 | 7.0 | 1.96 | NODI 9 | NODI 9 | 4.7 | 36.2 | 103 | |
| Oct/20 | 0.290 | 0.481 | 311 | 3.9 | 6 | 98.7 | 158 | 5 | 12 | 97.1 | 0.1 | 6.3 | 6.7 | 1.81 | 2.30 | 2.40 | 4.5 | 51.6 | 88.9 | |
| Nov/20 | 0.263 | 0.353 | 359 | 3.5 | 7 | 99 | 156.7 | 6 | 10 | 96.2 | 0.1 | 6.4 | 6.6 | 1.90 | NODI 9 | NODI 9 | 4.6 | 80.9 | 123 | |
| Dec/20 | 0.308 | 0.905 | 299 | 4 | 10 | 98.7 | 138.7 | 4 | 9 | 96.9 | < .1 | 6.3 | 6.9 | 1.96 | NODI 9 | NODI 9 | 5.4 | 23.1 | 74.3 | |
| Jan/21 | 0.362 | 0.584 | 230.5 | 2 | 3 | 99 | 124.5 | 3 | 8 | 97.7 | < .1 | 6.4 | 6.8 | 1.60 | 2.20 | 0.60 | 5.5 | 20.3 | 79.8 | |
| Feb/21 | 0.336 | 0.487 | 242.3 | 2 | 4 | 99.1 | 113.7 | 3 | 5 | 97.8 | < .1 | 6.3 | 6.5 | 1.98 | NODI 9 | NODI 9 | 6.5 | 20.1 | 69.3 | 1 |
| Mar/21 | 0.560 | 1.300 | 199.5 | 4 | 9 | 97.9 | 127.1 | 4 | 9 | 96.7 | < .1 | 6.0 | 6.5 | 1.98 | NODI 9 | NODI 9 | 3.3 | 27.3 | 119 | 2 |
| Apr/21 | 0.330 | 1.070 | 241 | 5 | 10 | 98 | 163 | 3 | 7 | 98.3 | < .1 | 6.1 | 6.6 | 1.67 | 1.50 | 0.10 | 4.0 | 21.7 | 53.6 | 1 |
| May/21 | 0.332 | 0.967 | 254.6 | 4 | 8 | 98.3 | 135.3 | 4 | 7 | 97.1 | < .1 | 6.4 | 6.6 | 1.87 | NODI 9 | NODI 9 | 4.8 | 46.4 | 173 | 3 |
| Jun/21 | 0.294 | 0.631 | 290.8 | 4 | 5 | 98.8 | 307.5 | 4 | 10 | 98.7 | < .1 | 6.3 | 6.7 | 1.99 | NODI 9 | NODI 9 | 4.1 | 41.4 | 2420 | + |
| Jul/21 | 0.230 | 0.414 | 345.1 | 3 | 6 | 99.1 | 298.6 | 3 | 6 | 98.9 | < .1 | 6.5 | 6.7 | 1.86 | 1.20 | 0.70 | 4.5 | 27.2 | 58.5 | |
| Aug/21 | 0.322 | 0.899 | 343.4 | 2 | 3 | 99.5 | 208.2 | 2 | 3 | 98.9 | 0.1 | 6.4 | 6.8 | 1.91 | NODI 9 | NODI 9 | 2.8 | 11.1 | 69.3 | 1 |
| Sep/21 | 0.371 | 1.040 | 239 | 2 | 3 | 99.2 | 141 | 4 | 15 | 97.1 | < .1 | 6.4 | 6.9 | 1.66 | NODI 9 | NODI 9 | 4.1 | 22.1 | 55.1 | 2 |
| Oct/21 | 0.285 | 0.551 | 284 | 4 | 14 | 98.7 | 179 | 4 | 8 | 98 | < .1 | 6.4 | 6.8 | 1.99 | 1.00 | 1.20 | 4.3 | 26.4 | 90.8 | 1 |
| Nov/21 | 0.243 | 0.301 | 330.8 | 3 | 4 | 99.2 | 227.2 | 4 | 6 | 98.5 | < .1 | 6.4 | 6.7 | 1.67 | NODI 9 | NODI 9 | 4.7 | 25.2 | 60.2 | |
| Dec/21 | 0.385 | 0.630 | 325 | 3 | 8 | 99 | 139 | 4 | 10 | 97.3 | < .1 | 6.4 | 6.7 | 1.97 | NODI 9 | NODI 9 | 3.8 | 19 | 65.7 | |
| Jan/22 | 0.469 | 0.630 | 181.5 | 3 | 4 | 98.6 | 95.5 | 3 | 6 | 96.5 | < .1 | 6.4 | 6.9 | 1.99 | 0.90 | 0.20 | 5.4 | 14.9 | 87.3 | |
| Feb/22 | 0.458 | 1.110 | 213.4 | 4 | 6 | 98.3 | 154 | 6 | 14 | 96.1 | < .1 | 6.6 | 7.4 | 1.98 | NODI 9 | NODI 9 | 5.4 | 12.7 | 106 | 11 |
