**AUTHORIZATION TO DISCHARGE UNDER**
**THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

**Onyx Specialty Papers, Inc.**
**P.O. Box 188**
**South Lee, MA 01260**

**WestRock**
**1000 Abernathy Road NE**
**Atlanta, GA 30328**

is authorized to discharge from a facility located at

**Laurel Mill**
**1085 Pleasant Street**
**South Lee, MA 01260**

to receiving water named

**Housatonic River (MA21-19)**
**Housatonic River Basin**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This Permit shall become effective on [*the first day of the calendar month immediately following 60 days after signature*].[1]

This Permit expires at midnight on [*five years from the last day of the month preceding the effective date*].

This Permit supersedes the Permit issued on September 27, 2012.

This Permit consists of this **cover page**, **Part I**, **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011), **Attachment B** (Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013) and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this day of

_____
Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Pursuant to 40 Code of Federal Regulations (CFR) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the Permit will become effective upon the date of signature. Procedures for appealing EPA's Final Permit decision may be found at 40 CFR § 124.19.

**PART I**

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated wastewater from papermaking operations, non-contact cooling water, backwash water from sand filters, stormwater from roof drains, and landfill leachate through Outfall Serial Number 001 to the Housatonic River. The discharge shall be limited and monitored as specified below; the receiving water shall be monitored as specified below.

| **Effluent Characteristic** | **Effluent Limitations** | | **Monitoring Requirements[1,2,3]** | |
|---|---|---|---|---|
| | **Average Monthly** | **Maximum Daily** | **Measurement Frequency[4]** | **Sample Type[5]** |
| Effluent Flow[6] | 1.0 MGD | 1.5 MGD | Continuous | Recorder |
| Total Production | Report tons/day | Report tons/day | Daily | Daily Calculated |
| Total Suspended Solids (TSS) | 100 lb/day<br>30 mg/L | 250 lb/day<br>45 mg/L | 2/Week | Composite |
| Biochemical Oxygen Demand, 5-day (BOD5) | 18.2 lb/day<br>Report mg/L | 34.8 lb/day<br>Report mg/L | 2/Week | Composite |
| pH[7] | 6.5 - 8.3 S.U. | | 1/Week | Grab |
| Temperature | Report °F | 90°F | 1/Week | Grab |
| Total Residual Chlorine (TRC)[8] | Report µg/L | Report µg/L | 1/Week | Grab |
| Total Kjeldahl Nitrogen | Report mg/L | --- | 1/Month | Composite |
| Nitrite and Nitrate Nitrogen | Report mg/L | --- | 1/Month | Composite |
| Total Nitrogen[9,10] | Report lb/day<br>Report mg/L | --- | 1/Month | Calculated |
| Total Phosphorus[11] | Report mg/L | --- | 1/Week | Composite |
| Aluminum, Total[12] | 87 µg/L | Report µg/L | 2/Month | Composite |
| Cadmium, Total | 11.3 µg/L | Report µg/L | 2/Month | Composite |
| Copper, Total | 10.7 µg/L | Report µg/L | 2/Month | Composite |
| Perfluorohexanesulfonic acid (PFHxS)[13,14] | --- | Report ng/L | 1/Quarter | Composite |
| Perfluoroheptanoic acid (PFHpA)[13,14] | --- | Report ng/L | 1/Quarter | Composite |

| Effluent Characteristic | Effluent Limitations | | Monitoring Requirements[1,2,3] | |
|---|---|---|---|---|
| | Average Monthly | Maximum Daily | Measurement Frequency[4] | Sample Type[5] |
| Perfluorononanoic acid (PFNA)[13,14] | --- | Report ng/L | 1/Quarter | Composite |
| Perfluorooctanesulfonic acid (PFOS)[13,14] | --- | Report ng/L | 1/Quarter | Composite |
| Perfluorooctanoic acid (PFOA)[13,14] | --- | Report ng/L | 1/Quarter | Composite |
| Perfluorodecanoic acid (PFDA)[13,14] | --- | Report ng/L | 1/Quarter | Composite |
| Whole Effluent Toxicity (WET) Testing[15,16] | | | | |
| $LC_{50}$ | --- | ≥ 100 % | 1/Quarter | Composite |
| C-NOEC | --- | Report % | 1/Quarter | Composite |
| Hardness | --- | Report mg/L | 1/Quarter | Composite |
| Ammonia Nitrogen | --- | Report mg/L | 1/Quarter | Composite |
| Total Aluminum | --- | Report mg/L | 1/Quarter | Composite |
| Total Cadmium | --- | Report mg/L | 1/Quarter | Composite |
| Total Copper | --- | Report mg/L | 1/Quarter | Composite |
| Total Nickel | --- | Report mg/L | 1/Quarter | Composite |
| Total Lead | --- | Report mg/L | 1/Quarter | Composite |
| Total Zinc | --- | Report mg/L | 1/Quarter | Composite |

| Ambient Characteristic[17] | Reporting Requirements | | Monitoring Requirements[1,2,3] | |
|---|---|---|---|---|
| | Average Monthly | Maximum Daily | Measurement Frequency[4] | Sample Type[5] |
| Hardness | --- | Report mg/L | 1/Quarter | Grab |
| Ammonia Nitrogen | --- | Report mg/L | 1/Quarter | Grab |
| Total Aluminum | --- | Report mg/L | 1/Quarter | Grab |
| Total Cadmium | --- | Report mg/L | 1/Quarter | Grab |
| Total Copper | --- | Report mg/L | 1/Quarter | Grab |

| | | | | |
|---|---|---|---|---|
| Total Nickel | --- | Report mg/L | 1/Quarter | Grab |
| Total Lead | --- | Report mg/L | 1/Quarter | Grab |
| Total Zinc | --- | Report mg/L | 1/Quarter | Grab |
| pH[18] | --- | Report S.U. | 1/Quarter | Grab |
| Temperature[18] | --- | Report °C | 1/Quarter | Grab |

**Footnotes:**

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the discharge point to the receiving water after treatment in the secondary clarifier. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA). The Permittee shall report the results to EPA and the State of any additional testing above that required herein, if testing is done in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).

4. Measurement frequency of continuous is defined as the recording of the entire record of effluent flow. Measurement frequency of 1/Week is defined as the sampling of one discharge event in each seven-day calendar week; 2/Week as the sampling of two discharge events. Measurement frequency of 1/Month is defined as the sampling of one discharge event in each calendar month; 2/Month as the sampling of two discharge events. Measurement frequency of 1/Quarter is defined as the sampling of one discharge event during one calendar quarter.

Calendar quarters are defined as January through March, inclusive, April through June, inclusive, July through September, inclusive and October through December, inclusive. If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.

5. Each composite sample will consist of at least eight grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.

6. Effluent flow shall be reported in million gallons per day (MGD).

7. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.).

8. TRC analysis must be completed using a test method in 40 CFR Part 136 that achieves a minimum level of detection no greater than 20 µg/L.

9. Total Kjeldahl nitrogen, nitrite nitrogen, and nitrate nitrogen samples shall be collected concurrently by composite sample. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen:

   Total Nitrogen = total kjeldahl nitrogen + total nitrite nitrogen + total nitrite nitrogen

   The total nitrogen loading values reported each month shall be calculated as follows:

   Total Nitrogen (lb/day) = [average monthly total nitrogen concentration (mg/L) * total monthly effluent flow (million gallons) / days in the month] * 8.345

10. The Facility is subject to nitrogen optimization requirements, see Part I.D.2.

11. Total Phosphorus monitoring is only required when phosphorus-containing materials are added as part of paper manufacturing or wastewater treatment. For months when phosphorus is not used, report a "NODI: 9" code on the monthly DMR.

12. See part I.D.5 for a schedule of compliance for the chronic aluminum limit.

13. This reporting requirement for the listed PFAS parameters takes effect six months after EPA notifies the Permittees that a multi-lab validated method for wastewater is available to the public on EPA's CWA methods program website. *See* https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical and https://www.epa.gov/cwa-methods.

14. After one year of monitoring, if all samples are non-detect for all six PFAS compounds, using EPA's multi-lab validated method for wastewater, the Permittee may request to remove the requirement for PFAS monitoring. *See* Special Condition in Part I.D.4.

15. The Permittee shall conduct acute toxicity tests ($LC_{50}$) and chronic toxicity tests (C-NOEC) 1/Quarter in accordance with test procedures and protocols specified in **Attachment A and B** of this permit. $LC_{50}$ and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal that includes the results for that toxicity test.

16. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A and B**, Section IV., DILUTION WATER. Even where alternate dilution water has been used, the results of the receiving water control (0% effluent) analyses must be reported. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

17. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A and B**. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

18. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

**Part I.A. continued.**

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. The discharge shall be free from pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

4. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

5. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

6. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

8. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify EPA as soon as they know or have reason to believe (40 CFR § 122.42):

    a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (1) 100 micrograms per liter (µg/L);
        (2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/L) for antimony;
        (3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
        (4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

    b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (1) 500 µg/L;
        (2) One mg/L for antimony;

(3) 10 times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
(4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

## B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall(s) listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources are not authorized by this permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this permit (24-hour reporting).

## C. COOLING WATER INTAKE STRUCTURE REQUIREMENTS

1. Cease or reduce the withdrawal of source water for cooling to the maximum extent practicable or when cooling needs are reduced.

2. Maintain the existing physical screening technology (0.5-inch square opening mesh screens) with a maximum CWIS through-screen velocity of 0.5 feet per second (fps).

3. Any change in the location, design, or capacity of the intake structure (including both the pump and screening technology) must be approved in advance in writing by EPA and MassDEP and may require a permit modification. The Permittees shall notify EPA and MassDEP of any such proposed change.

4. Routinely inspect intake structure (pump and screens) at a frequency no less than quarterly to ensure proper operation and maintenance. Including inspection of the screens for fish impingements.

5. Notify EPA and MassDEP if fish mortalities are observed in the dredged lagoon or within the intake structure's holding bay that are believed to be associated with the use of the pump. Notification should follow the verbal notification and reporting procedure in Part I.E.6.

## D. SPECIAL CONDITIONS

1. Chlorophenolic-containing Biocide Use Certification

   On the Facility's permit renewal application, the Permittees must certify that the Facility does not use chlorophenolic-containing biocides. *See* 40 CFR §§ 430.114 and 430.124.