| Mar/22 | 0.316 | 0.629 | 264 | 4 | 6 | 98.4 | 146 | 7 | 19 | 95 | < .1 | 6.3 | 6.8 | 1.84 | NODI 9 | NODI 9 | 5.1 | 11.8 | 75.7 | |
| Apr/22 | 0.285 | 0.536 | 246.7 | 4 | 8 | 98.2 | 141.1 | 5 | 11 | 96.4 | < .1 | 5.5 + | 7.1 | 1.99 | 2.70 | 2.40 | 4.7 | 11.8 | 91 | 1 |
| May/22 | 0.210 | 0.503 | 324.7 | 4 | 7 | 98.8 | 226.3 | 5 | 10 | 98 | 0.1 | 6.7 | 7.2 | 1.83 | NODI 9 | NODI 9 | 4.8 | 43.4 | 101 | |
| Jun/22 | 0.172 | 0.229 | 324.6 | 3 | 5 | 99.1 | 267.7 | 3 | 6 | 98.7 | 0.1 | 6.8 | 7.2 | 1.98 | NODI 9 | NODI 9 | 3.4 | 18.9 | 111 | |
| Jul/22 | 0.186 | 0.240 | 380.8 | 2 | 5 | 99.4 | 201.7 | 4 | 6 | 98.3 | 0.1 | 6.9 | 7.4 | 1.97 | 1.80 | 3.20 | 4.2 | 23.4 | 63.8 | |
| Aug/22 | 0.204 | 0.515 | 375.1 | 3 | 4 | 99.2 | 190 | 4 | 11 | 97.8 | 0.1 | 6.7 | 7.3 | 1.96 | NODI 9 | NODI 9 | 4.0 | 33.3 | 85.2 | |
| Sep/22 | 0.213 | 0.307 | 310.5 | 4 | 8 | 98.6 | 173.7 | 6 | 10 | 96.8 | 0.3 | 6.7 | 7.4 | 1.98 | NODI 9 | NODI 9 | 4.6 | 36.5 | 74.7 | 1 |
| Oct/22 | 0.165 | 0.263 | 229.8 | 4 | 8 | 98.1 | 192.2 | 4 | 6 | 97.8 | < .1 | 6.6 | 7.1 | 1.41 | 5.00 | 1.60 | 4.4 | 39.6 | 71.4 | 1 |
| Nov/22 | 0.244 | 0.547 | 289.9 | 3 | 6 | 99.7 | 169.8 | 3 | 5 | 98.3 | < .1 | 6.5 | 7.1 | 1.90 | NODI 9 | NODI 9 | 4.6 | 53.6 | 83.9 | |
| Dec/22 | 0.313 | 0.715 | 229.3 | 3 | 5 | 98.6 | 215 | 3 | 5 | 98.6 | < .1 | 6.5 | 7.0 | 1.85 | NODI 9 | NODI 9 | 5.2 | 47.9 | 121 | 4 |
| Jan/23 | 0.391 | 0.848 | 167.4 | 5 | 16 | 96.9 | 117.3 | 4 | 6 | 96.8 | < .1 | 6.5 | 6.9 | 1.78 | 1.60 | 1.20 | 5.2 | 39.7 | 137 | 1 |
| Feb/23 | 0.348 | 0.541 | 282 | 3 | 8 | 98.8 | 165.3 | 3 | 6 | 98.3 | < .1 | 6.4 | 7.3 | 1.96 | NODI 9 | NODI 9 | 4.7 | 41 | 84.5 | |
| Mar/23 | 0.417 | 0.681 | 264.7 | 3 | 10 | 98.7 | 169.5 | 3 | 5 | 98.5 | < .1 | 6.6 | 6.9 | 1.99 | NODI 9 | NODI 9 | 7.2 | 42.5 | 95.7 | |
| Apr/23 | 0.307 | 0.899 | 274.9 | 5 | 8 | 98.3 | 215.7 | 3 | 8 | 98.6 | < .1 | 6.6 | 7.0 | 1.89 | 2.00 | 0.40 | 4.7 | 46.8 | 98.3 | |
| May/23 | 0.320 | 0.561 | 280.5 | 4 | 6 | 98.6 | 184.2 | 2 | 3 | 98.8 | < .1 | 6.7 | 7.0 | 1.99 | NODI 9 | NODI 9 | 4.4 | 40 | 78 | |
| Jun/23 | 0.195 | 0.245 | 351.5 | 2 | 3 | 99.3 | 188.3 | 2 | 5 | 98.7 | < .1 | 6.8 | 7.2 | 1.67 | NODI 9 | NODI 9 | 4.6 | 22.6 | 74.8 | |
| Jul/23 | 0.220 | 0.571 | 208.8 | 2 | 3 | 98.9 | 249.1 | 3 | 4 | 99 | < .1 | 6.5 | 7.4 | 2.00 | 2.10 | 1.90 | 4.6 | 21.4 | 98.7 | |
| Aug/23 | 0.292 | 0.596 | 219.1 | 2 | 3 | 99.1 | 173.3 | 2 | 4 | 98.6 | < .1 | 6.9 | 7.1 | 1.88 | NODI 9 | NODI 9 | 5.4 | 9.5 | 81.5 | |