2. Nitrogen Optimization

a. The Permittees shall continue to optimize the treatment facility operations relative to total nitrogen ("TN") removal through measures such as continued ammonia removal, maximization of solids retention time while maintaining compliance with BOD5 and TSS limits, and/or other operational changes designed to enhance the removal of nitrogen in order to minimize the annual average mass discharge of total nitrogen.

b. The Permittees shall submit an annual report to EPA and the MassDEP by **February 1st** of each year, that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous calendar year. If, in any year, the treatment facility discharges of TN on an average annual basis have increased, the annual report shall include a detailed explanation of the reasons why TN discharges have increased, including any changes in influent flows/loads and any operational changes. The report shall also include all supporting data. See Reporting Requirements in Part I.E.3.

3. Discharges of Chemicals and Additives

The discharge of any chemical or additive, including chemical substitution that was not reported in the application submitted to EPA or provided through a subsequent written notification submitted to EPA is prohibited. Upon the effective date of this permit, chemicals and/or additives that have been disclosed to EPA may be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA or applicable State water quality standards. Discharges of a new chemical or additive are authorized under this permit 30 days following written notification to EPA unless otherwise notified by EPA. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA in accordance with Part I.E.3 of this permit. The written notification must include the following information, at a minimum:

a. The following information for each chemical and/or additive that will be discharged:

(1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
(2) Purpose or use of the chemical/additive;
(3) Safety Data Sheet (SDS), Chemical Abstracts Service (CAS) Registry number, and EPA registration number, if applicable, for each chemical/additive;
(4) The frequency (e.g., daily), magnitude (i.e., maximum application concentration), duration (e.g., hours), and method of application for the chemical/additive; and
(5) The vendor's reported aquatic toxicity, if available (i.e., NOAEL and/or $LC_{50}$ in percent for aquatic organism(s)).

b. Written rationale that demonstrates that the discharge of such chemicals and/or additives as proposed will not: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the

application of permit conditions different from, or in addition to those currently in this permit.

4. PFAS Testing

   After one year of monitoring, if all samples are non-detect for all six PFAS compounds, using EPA's multi-lab validated method for wastewater, the Permittee may request to remove the requirement for PFAS monitoring. Until written notice is received from EPA indicating that the monitoring requirements have been changed, the Permittee is required to continue the monitoring specified in this Permit. *See* Reporting Requirements in Part I.E.3.

5. Aluminum Limit

   a. The effluent limit for total aluminum shall be subject to a schedule of compliance whereby the limit takes effect three years after the effective date of the permit.[2] For the period starting on the effective date of this permit and ending three (3) years after the effective date, the Permittees shall report only the monthly average aluminum concentration on the monthly DMR. After this initial three (3) year period, the Permittees shall comply with the monthly average total aluminum limit of 87 µg/L ("final aluminum effluent limit"). The Permittees shall submit an annual report due by January 15th of each of the first three (3) years of the permit that will detail its progress towards meeting the final aluminum effluent limit. *See* Reporting Requirements in Part I.E.3.

   b. If during the three-year period after the effective date of the permit, Massachusetts adopts revised aluminum criteria, then the Permittees may request a permit modification, pursuant to 40 CFR § 122.62(a)(3), for a further delay in the effective date of the final aluminum effluent limits. If new criteria are approved by EPA before the effective date of the final aluminum effluent limit, the Permittees may apply for a permit modification, pursuant to 40 CFR § 122.62(a)(3), to revise the time to meet the final aluminum effluent limit and/or for revisions to the permit based on whether there is reasonable potential for the facility's aluminum discharge to cause or contribute to a violation of the newly approved aluminum criteria.

## E. REPORTING REQUIREMENTS

Unless otherwise specified in this Permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

[2] The final effluent limit of 87 µg/l for aluminum may be modified prior to the end of the three-year compliance schedule if warranted by new criteria and a reasonable potential analysis, and if consistent with anti-degradation requirements. Such a modification would not trigger anti-backsliding prohibitions, as reflected in CWA § 402(o) and 40 CFR § 122.44(l), provided that such modification is finalized before the final limit takes effect.

The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State electronically using NetDMR no later than the 15th day of the month following the monitoring period. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this Permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. *See* Part I.E.5. for more information on State reporting. Because the due dates for reports described in this Permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month following the monitoring period), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this Permit.

3. Submittal of Requests and Reports to EPA Water Division (WD)

a. The following requests, reports, and information described in this Permit shall be submitted to the NPDES Applications Coordinator in EPA WD:

(1) Transfer of Permit notice;
(2) Request for changes in sampling location;
(3) Request to discharge new chemicals or additives;
(4) Request for change in discontinuation of per- and polyfluoroalkyl substances (PFAS) sampling (see Part I.A.1, footnote 13 and I.D.4) requirements;
(5) Report on unacceptable dilution water/request for alternative dilution water for WET testing;
(6) Nitrogen optimization monitoring report; and
(7) Aluminum compliance schedule report.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov or by hard copy mail to the following address:

**U.S. Environmental Protection Agency**
**Water Division**
**NPDES Applications Coordinator**
**5 Post Office Square - Suite 100 (06-03)**
**Boston, MA 02109-3912**

4. Submittal of Reports in Hard Copy Form

a. The following notifications and reports shall be signed and dated originals, submitted in hard copy, with a cover letter describing the submission:

(1) Written notifications required under Part II, Standard Conditions. Beginning December 21, 2025, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

b. This information shall be submitted to EPA ECAD at the following address:

**U.S. Environmental Protection Agency**
**Enforcement and Compliance Assurance Division**
**Water Compliance Section**
**5 Post Office Square, Suite 100 (04-SMR)**
**Boston, MA 02109-3912**

5. State Reporting

Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

**Massachusetts Department of Environmental Protection**
**Bureau of Water Resources**
**Division of Watershed Management**
**8 New Bond Street**
**Worcester, Massachusetts 01606**

6. Verbal Reports and Verbal Notifications

a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this Permit, shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).

b. Verbal reports and verbal notifications shall be made to EPA's Enforcement and Compliance Assurance Division at:

**617-918-1510**

c. Verbal reports and verbal notifications shall be made to the State's Emergency Response at:

**888-304-1133**

## F. STATE 401 CERTIFICATION CONDITIONS

1. This Permit is in the process of receiving state water quality certification issued by the State under § 401(a) of the CWA and 40 CFR § 124.53. EPA will incorporate by reference all State water quality certification requirements (if any) into the Final Permit.

**USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL**

## I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

## II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

## III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6$^{o}$C.

## IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

*See the most current annual DMR instructions which can be found on the EPA Region 1 website at* http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

## V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]**

| | | |
|---|---|---|
| 1. | Test type | Static, non-renewal |
| 2. | Temperature ($^{o}$C) | 20 ± 1$^{o}$C or 25 ± 1$^{o}$C |
| 3. | Light quality | Ambient laboratory illumination |
| 4. | Photoperiod | 16 hour light, 8 hour dark |
| 5. | Test chamber size | Minimum 30 ml |
| 6. | Test solution volume | Minimum 15 ml |
| 7. | Age of test organisms | 1-24 hours (neonates) |
| 8. | No. of daphnids per test chamber | 5 |
| 9. | No. of replicate test chambers per treatment | 4 |
| 10. | Total no. daphnids per test concentration | 20 |
| 11. | Feeding regime | As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test |
| 12. | Aeration | None |
| 13. | Dilution water[2] | Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q$^{R}$ or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness. |
| 14. | Dilution series | ≥ 0.5, must bracket the permitted RWC |
| 15. | Number of dilutions | 5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution |

| | | |
|---|---|---|
| | | series. |
| 16. | Effect measured | Mortality-no movement of body or appendages on gentle prodding |
| 17. | Test acceptability | 90% or greater survival of test organisms in dilution water control solution |
| 18. | Sampling requirements | For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection. |
| 19. | Sample volume required | Minimum 1 liter |

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

**EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST[1]**

| | | |
|---|---|---|
| 1. | Test Type | Static, non-renewal |
| 2. | Temperature ($^{o}$C) | 20 $\pm$ 1 $^{o}$ C or 25 $\pm$ 1$^{o}$C |
| 3. | Light quality | Ambient laboratory illumination |
| 4. | Photoperiod | 16 hr light, 8 hr dark |
| 5. | Size of test vessels | 250 mL minimum |
| 6. | Volume of test solution | Minimum 200 mL/replicate |
| 7. | Age of fish | 1-14 days old and age within 24 hrs of each other |
| 8. | No. of fish per chamber | 10 |
| 9. | No. of replicate test vessels per treatment | 4 |
| 10. | Total no. organisms per concentration | 40 |
| 11. | Feeding regime | As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test |
| 12. | Aeration | None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.) |
| 13. | dilution water[2] | Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q$^{R}$ or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness. |
| 14. | Dilution series | $\geq$ 0.5, must bracket the permitted RWC |

| | | |
|---|---|---|
| 15. | Number of dilutions | 5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series. |
| 16. | Effect measured | Mortality-no movement on gentle prodding |
| 17. | Test acceptability | 90% or greater survival of test organisms in dilution water control solution |
| 18. | Sampling requirements | For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection. |
| 19. | Sample volume required | Minimum 2 liters |

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

## VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

| Parameter | Effluent | Receiving Water | ML (mg/l) |
|---|---|---|---|
| Hardness[1] | x | x | 0.5 |
| Total Residual Chlorine (TRC)[2, 3] | x | | 0.02 |
| Alkalinity | x | x | 2.0 |
| pH | x | x | -- |
| Specific Conductance | x | x | -- |
| Total Solids | x | | -- |
| Total Dissolved Solids | x | | -- |
| Ammonia | x | x | 0.1 |
| Total Organic Carbon | x | x | 0.5 |
| Total Metals | | | |
| Cd | x | x | 0.0005 |
| Pb | x | x | 0.0005 |
| Cu | x | x | 0.003 |
| Zn | x | x | 0.005 |
| Ni | x | x | 0.005 |
| Al | x | x | 0.02 |
| Other as permit requires | | | |

**Notes:**

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

## VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

## VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

# FRESHWATER CHRONIC
# TOXICITY TEST PROCEDURE AND PROTOCOL
## USEPA Region 1

## I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

## II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition. October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at http://www.epa.gov/waterscience/WET/ . Exceptions and clarification are stated herein.