APPENDIX 3 – METALS & TOXICS CALCULATIONS

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations:

- a) The most recent background conditions of the receiving stream segment are compiled. This information includes:
 - 1Q10 of receiving stream (154 MGD, USGS)
 - Calcium hardness (165 mg/L, ambient)
 - Total suspended solids (20 mg/L, ambient)
 - Background metals concentrations (ambient and ½ water quality criteria)
 - Other dischargers impacting this segment (none)
 - Downstream water supplies, if applicable
- b) The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.
- c) The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc, and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel, and silver.
- d) The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.
- e) A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

The following formulas are used to evaluate water quality protection:

$$C_m = \frac{Q_s C_s + Q_w C_w}{Q_s + Q_w}$$

Where:

C_m = resulting instream concentration after mixing
 C_w = concentration of pollutant in wastewater
 C_s = stream background concentration
 Q_w = wastewater flow (STP Design flow)
 Q_s = stream low flow

To protect water quality:

$$C_w \leq \frac{(S_A)[C_m(Q_s + Q_w) - Q_s C_s]}{Q_w}$$

Where: S_A = the percent "Stream Allocation"

Calculations for this permit have been done using a standardized spreadsheet, titled "Water Quality Based Effluent Calculations". Division policy dictates the following procedures in establishing these permit limits:

- 1) The critical low flow values are determined using USGS data:

Fish and Aquatic Life protection:

7Q10 – Low flow under natural conditions
 1Q10 – Regulated low flow conditions

Other than Fish and Aquatic Life protection:

30Q5 – Low flow under natural conditions

- 2) Fish and Aquatic Life water quality criteria for certain metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.
- 3) For criteria that are hardness dependent, chronic and acute concentrations are based on a hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless available ambient monitoring information substantiates a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.

- 4) Background concentrations are determined from the Division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic “In-stream Allowable” water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, then the measured background concentration is used in lieu of the chronic “In-stream Allowable” water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the “stream allocation” is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic “In-stream Allowable” water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has 15 data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The “stream background” concentrations of the effluent characteristics.

Column 2: The “chronic” Fish and Aquatic Life water quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp\{m_c[\ln(\text{stream hardness})] + b_c\}) * (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule [0400-40-03-.03](#) and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 3: The “Acute” Fish and Aquatic Life water quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the

criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp\{m_A[\ln(\text{stream hardness})] + b_A\}) * (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 4: The "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{\text{diss}}}{C_{\text{total}}} = \frac{1}{1 + \{[K_{\text{po}}][ss^{(1+a)}][10^{-6}]\}}$$

ss = in-stream suspended solids concentration (mg/L)

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

Column 5: The "Chronic" Fish and Aquatic Life water quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.

Column 6: The "Acute" Fish and Aquatic Life water quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.

Column 7: The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. *This is the chronic limit.*

- Column 8:** The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. *This is the acute limit.*
- Column 9:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).
- Column 10:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both "Recreation" and "Domestic Water Supply".
- Column 11:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.
- Column 12:** The Calculated Effluent Concentration associated with Organism Consumption.
- Column 13:** The Calculated Effluent Concentration associated with Water and Organism Consumption.
- Column 14:** The Calculated Effluent Concentration associated with Domestic Water Supply.
- Column 15 (Metals and Toxics):** The Effluent Limited criteria. This upper level of allowable pollutant loading is established if (a) the calculated water quality value is greater than accepted removal efficiency values, (b) the treatment facility is properly operated, *and* (c) full compliance with the pretreatment program is demonstrated. This upper level limit is based upon EPA's 40 POTW Survey on levels of metals that should be discharged from a POTW with a properly enforced pretreatment program and considering normal coincidental removals.
- Column 15 (Other Compounds):** The average effluent values provided in the application.

The most stringent water quality effluent concentration from Columns 7, 8, 12, 13, 14, and 15 is applied if the receiving stream is designated for domestic water supply. Otherwise, the most stringent effluent concentration is chosen from columns 7, 8, 12, and 15 only. Column 15 is only applicable to the metal and toxics determination.

Water Quality Based Effluent Calculations (Metals and Toxics):

2019 WQC

WATER QUALITY CALCULATIONS FOR METALS AND OTHER TOXIC SUBSTANCES
WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Centerville **PERMIT #:** TN0024937 **DATE:** 09/26/23 **CALC BY:** WDM

regulated stream worksheet (1Q10)

| Stream (1Q10) | Stream (30Q5) | Waste Flow (MGD) | Ttl. Susp. Solids (mg/l) | Hardness (as CaCO3) (mg/l) | Margin of Safety (%) |
|------------------|------------------|------------------------|--------------------------------|----------------------------------|----------------------------|
| 154 | 224 | 0.75 | 20 | 165 | 50 |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | |
|----------------------------|---------|------------------------------|---------|----------------------------|--------------------------|-----------|------------------------------|------------|---------------------------------------|-----------------|--------|---------------------------------|-----------------|-----------|----------|----------------------------|--------------------|
| | Stream | Fish/Aqua. Life (F & AL) WQC | | F & AL: instream allowable | | | Calc. Effluent Concentration | | Human Health Water Quality Criteria * | | | | | | | effluent | |
| | Bckgmd. | lab conditions | | Fraction | ambient conditions (Tot) | | based on F & AL | | In-Stream Criteria | | | Calc. Effluent Concentration ** | | limited | | | |
| PARAMETER | Conc. | Chronic | Acute | Dissolved | Chronic | Acute | Chronic | Acute | Organisms | Water/Organisms | DWS | Organisms | Water/Organisms | DWS | case | PARAMETER | |
| | [ug/l] | [ug/l] | [ug/l] | [Fraction] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | ug/l | |
| Copper (a,b) | 1.300 | 13.739 | 21.542 | 0.206 | 66.570 | 104.380 | 6754.57 | 10667.11 | N/A | N/A | N/A | NA | NA | NA | NA | 80.0 | Copper (a,b) |
| Chromium III | 1.500 | 111.692 | 858.646 | 0.049 | 2295.318 | 17645.507 | 237358.45 | 1825751.99 | N/A | N/A | N/A | NA | NA | NA | NA | Report | Chromium III |
| Chromium VI | 1.500 | 11.000 | 16.000 | 1.000 | 11.000 | 16.000 | 983.78 | 1501.17 | N/A | N/A | N/A | NA | NA | NA | NA | Report | Chromium VI |
| Chromium, Total | 1.500 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 100.0 | NA | NA | NA | 14734.37 | NA | Chromium, Total |
| Nickel (a,b) | 3.600 | 79.442 | 715.247 | 0.180 | 442.145 | 3980.808 | 45381.16 | 411551.84 | 4600.0 | 610.0 | 100.0 | 687530.70 | 90707.03 | 14421.30 | 180.0 | Nickel (a,b) | |
| Cadmium (a,b) | 0.200 | 1.046 | 2.877 | 0.185 | 5.663 | 15.570 | 565.37 | 1590.57 | N/A | N/A | 5.0 | NA | NA | NA | 718.08 | 5.0 | Cadmium (a,b) |
| Lead (a,b) | 1.900 | 4.322 | 110.900 | 0.110 | 39.263 | 1007.568 | 3867.21 | 104064.54 | N/A | N/A | 5.0 | NA | NA | NA | 464.65 | 45.0 | Lead (a,b) |
| Mercury (T) (c) | 0.050 | 0.770 | 1.400 | 1.000 | 0.770 | 1.400 | 74.53 | 139.72 | 0.051 | 0.05 | 2.0 | 0.17 | 0.02 | 291.71 | 0.4 | Mercury (T) (c) | |
| Silver (a,b,e) | 3.806 | N/A | 7.612 | 1.000 | NA | 7.612 | N/A | 395.73 | N/A | N/A | N/A | NA | NA | NA | NA | 5.0 | Silver (a,b,e) |
| Zinc (a,b) | 3.700 | 180.579 | 179.114 | 0.103 | 1759.298 | 1745.023 | 181666.05 | 180188.99 | 26000.0 | 7400.0 | N/A | 3888524.94 | 1106339.42 | NA | 200.0 | Zinc (a,b) | |
| Cyanide (d) | 0.020 | 5.200 | 22.000 | 1.000 | 5.200 | 22.000 | 536.02 | 2274.44 | 140.0 | 140.0 | 200.0 | 20938.20 | 20938.20 | 29912.99 | 230.0 | Cyanide (d) | |
| Toluene | | | | | | | | | 15000.0 | 1300.0 | 1000.0 | 2243698.00 | 194453.83 | 149579.87 | 15.0 | Toluene | |
| Benzene | | | | | | | | | 510.0 | 22.0 | 5.0 | 76285.73 | 3290.76 | 747.90 | 3.0 | Benzene | |
| 1,1,1 Trichloroethane | | | | | | | | | N/A | N/A | 200.0 | NA | NA | 29915.97 | 30.0 | 1,1,1 Trichloroethane | |
| Ethylbenzene | | | | | | | | | 2100.0 | 530.0 | 700.0 | 314117.72 | 79277.33 | 104705.91 | 4.0 | Ethylbenzene | |
| Carbon Tetrachloride | | | | | | | | | 16.0 | 2.3 | 5.0 | 2393.28 | 344.03 | 747.90 | 15.0 | Carbon Tetrachloride | |
| Chloroform | | | | | | | | | 4700.0 | 57.0 | N/A | 703025.37 | 8526.05 | NA | 85.0 | Chloroform | |
| Tetrachloroethylene | | | | | | | | | 33.0 | 6.9 | 5.0 | 4936.14 | 1032.10 | 747.90 | 25.0 | Tetrachloroethylene | |
| Trichloroethylene | | | | | | | | | 300.0 | 25.0 | 5.0 | 44873.96 | 3739.50 | 747.90 | 10.0 | Trichloroethylene | |
| 1,2 trans Dichloroethylene | | | | | | | | | 10000.0 | 140.0 | 100.0 | NA | 20941.18 | 14957.99 | 1.5 | 1,2 trans Dichloroethylene | |
| Methylene Chloride | | | | | | | | | 5900.0 | 46.0 | 5.0 | 882521.21 | 6880.67 | NA | 50.0 | Methylene Chloride | |
| Total Phenols | | | | | | | | | 860000.0 | 10000.0 | N/A | 128638685.33 | 1495798.67 | NA | 50.0 | Total Phenols | |
| Naphthalene | | | | | | | | | N/A | N/A | N/A | NA | NA | NA | 1.0 | Naphthalene | |
| Total Phthalates | | | | | | | | | N/A | N/A | N/A | NA | NA | NA | 64.5 | Total Phthalates | |
| Chlorine (T. Res.) | 0.000 | 11.000 | 19.000 | 1.000 | 11.000 | 19.000 | 2276.50 | 3932.13 | NA | NA | NA | NA | NA | NA | NA | n/a | Chlorine (T. Res.) |