## III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6$^{o}$ C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

## IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

*See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.*

## V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

### V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25 values and ≥ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

## VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

| Parameter | Effluent | Receiving Water | ML (mg/l) |
|---|---|---|---|
| Hardness[1, 4] | x | x | 0.5 |
| Total Residual Chlorine (TRC)[2, 3, 4] | x | | 0.02 |
| Alkalinity[4] | x | x | 2.0 |
| pH[4] | x | x | -- |
| Specific Conductance[4] | x | x | -- |
| Total Solids[6] | x | | -- |
| Total Dissolved Solids[6] | x | | -- |
| Ammonia[4] | x | x | 0.1 |
| Total Organic Carbon[6] | x | x | 0.5 |
| Total Metals[5] | | | |
| Cd | x | x | 0.0005 |
| Pb | x | x | 0.0005 |
| Cu | x | x | 0.003 |
| Zn | x | x | 0.005 |
| Ni | x | x | 0.005 |
| Al | x | x | 0.02 |
| Other as permit requires | | | |

**Notes:**

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 2340B (hardness by calculation)
  -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 4500-CL E Low Level Amperometric Titration
  -Method 4500-CL G DPD Colorimetric Method
- USEPA 1983. Manual of Methods Analysis of Water and Wastes
  -Method 330.5

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

## VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/ . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value**,** for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.

- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater that the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

## VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Test sensitivity evaluation results (test PMSD for growth and reproduction)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

# NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

## A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit

condition.

3. Duty to Provide Information

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

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

## B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up 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.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a 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.

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* 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.

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the 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

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

a. *Definition*. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit 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.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

## C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), 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.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must 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 Clean Water Act, any substances or parameters at any location.

## D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. *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:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(2) 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 at 40 C.F.R. § 122.42(a)(1).

(3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. *Anticipated noncompliance*. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. *Transfers*. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

d. *Monitoring reports*. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any

relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

## E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

*Administrator* means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

*Applicable standards and limitations* means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

*Application* means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

"approved States," including any approved modifications or revisions.

*Approved program* or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

*Average monthly discharge limitation* means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

*Average weekly discharge limitation* means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

*Best Management Practices ("BMPs")* means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

*Bypass* see B.4.a.1 above.

*C-NOEC* or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

*Class I sludge management facility* is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

*Contiguous zone* means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

*Continuous discharge* means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

*CWA* means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

*CWA and regulations* means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

*Daily Discharge* means the "discharge of a pollutant" measured during a calendar day or any

other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

*Direct Discharge* means the "discharge of a pollutant."

*Director* means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

*Discharge*

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

*Discharge Monitoring Report ("DMR")* means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

*Discharge of a pollutant* means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

*Effluent limitation* means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

*Effluent limitation guidelines* means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

*Environmental Protection Agency ("EPA")* means the United States Environmental Protection

Agency.

*Grab Sample* means an individual sample collected in a period of less than 15 minutes.

*Hazardous substance* means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

*Incineration* is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

*Indirect discharger* means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

*Interference* means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

*Landfill* means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

*Land application* is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

*Land application unit* means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

$LC_{50}$ means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The $LC_{50}$ = 100% is defined as a sample of undiluted effluent.

*Maximum daily discharge limitation* means the highest allowable "daily discharge."

*Municipal solid waste landfill (MSWLF) unit* means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

*Municipality*

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

*National Pollutant Discharge Elimination System* 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 CWA. The term includes an "approved program."

*New Discharger* means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants;"

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source;" and

(d) Which has never received a finally effective NPDES permit for discharges at that "site."

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

*New source* means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

*NPDES* means "National Pollutant Discharge Elimination System."

*Owner or operator* means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

*Pass through* means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

*Pathogenic organisms* are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

*Permit* means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

*Person* means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

*Person who prepares sewage sludge* is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

*pH* means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

*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 storm water runoff (see 40 C.F.R. § 122.3).

*Pollutant* means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq*.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

*Primary industry category* means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

*Privately owned treatment works* means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

*Process wastewater* means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

*Publicly owned treatment works (POTW)* means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

*Regional Administrator* means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

*Secondary industry category* means any industry which is not a "primary industry category."

*Septage* means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

*Sewage Sludge* means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

*Sewage sludge incinerator* is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

*Sewage sludge unit* is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

*Sewage sludge use or disposal practice* means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

*Significant materials* includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

*Significant spills* includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

*Sludge-only facility* means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

*State* means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

*Store or storage of sewage sludge* is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

*Storm water* means storm water runoff, snow melt runoff, and surface runoff and drainage.

*Storm water discharge associated with industrial activity* means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

*Surface disposal site* is an area of land that contains one or more active sewage sludge units.

*Toxic pollutant* means any pollutant listed as toxic under Section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA.

*Treatment works treating domestic sewage* means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

*Upset* see B.5.a. above.

*Vector attraction* is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

*Waste pile* or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

*Waters of the United States or waters of the U.S.* means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

*Wetlands* means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

*Whole Effluent Toxicity (WET)* means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

| | |
|---|---|
| BOD | Five-day biochemical oxygen demand unless otherwise specified |
| CBOD | Carbonaceous BOD |
| CFS | Cubic feet per second |
| COD | Chemical oxygen demand |
| Chlorine | |
| $Cl_2$ | Total residual chlorine |
| TRC | Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.) |
| TRO | Total residual chlorine in marine waters where halogen compounds are present |
| FAC | Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion) |
| Coliform | |
| Coliform, Fecal | Total fecal coliform bacteria |
| Coliform, Total | Total coliform bacteria |
| Cont. | Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc. |
| Cu. M/day or $M^3$/day | Cubic meters per day |
| DO | Dissolved oxygen |

| | |
|---|---|
| kg/day | Kilograms per day |
| lbs/day | Pounds per day |
| mg/L | Milligram(s) per liter |
| mL/L | Milliliters per liter |
| MGD | Million gallons per day |
| Nitrogen | |
| Total N | Total nitrogen |
| $NH_3$-N | Ammonia nitrogen as nitrogen |
| $NO_3$-N | Nitrate as nitrogen |
| $NO_2$-N | Nitrite as nitrogen |
| $NO_3$-$NO_2$ | Combined nitrate and nitrite nitrogen as nitrogen |
| TKN | Total Kjeldahl nitrogen as nitrogen |
| Oil & Grease | Freon extractable material |
| PCB | Polychlorinated biphenyl |
| Surfactant | Surface-active agent |
| Temp. °C | Temperature in degrees Centigrade |
| Temp. °F | Temperature in degrees Fahrenheit |
| TOC | Total organic carbon |
| Total P | Total phosphorus |
| TSS or NFR | Total suspended solids or total nonfilterable residue |
| Turb. or Turbidity | Turbidity measured by the Nephelometric Method (NTU) |
| µg/L | Microgram(s) per liter |
| WET | "Whole effluent toxicity" |
| ZID | Zone of Initial Dilution |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**NEW ENGLAND - REGION 1**
**5 POST OFFICE SQUARE, SUITE 100**
**BOSTON, MASSACHUSETTS 02109-3912**

# FACT SHEET

## DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

**NPDES PERMIT NUMBER:** MA0001716

**PUBLIC NOTICE START AND END DATES:** April 1, 2021 – April 30, 2021

**NAME AND MAILING ADDRESS OF PERMITTEES:**

Onyx Specialty Papers, Inc.
P.O. Box 188
South Lee, MA 01260

WestRock
1000 Abernathy Road NE
Atlanta, GA 30328

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

Laurel Mill
1085 Pleasant Street
South Lee, MA 01260

**RECEIVING WATER AND CLASSIFICATION:**

Housatonic River (MA21-19)
Housatonic River Basin
Class B

**SIC CODES:** 2621 (Paper Mills), 4953 (Refuse Systems)

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## Appendices

## 1.0 Proposed Action

Onyx Specialty Paper, Inc. (Onyx) and WestRock, together referred to as the Permittees, have applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge from the Laurel Mill paper manufacturing facility, closed landfill, and wastewater treatment plant in South Lee, Massachusetts (the Facility) into the Housatonic River.

The permit currently in effect was issued and became effective on September 27, 2012 and expired on August 31, 2017 (the 2012 Permit). During the permit term, Onyx notified EPA that they had purchased the paper manufacturing facility and taken over operation of the wastewater treatment plant. WestRock, formerly MeadWestvaco Corporation, retained ownership of the wastewater treatment plant and closed landfill. Onyx filed an application on behalf of the entire Facility for permit reissuance with EPA dated June 30, 2017, as required by 40 Code of Federal Regulations (CFR) § 122.6. Since the permit application was deemed timely and complete by EPA, the Facility's 2012 Permit has been administratively continued pursuant to 40 CFR § 122.6 and § 122.21(d). In determining permittee status for this reissuance, EPA has determined that Onyx and WestRock are co-permittees and are both responsible for complying will all Parts of the final NPDES permit. Regulatory references to "Permittee" in section 2.0 and its subsections shall apply to both Onyx and WestRock.

EPA and the State held a joint conference call with the Permittees on October 26, 2020 to review facility operations and confirm permittee status. In addition, EPA conducted a site visit on November 12, 2020.

## 2.0 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251 – 1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 CFR §§ 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). *See also* 40 CFR §§ 122.4(d), 122.44(d)(1), and 122.44(d)(5). CWA §§ 301 and 306 provide for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations (TBELs) and "water quality-based" effluent limitations (WQBELs). *See* CWA §§ 301 and 304(b); 40 CFR §§ 122, 125, and 131.

## 2.1 Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under CWA §§ 301(b) and 402 to meet best practicable control technology currently available (BPT) for conventional pollutants and some metals, best conventional control technology (BCT) for conventional pollutants, and best available technology economically achievable (BAT) for toxic and non-conventional pollutants. *See* 40 CFR § 125 Subpart A.

Subpart A of 40 CFR Part 125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under § 301(b) of the CWA, including the application of EPA promulgated Effluent Limitation Guidelines (ELGs) and case-by-case determinations of effluent limitations under CWA § 402(a)(1). EPA promulgates New Source Performance Standards (NSPS) under CWA § 306 and 40 CFR § 401.12. *See also* 40 CFR §§ 122.2 (definition of "new source") and 122.29. Cooling water intake structure requirements under CWA § 316(b) are developed for new facilities in accordance with 40 CFR Part 125, Subpart I, while they are developed for existing facilities in accordance with 40 CFR Part 125, Subpart J.