- a Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness.
b The criteria for this metal is in the dissolved form at lab conditions. The calculated effluent concentration is in the total recoverable form.
c The chronic criteria for mercury is not converted to dissolved, since it is based on fish tissue data rather than toxicity.
d The criteria for this parameter is in the total form.
e Silver limit is daily max if column 8 is most stringent.
f When columns 7 or 8 result in a negative number, use results from columns 5 or 6, respectively.
g When columns 12, 13 or 14 result in a negative number, use results from columns 9, 10 or 11, respectively, as applicable.

* Domestic supply included in river use so pick from columns 7,8,12,13,14,15 or Domestic supply not included in river use so pick from columns 7, 8, 12 or 15.
** Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

APPENDIX 4 – WATER QUALITY BASED EFFLUENT CALCULATIONS (OTHER COMPOUNDS)

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------|---------------|---|------------------------|-----------------------------------|---------|--|-----------|-----------------------------------|-----------|------------|-----------|------------------------|---------|------------------|------------------|---------------|----------------------|------------------------|---------------------|-------|-------|-------|--------|--------|-----|--------|-----|------|----|-----|----|
| 2019 WQC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div>WATER QUALITY BASED EFFLUENT CALCULATIONS</div><div>OUTFALL 001</div><div>FACILITY: Centerville</div><div>PERMIT: TN0024937</div><div>DATE: 09/26/23</div></div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table><tr><td>Stream (1Q10)</td><td>Stream (3Q05)</td><td>Waste Flow</td><td>Ttl. Susp. Solids</td><td>Hardness (as CaCO3)</td><td>Margin of Safety</td></tr><tr><td>(MGD)</td><td>(MGD)</td><td>(MGD)</td><td>(mg/l)</td><td>(mg/l)</td><td>(%)</td></tr><tr><td>154.00</td><td>224</td><td>0.75</td><td>20</td><td>165</td><td>50</td></tr></table> | | | | | | | | | | | | | | | Stream (1Q10) | Stream (3Q05) | Waste Flow | Ttl. Susp. Solids | Hardness (as CaCO3) | Margin of Safety | (MGD) | (MGD) | (MGD) | (mg/l) | (mg/l) | (%) | 154.00 | 224 | 0.75 | 20 | 165 | 50 |
| Stream (1Q10) | Stream (3Q05) | Waste Flow | Ttl. Susp. Solids | Hardness (as CaCO3) | Margin of Safety | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (MGD) | (MGD) | (MGD) | (mg/l) | (mg/l) | (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 154.00 | 224 | 0.75 | 20 | 165 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | | | | | | | | | | | | | | | | | |
| Stream Bckgrnd. | Detection Levels | | Fish/Aqua. Life Water Quality Criteria | | Calculated Effluent Concentration | | Human Health Water Quality Criteria (3Q05) | | | | | | Avg. daily effluent | | | | | | | | | | | | | | | | | | | |
| | Scan | WQC RDL | | | | | In-Stream Criteria | | Calculated Effluent Concentration | | | | | | | | | | | | | | | | | | | | | | | |
| PARAMETER | Conc. | MDL | *EPA MDL | Chronic | Acute | Chronic | Acute | Organisms | Water/Org | DWS | Organisms | Water/Org | DWS | ug/l | | | | | | | | | | | | | | | | | | |
| ANTIMONY | 2.8 | 3.8 | 3.0 | | | | | 640.0 | 5.6 | 6.0 | 95313.7 | 420.2 | 480.1 | <2 | | | | | | | | | | | | | | | | | | |
| ARSENIC | 0.9 | 1.0 | 1.0 | 150.0 | 340.0 | 15382.6 | 34984.3 | 10.0 | 10.0 | 10.0 | 1361.6 | 1361.6 | 1361.6 | <1 | | | | | | | | | | | | | | | | | | |
| BERYLLIUM | 2 | 2.0 | 1.0 | | | | | | | 4.0 | | | 300.2 | <1 | | | | | | | | | | | | | | | | | | |
| SELENIUM (I) | 0.6 | 5.0 | 2.0 | 1.5 | 3.1 | 20.0 | 93.2 | 258.2 | 2001.7 | 4200.0 | 170.0 | 50.0 | 628146.0 | 25339.1 | 7389.5 | <2 | | | | | | | | | | | | | | | | |
| THALLIUM | 0.235 | 5.0 | + | | | | | 0.47 | 0.24 | 2.0 | 35.3 | 0.9 | 264.1 | <1 | | | | | | | | | | | | | | | | | | |
| ACROLEIN | 0.0 | 50.0 | 1.0 | 3.000 | 3.000 | 309.5 | 309.5 | 9.0 | 6.0 | | 1346.2 | 897.5 | | <50 | | | | | | | | | | | | | | | | | | |
| ACRYLONITRILE | 0.0 | 50.0 | 1.0 | | | | | 2.5 | 0.51 | | 373.9 | 76.3 | | <10 | | | | | | | | | | | | | | | | | | |
| BENZENE | 0.0 | 1.0 | 1.0 | | | | | 510.0 | 22.0 | 5.0 | 76285.7 | 3290.8 | 747.9 | <1 | | | | | | | | | | | | | | | | | | |
| BROMOFORM | 0.0 | 1.0 | 1.0 | | | | | 1400.0 | 43.0 | | 209411.8 | 6431.9 | | <1 | | | | | | | | | | | | | | | | | | |