In general, ELGs for non-POTW facilities must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989. *See* 40 CFR § 125.3(a)(2). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit. In the absence of published technology-based effluent guidelines, the permit writer is authorized under CWA § 402(a)(1)(B) to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ).

## 2.2 Water Quality-Based Requirements

The CWA and federal regulations require that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1),122.44(d)(5), 125.84(e) and 125.94(i).

### 2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 CFR §§ 131.10-12. Generally, WQSs consist of three parts: 1) beneficial designated use or uses for a water body or a segment of a water body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) antidegradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 CFR § 131.12. The applicable State WQSs can be found in Title 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00).

As a matter of state law, state WQSs specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to monthly average limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use," 2) based on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 CFR § 122.44(d)(1)(vi)(A-C).

### 2.2.2 Antidegradation

Federal regulations found at 40 CFR § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

Massachusetts' statewide antidegradation policy, entitled "Antidegradation Provisions," is found in the State's WQSs at 314 CMR 4.04. Massachusetts guidance for the implementation of this policy is in an associated document entitled "Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00" dated October 21, 2009. According to the policy, no lowering of water quality is allowed, except in accordance with the antidegradation policy, and all existing in-stream uses, and the level of water quality necessary to protect the existing uses of a receiving water body must be maintained and protected.

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State's antidegradation requirements, including the protection of the existing uses of the receiving water.

### 2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop

information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among the various sources, including point source discharges, subject to NPDES permits. *See* 40 CFR § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 CFR § 122.44(d)(1)(vii)(B).

### 2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 CFR § 122.44(d)(1)(i).

### 2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs, the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 CFR § 124.53 and § 124.55. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified.

If the State believes that conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307, or applicable requirements of State law, the State should include such conditions in its certification and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through EPA's permit appeal procedures of 40 CFR Part 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to final permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limitations based upon WQSs and State requirements are contained in 40 CFR §§ 122.4(d) and 122.44(d).

## 2.3 Effluent Flow Requirements

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the effluent limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under CWA § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced and the calculated effluent limitations might not be sufficiently protective (i.e., might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at a lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may

ensure the validity of its "worst-case" effluent flow assumptions through imposition of permit conditions for effluent flow.[1] In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs.

The limitation on effluent flow is within EPA's authority to condition a permit to carry out the objectives and satisfy the requirements of the CWA. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 CFR §§ 122.4(a) and (d), 122.43 and 122.44(d). A condition on the discharge designed to ensure the validity of EPA's WQBELs and reasonable potential calculations that account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§402 and 301 and the implementing regulations, as WQBELs are designed to assure compliance with applicable water quality regulations, including antidegradation requirements. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of effluent is also consistent with the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 CFR § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Consequently, the effluent flow limit is a permit condition that relates to the Permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 CFR §§ 122.41(d), (e).

## 2.4 Monitoring and Reporting Requirements

### 2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the discharges. The monitoring program is needed to enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based

[1] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id.* 40 CFR §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 599 (EAB 2010). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *See In re Washington Aqueduct Water Supply Sys., 11 E.A.D. 565, 584 (EAB 2004)*.

standards under the CWA. EPA and/or the State may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.[2] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[3] (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

### 2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to

[2] Fed. Reg. 49,001 (Aug. 19, 2014).
[3] The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49,001 (Aug. 19, 2014).

EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on EPA's NetDMR support portal webpage.[4]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for providing written notifications required under the Part II Standard Conditions.

### 2.5 Standard Conditions

The Standard Conditions, included as Part II of the Draft Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 CFR Part 122.

### 2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified to include less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(*l*). Anti-backsliding provisions apply to effluent limits based on technology, water quality, and/or State certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2012 Permit unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

## 3.0 Description of Facility and Discharge

### 3.1 Location and Type of Facility

The Facility is located along the northern bank of the Housatonic River on Pleasant Street in South Lee, Massachusetts. A location map is provided in Figure 1. The Facility is composed of two paper manufacturing buildings – the Morart and Laurel Mill buildings. The Morart building is actively producing paper while the Laurel Mill building was the historical location of paper manufacturing and is now used primarily for non-manufacturing purposes such as storage. In addition to the paper manufacturing buildings, the site is made up of a water intake building on the Housatonic River, a process water treatment plant (for treating river water), and a wastewater treatment plant. The wastewater treatment plant consists of a primary clarifier, one active Rotating Biological Contractor (RBC), and one active secondary clarifier. The southern portion of the Facility is composed of WestRock's closed landfill that was the disposal site for setteable solids from paper manufacturing wastewater treatment prior to 1998. A site plan is provided in Figure 2.

[4] https://netdmr.zendesk.com/hc/en-us

The Facility is engaged in research scale production of specialty grades of paper for industrial and automotive applications. The paper products are produced from purchased pulps and additives: 63% wood, 28% cotton, and 9% other materials. A single "Research Paper Machine" located in the Morart building produces all paper at the Facility. Paper manufacturing consists of the combination of water, fiber, and additives in a "pulper" to make the desired stock of paper. This source material is then fed to the paper machine where the paper slurry is gradually dewatered by gravity, vacuum pumps, and steam pressure. The mixture goes from about 95% water content down to less than 5%. A "Wire" or "Screen" directs the mixture as it begins to form into paper during this process. A schematic of the paper manufacturing process is provided in Figure 3.