| CARBON TETRACHLORIDE | 0.0 | 1.0 | 1.0 | | | | | 16.0 | 2.3 | 5.0 | 2393.3 | 344.0 | 747.9 | <1 | | | | | | | | | | | | | | | | | | |
| CHLOROBENZENE | 0.0 | 1.0 | + | | | | | 1600.0 | 130.0 | 100.0 | 239327.8 | 19445.4 | 14958.0 | <1 | | | | | | | | | | | | | | | | | | |
| CHLORODIBROMO-METHANE | 0.0 | 1.0 | + | | | | | 130.0 | 4.0 | | 19445.4 | 598.3 | | <1 | | | | | | | | | | | | | | | | | | |
| CHLOROETHANE | 0.0 | 1.0 | + | | | | | | | | | | | <5 | | | | | | | | | | | | | | | | | | |
| 2-CHLORO-ETHYL VINYL ETHER | 0.0 | 1.0 | + | | | | | | | | | | | <50 | | | | | | | | | | | | | | | | | | |
| CHLOROFORM | 0.0 | 5.0 | 0.5 | | | | 4700.0 | 57.0 | | 703025.4 | 8526.1 | | 7.8 | <5 | | | | | | | | | | | | | | | | | | |
| DICHLOROBROMO-METHANE | 0.0 | 1.0 | 1.0 | | | | 170.0 | 5.5 | | 25428.6 | 822.7 | | | <5 | | | | | | | | | | | | | | | | | | |
| 1,1-DICHLOROETHANE | 0.0 | 1.0 | 1.0 | | | | NA | NA | NA | NA | NA | NA | | <1 | | | | | | | | | | | | | | | | | | |
| 1,2-DICHLOROETHANE | 0.0 | 1.0 | 1.0 | | | | 370.0 | 3.8 | 5.0 | 55344.6 | 568.4 | 747.9 | | <1 | | | | | | | | | | | | | | | | | | |
| TRANS 1,2-DICHLORO-ETHYLENE | 0.0 | 1.0 | + | | | | 10000 | 140.0 | 100.0 | 1495798.7 | 20941.2 | 14958.0 | | <1 | | | | | | | | | | | | | | | | | | |
| 1,1-DICHLOROETHYLENE | 0.0 | 1.0 | 1.0 | | | | 7100.0 | 300.0 | 7.0 | 1062017.1 | 44874.0 | 1047.1 | | <1 | | | | | | | | | | | | | | | | | | |
| 1,2-DICHLOROPROPANE | 0.0 | 1.0 | + | | | | 150.0 | 5.0 | 5.0 | 22437.0 | 747.9 | 747.9 | | <1 | | | | | | | | | | | | | | | | | | |
| 1,3-DICHLORO-PROPYLENE | 0.0 | 1.0 | 1.0 | | | | 210.0 | 3.4 | | 31411.8 | 508.6 | | | <1 | | | | | | | | | | | | | | | | | | |
| ETHYLBENZENE | 0.0 | 1.0 | 1.0 | | | | 2100 | 530.0 | 700.0 | 314117.7 | 79277.3 | 104705.9 | | <1 | | | | | | | | | | | | | | | | | | |
| METHYL BROMIDE | 0.0 | 1.0 | + | | | | 1500.0 | 47.0 | | 224369.8 | 7030.3 | | | <1 | | | | | | | | | | | | | | | | | | |
| METHYL CHLORIDE | 0.0 | 1.0 | 1.0 | | | | | | | | | | | <5 | | | | | | | | | | | | | | | | | | |
| METHYLENE CHLORIDE | 0.0 | 5.0 | 1.0 | | | | 5900.0 | 46.0 | 5.0 | 882521.2 | 6880.7 | 747.9 | | <5 | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-TETRACHLORO-ETHANE | 0.0 | 1.0 | 0.5 | | | | 40.0 | 1.7 | | 5983.2 | 254.3 | | | <1 | | | | | | | | | | | | | | | | | | |
| TETRACHLORO-ETHYLENE | 0.0 | 1.0 | 0.5 | | | | 170.0 | 5.5 | 5.0 | 4936.1 | 1032.1 | 747.9 | | <1 | | | | | | | | | | | | | | | | | | |
| TOLUENE | 0.0 | 1.0 | 1.0 | | | | 15000 | 1300.0 | 1000.0 | 2243698.0 | 194453.8 | 149579.9 | | <1 | | | | | | | | | | | | | | | | | | |
| 1,1,1-TRICHLOROETHANE | 0.0 | 1.0 | 1.0 | | | | | | 200.0 | | | | 29916.0 | <1 | | | | | | | | | | | | | | | | | | |
| 1,1,2-TRICHLOROETHANE | 0.0 | 1.0 | 0.2 | | | | 160.0 | 5.9 | 5.0 | 23932.8 | 882.5 | 747.9 | | <1 | | | | | | | | | | | | | | | | | | |
| TRICHLOROETHYLENE | 0.0 | 1.0 | 1.0 | | | | 300.0 | 25.0 | 5.0 | 44874.0 | 3739.5 | 747.9 | | <1 | | | | | | | | | | | | | | | | | | |
| VINYL CHLORIDE | 0.0 | 1.0 | 2.0 | | | | 24.0 | 0.25 | 2.0 | 3589.9 | 37.4 | 299.2 | | <1 | | | | | | | | | | | | | | | | | | |
| P-CHLORO-M-CRESOL | 0.0 | 10.0 | + | | | | | | | | | | | <10 | | | | | | | | | | | | | | | | | | |
| 2-CHLOROPHENOL | 0.0 | 10.0 | + | | | | 150.0 | 81.0 | | 22437.0 | 12116.0 | | | <10 | | | | | | | | | | | | | | | | | | |
| 2,4-DICHLOROPHENOL | 0.0 | 10.0 | + | | | | 290.0 | 77.0 | | 43378.2 | 11517.6 | | | <10 | | | | | | | | | | | | | | | | | | |
| 2,4-DIMETHYLPHENOL | 0.0 | 10.0 | + | | | | 850.0 | 380.0 | | 127142.9 | 56840.3 | | | <10 | | | | | | | | | | | | | | | | | | |
| 4,6-DINITRO-O-CRESOL | 0.0 | 10.0 | 24.0 | | | | 280.0 | 13.0 | | 41882.4 | 1944.5 | | | <10 | | | | | | | | | | | | | | | | | | |
| 2,4-DINITROPHENOL | 0.0 | 10.0 | 42.0 | | | | 5300.0 | 69.0 | | 792773.3 | 10321.0 | | | <10 | | | | | | | | | | | | | | | | | | |
| 4-NITROPHENOL | 0.0 | 10.0 | + | | | | | | | | | | | <10 | | | | | | | | | | | | | | | | | | |
| PENTACHLOROPHENOL | 0.0 | 10.0 | + | | | | | | | | | | | <10 | | | | | | | | | | | | | | | | | | |
| PHENOL | 0.0 | 10.0 | 5.0 | 15 | 19 | 1547.5 | 1960.2 | 30.0 | 2.7 | 1.0 | 4487.4 | 403.9 | 149.6 | <10 | | | | | | | | | | | | | | | | | | |
| 2,4,6-TRICHLOROPHENOL | 0.0 | 10.0 | 2.7 | | | | | 800000 | 10000.0 | | 12863085.3 | 1495798.7 | | <10 | | | | | | | | | | | | | | | | | | |
| | 0.0 | 10.0 | | | | | | 24.0 | 14.0 | | 3589.9 | 2094.1 | | <10 | | | | | | | | | | | | | | | | | | |

Continued on next page



| | | | | | | | | | | | | | | | |
|-------------------------------------|-----|------|------|--|--|--|--|---------|----------|------|-------------|------------|---------|-----|---------------------------------|
| ACENAPHTHENE | 0.0 | 10.0 | * | | | | | 990.0 | 670.0 | | 148084.1 | 100218.5 | | <1 | ACENAPHTHENE |
| ACENAPHTHYLENE | 0.0 | 10.0 | 2.3 | | | | | | | | | | | <1 | ACENAPHTHYLENE |
| ANTHRACENE | 0.0 | 10.0 | 0.7 | | | | | 40000 | 8300.0 | | 5983194.7 | 1241512.9 | | <1 | ANTHRACENE |
| BENZENE | 0.0 | 50.0 | * | | | | | 0.0020 | 0.0009 | | 0.299 | 8.1 | | <1 | BENZENE |
| BENZO[A]ANTHRACENE | 0.0 | 10.0 | 0.3 | | | | | 0.18 | 0.038 | | 26.9 | 5.7 | | <1 | BENZO[A]ANTHRACENE |
| BENZO[A]PYRENE | 0.0 | 10.0 | 0.3 | | | | | 0.18 | 0.038 | 0.2 | 26.9 | 5.7 | 29.9 | <1 | BENZO[A]PYRENE |
| 3,4-BENZO-FLUORANTHENE | 0.0 | 10.0 | 0.3 | | | | | 0.18 | 0.038 | | 26.9 | 5.7 | | <1 | 3,4-BENZO-FLUORANTHENE |
| BENZO[GHI]PERYLENE | 0.0 | 10.0 | * | | | | | | | | | | | <1 | BENZO[GHI]PERYLENE |
| BENZO[K]FLUORANTHENE | 0.0 | 10.0 | 0.3 | | | | | 0.18 | 0.038 | | 26.9 | 5.7 | | <1 | BENZO[K]FLUORANTHENE |
| BIS (2-CHLOROETHOXY) METHANE | 0.0 | 10.0 | * | | | | | | | | | | | <10 | BIS (2-CHLOROETHOXY) METHANE |
| BIS (2-CHLOROETHYL) ETHER | 0.0 | 10.0 | 1.0 | | | | | 5.3 | 0.30 | | 792.8 | 44.9 | | <10 | BIS (2-CHLOROETHYL) ETHER |
| BIS (2-CHLOROSOPROPYL) ETHER | 0.0 | 10.0 | 0.3 | | | | | 65000 | 1400.0 | | 8722691.3 | 209411.8 | | <10 | BIS (2-CHLOROSOPROPYL) ETHER |
| BIS (2-ETHYLHEXYL) PHTHALATE | 0.0 | 10.0 | 2.5 | | | | | 22.0 | 12.0 | 6.0 | 3290.8 | 1765.0 | 887.5 | <3 | BIS (2-ETHYLHEXYL) PHTHALATE |
| 4-BROMOPHENYL PHENYL ETHER | 0.0 | 10.0 | * | | | | | | | | | | | <10 | 4-BROMOPHENYL PHENYL ETHER |
| BUTYL BENZYL PHTHALATE | 0.0 | 10.0 | * | | | | | 1900.0 | 1500.0 | | 284201.7 | 224369.8 | | <3 | BUTYL BENZYL PHTHALATE |
| 2-CHLORONAPHTHALENE | 0.0 | 10.0 | * | | | | | 1600.0 | 1000.0 | | 239327.8 | 149579.9 | | <1 | 2-CHLORONAPHTHALENE |
| 4-CHLOROPHENYL PHENYL ETHER | 0.0 | 10.0 | * | | | | | | | | | | | <10 | 4-CHLOROPHENYL PHENYL ETHER |
| CHRYSENE | 0.0 | 10.0 | 2.5 | | | | | 0.18 | 0.038 | | 26.9 | 5.7 | | <1 | CHRYSENE |
| DIN-BUTYL PHTHALATE | 0.0 | 10.0 | 2.5 | | | | | 4500.0 | 2000.0 | | 673109.4 | 299159.7 | | <3 | DIN-BUTYL PHTHALATE |
| DIN-OCTYL PHTHALATE | 0.0 | 10.0 | * | | | | | | | | | | | <3 | DIN-OCTYL PHTHALATE |
| DIBENZO[AH] ANTHRACENE | 0.0 | 1.0 | 2.0 | | | | | 0.18 | 0.038 | | 26.9 | 5.7 | | <1 | DIBENZO[AH] ANTHRACENE |
| 1,2-DICHLOROBENZENE | 0.0 | 5.0 | 2.0 | | | | | 1390.0 | 420.0 | | 194453.8 | 43823.5 | | <1 | 1,2-DICHLOROBENZENE |
| 1,3-DICHLOROBENZENE | 0.0 | 5.0 | 2.0 | | | | | 960.0 | 320.0 | | 143596.7 | 47865.6 | | <1 | 1,3-DICHLOROBENZENE |
| 1,4-DICHLOROBENZENE | 0.0 | 5.0 | 2.0 | | | | | 190.0 | 63.0 | | 28420.2 | 9423.5 | | <1 | 1,4-DICHLOROBENZENE |
| 3,3-DICHLOROBENZIDINE | 0.0 | 10.0 | * | | | | | 0.28 | 0.2 | | 41.9 | 31.4 | | <10 | 3,3-DICHLOROBENZIDINE |
| DIETHYL PHTHALATE | 0.0 | 10.0 | 1.9 | | | | | 44000 | 17000.0 | | 6581514.1 | 2542857.7 | | <3 | DIETHYL PHTHALATE |
| DIMETHYL PHTHALATE | 0.0 | 10.0 | 1.6 | | | | | 1100000 | 270000.0 | | 164537853.3 | 40388564.0 | | <3 | DIMETHYL PHTHALATE |
| Di-n-butyl phthalate (84-74-2) (g) | 0.0 | 10.0 | | | | | | 4500 | 2000.0 | | 673109.4 | 299159.7 | | <10 | Di-n-butyl phthalate (84-74-2) |
| 2,4-DINITROTOLUENE | 0.0 | 10.0 | 1.0 | | | | | 34.0 | 1.1 | | 5085.7 | 164.5 | | <10 | 2,4-DINITROTOLUENE |
| 2,6-DINITROTOLUENE | 0.0 | 10.0 | * | | | | | | | | | | | <10 | 2,6-DINITROTOLUENE |
| Di-n-octyl phthalate (117-84-0) (g) | 0.0 | 10.0 | | | | | | | | | | | | <10 | Di-n-octyl phthalate (117-84-0) |
| 1,2-DIPHENYLHYDRAZINE | 0.0 | 10.0 | * | | | | | 2.0 | 0.4 | | 299.2 | 53.8 | | <10 | 1,2-DIPHENYLHYDRAZINE |
| FLUORANTHENE | 0.0 | 10.0 | 2.2 | | | | | 140.0 | 130.0 | | 20941.2 | 19445.4 | | <1 | FLUORANTHENE |
| FLUORENE | 0.0 | 10.0 | 0.3 | | | | | 5300.0 | 1100.0 | | 782773.3 | 164537.9 | | <1 | FLUORENE |
| HEXACHLOROBENZENE | 0.0 | 10.0 | 1.9 | | | | | 0.0029 | 0.0028 | 1.0 | 0.434 | 8.4 | 149.6 | <1 | HEXACHLOROBENZENE |
| HEXACHLOROBUTADIENE | 0.0 | 10.0 | 5.0 | | | | | 180.0 | 4.4 | | 26024.4 | 658.2 | | <10 | HEXACHLOROBUTADIENE |
| HEXACHLOROCYCLO-PENTADIENE | 0.0 | 10.0 | * | | | | | 1190.0 | 40.0 | 50.0 | 164537.9 | 5983.2 | 7479.9 | <10 | HEXACHLOROCYCLO-PENTADIENE |
| HEXACHLOROETHANE | 0.0 | 10.0 | 0.5 | | | | | 33.0 | 14.0 | | 4936.1 | 2094.1 | | <10 | HEXACHLOROETHANE |
| INDENO[1,2,3-CD]PYRENE | 0.0 | 10.0 | * | | | | | 0.18 | 0.038 | | 26.9 | 5.7 | | <1 | INDENO[1,2,3-CD]PYRENE |
| ISOPHORONE | 0.0 | 10.0 | * | | | | | 9600 | 350.0 | | 1435966.7 | 52353.0 | | <10 | ISOPHORONE |
| NAPHTHALENE | 0.0 | 10.0 | * | | | | | | | | | | | <1 | NAPHTHALENE |
| NITROBENZENE | 0.0 | 10.0 | 10.0 | | | | | 690.0 | 17.0 | | 103210.1 | 2542.9 | | <10 | NITROBENZENE |
| N-NITROSODI-N-PROPYLAMINE | 0.0 | 10.0 | * | | | | | 5.1 | 0.050 | | 782.9 | 7.5 | | <1 | N-NITROSODI-N-PROPYLAMINE |
| N-NITROSODI-METHYLAMINE | 0.0 | 10.0 | * | | | | | 30.0 | 0.0069 | | 4487.4 | 1.0 | | <1 | N-NITROSODI-METHYLAMINE |
| N-NITROSODI-PHENYLAMINE | 0.0 | 10.0 | * | | | | | 89.0 | 33.0 | | 8974.8 | 4936.1 | | <1 | N-NITROSODI-PHENYLAMINE |
| PHENANTHRENE | 0.0 | 10.0 | 0.7 | | | | | | | | | | | <1 | PHENANTHRENE |
| PYRENE | 0.0 | 10.0 | 0.3 | | | | | 4000.0 | 830.0 | | 598319.5 | 124151.3 | | <10 | PYRENE |
| 1,2,4-TRICHLOROBENZENE | 0.0 | | * | | | | | 70.0 | 35.0 | 70.0 | 10470.6 | 5235.3 | 10470.6 | <10 | 1,2,4-TRICHLOROBENZENE |

- a. Columns 7-8, and 12-14 are the effluent concentrations allowable to prevent exceedance of water quality criteria.
b. Potential to exceed criteria exists if the measured quantity in column 15 exceeds, or could exceed, the calculated allowable concentrations in columns 7-8, and 12-14.
c. Additional testing is required if the detection level used in the scan is higher than the state RDL and/or the MDL of the approved EPA scan method and industry is known to have that pollutant.
d. All background concentrations for these volatile organic, acid-extractable, and base-neutral compounds are assumed zero in the absence of supporting monitoring data. This calculation assumes background concentrations for antimony, beryllium and thallium at one half the most stringent human health criterion value.
e. Other metals for which data were provided on the application are evaluated on the Metals & Toxics spreadsheet.
f. The Water Quality Criteria CCC Value for Selenium is 1.5 µg/l (bentic - Still water aquatic ecosystems such as ponds, lakes, or reservoirs) and 3.1 µg/l (lotic - Flowing water aquatic ecosystems such as streams and rivers).
g. Form 20 only
i. Reasonable potential does not exist for the following reason(s): Results are below detection at appropriate method detection levels and are not likely to present from the significant industrial user making food products.

APPENDIX 5 – RECEIVING STREAM LOW FLOW DETERMINATION

The division calculated the low flows using USGS Hydrologic Toolbox Flows for USGS Gage Station # 03601990, which is located on the Duck River at Hwy 100.

The gage encompasses a 2,048 square mile drainage area. Outfall 001 encompasses a 2,050 square mile drainage area, so use gage flows.

| Frequency Statistics | | | | | |
|------------------------------|-------------|---------------------|--------|--------|--------|
| File Edit View Analysis Help | | | | | |
| Data Set | Probability | Recurrence Interval | 1-day | 7-day | 30-day |
| OBSERVED 03601990 Streamflow | 0.2000 | 5 | 277.82 | 292.67 | 346.02 |
| OBSERVED 03601990 Streamflow | 0.1000 | 10 | 239 | 250.33 | 293.33 |

Program SWStat U.S. GEOLOGICAL SURVEY Seq 00001
Ver. 5.0 Log-Pearson & Pearson Type III Statistics Run Date / Time
03/13/2018 based on USGS Program A193 9/25/2023 8:28 AM

Notice -- Log-Pearson Type III or Pearson Type III distributions are used
for these computations. Users are responsible for assessment
and interpretation.

Description: 03601990 DUCK RIVER AT HWY 100 AT CENTERVILLE, TN
Year Boundaries: April 1 - March 31
Period in report: April 1, 2002 - March 31, 2023
Parameter: 1-day low
Non-zero values: 21
Zero values: 0
Negative values: 0 (ignored)

Input time series (zero and negative values not included in listing.)

424.000 439.000 479.000 405.000 296.000 180.000 240.000 309.000
254.000 299.000 246.000 381.000 400.000 445.000 314.000 566.000
364.000 299.000 588.000 558.000 390.000

LOG PEARSON TYPE III Frequency Curve Parameters
(based on logs of the non-zero values)

Mean (logs) 2.555
Variance (logs) 0.018
Standard Deviation (logs) 0.135
Skewness (logs) -0.297
Standard Error of Skewness (logs) 0.501
Serial Correlation Coefficient (logs) 0.442
Coefficient of Variation (logs) 0.053

Frequency Curve - Parameter values at selected probabilities



| Non- exceedance Probability | Variance Recurrence Interval | 95-Pct Confidence Parameter of Estimate Lower Upper |
|-----------------------------------|------------------------------------|---|
| 0.1000 | 10.00 | 239.000 |
| 0.2000 | 5.00 | 277.820 |

Program SWStat U.S. GEOLOGICAL SURVEY Seq 00003
Ver. 5.0 Log-Pearson & Pearson Type III Statistics Run Date / Time
03/13/2018 based on USGS Program A193 9/25/2023 8:28 AM

Notice -- Log-Pearson Type III or Pearson Type III distributions are used
for these computations. Users are responsible for assessment
and interpretation.

Description: 03601990 DUCK RIVER AT HWY 100 AT CENTERVILLE, TN
Year Boundaries: April 1 - March 31
Period in report: April 1, 2002 - March 31, 2023
Parameter: 30-day low
Non-zero values: 21
Zero values: 0
Negative values: 0 (ignored)

Input time series (zero and negative values not included in listing.)

535.000 567.970 954.730 430.730 342.800 228.930 341.130 456.270
288.600 577.300 342.730 487.870 520.600 732.830 337.670 862.600
460.800 341.470 855.970 864.330 454.900

LOG PEARSON TYPE III Frequency Curve Parameters
(based on logs of the non-zero values)

Mean (logs) 2.686
Variance (logs) 0.030
Standard Deviation (logs) 0.173

Skewness (logs) 0.156
Standard Error of Skewness (logs) 0.501
Serial Correlation Coefficient (logs) 0.083
Coefficient of Variation (logs) 0.064

Frequency Curve - Parameter values at selected probabilities

| Non- exceedance Probability | Variance Recurrence Interval | 95-Pct Confidence Parameter of Estimate Lower Upper |
|-----------------------------------|------------------------------------|---|
| 0.1000 | 10.00 | 293.330 |
| 0.2000 | 5.00 | 346.020 |