Wastewater produced from paper manufacturing is directed to the wastewater treatment plant. The treatment plant treats both the paper mill's wastewater and landfill leachate from the adjacent closed landfill. Stormwater from building roofs is also directed to the wastewater treatment plant. A complete discussion of water flow is provided in Section 3.2 below.

### 3.1.1 Effluent Limitation Guidelines

EPA has promulgated technology-based ELGs for both the Pulp, Paper and Paperboard industry (40 CFR Part 430) and for Landfills (40 CFR Part 445).

For the Pulp, Paper and Paperboard industry, the ELGs are divided into 12 different subcategories based on the process used and the products made. Historically, Laurel Mill has been permitted under 40 CFR Part 430, Subpart K – "Fine and Lightweight Papers from Purchased Pulp Subcategory" and the wood fiber furnish subdivision of Subpart K. BPT for Subpart K is found in 40 CFR § 430.112. All facilities are subject to effluent limitations for BOD5, TSS, and pH depending on the type of paper manufactured. The subdivisions of this Subpart include fine papers composed of cotton fiber furnish or wood fiber furnish and lightweight papers for either the general category or for electrical grade papers. The following BPT effluent limitations have been applied historically at the Facility:

**Table 1. BPT effluent limitations for non-integrated mills where fine paper is produced from purchased pulp – wood fiber furnish subdivision**

| **Pollutant or pollutant property** | **Kg/kkg (or pounds per 1,000 lb) of product** | | |
|---|---|---|---|
| | **Continuous dischargers** | | **Non-continuous dischargers (annual average)** |
| | **Daily Maximum** | **Monthly Average** | |
| BOD5 | 8.2 | 4.25 | 2.4 |
| TSS | 11.0 | 5.9 | 3.2 |
| pH | 5.0 to 9.0 at all times | | |

As defined in 40 CFR § 430.113, BCT for this Subpart is equivalent to BPT. In addition to conventional pollutants, facilities in these subparts that use chlorophenolic-containing biocides

are subject to BAT effluent limitations or must certify that they are not using such biocides. The following BAT effluent limitations apply to this subcategory:

**Table 2. BAT effluent limitations for non-integrated mills where fine paper is produced from purchased pulp – wood fiber furnish subdivision**

| Pollutant or pollutant property | Maximum for any 1 day | |
|---|---|---|
| | Kg/kkg (or pounds per 1,000 lb) of product | Milligrams/liter |
| Pentachlorophenol | 0.0018 | (0.029)(15.2)/y |
| Trichlorophenol | 0.00064 | (0.010)(15.2)/y |

Note: y = wastewater discharged in thousand gallons per ton of product

For the Draft Permit, EPA reassessed the applicability of this subpart to the Facility. The original Subpart K designation was made at a time when the Facility, under different ownership, produced paper at industrial scale rather than for current research operations. At the time, the Facility produced 55 tons/day of product and used 99% wood fiber. The Permittees have indicated on their permit renewal application and shown via their DMR data that they typically produce closer to 0.25 tons/day and that 28% of their raw materials are composed of cotton fiber. Furthermore, the Facility currently produces multiple different specialty papers that do not all fall clearly into one category. In addition to the production of Subpart K papers, the Facility also produces papers that fall into Subpart L – Tissue, Filter, Non-woven, and Paperboard from Purchased Pulp (40 CFR Part 430, Subpart L).

Facility production is not stagnant, tied to one or two specific products; instead, due to the research-focused nature of current operations, the types of paper produced vary as existing products are altered and new business development is undertaken. Onyx provided additional clarification to EPA when asked what subpart most closely fits their current production:

> … we're not tissue, lightweight, non-woven or paperboard. We make specialty filter papers but they're not a main product. While some of our products have a high cotton content, and some have none, there isn't anyone here that would refer to us as a cotton fiber fine paper mill. Our furnish is predominantly wood…[5]

In developing the subcategorization scheme for the pulp, paper and paperboard industry, EPA anticipated that not all mills would fall within one subcategory. For those cases, EPA included an additional group:

> The subcategorization scheme does not account for all mills in each industry segment because of the complex variety of pulping processes employed, the different products manufactured, or because no subcategory exists within which a particular mill can be placed. Mills that do not logically fit the revised subcategorization scheme are included in miscellaneous mill groupings in each segment (integrated-miscellaneous, secondary fibers-miscellaneous, and nonintegrated-miscellaneous). Permits for all mills in the

[5] Email correspondence between Daniel Grant (Onyx) and Nathan Chien (EPA) dated October 8, 2020.

> miscellaneous groupings will be established on a case-by-case basis. For many mills, permits can be written by prorating effluent limitations and standards from the appropriate subcategories; however, for other mills, this will not be possible because operations are employed that are not characteristic of any of the subcategory delineations.[6]

Given the variety of papers produced at the Facility and the continuously changing production from research and development, EPA finds that the nonintegrated-miscellaneous grouping is appropriate for this permit issuance. In developing effluent limitations for TSS and BOD, EPA will consider both nonintegrated subcategories (Subparts K and L) as well as any relevant site-specific factors.

In addition to paper manufacturing, the Facility also discharges approximately 10,000 gallons per day of treated leachate from a closed landfill. According to the Permittees, this landfill is classified as a Resource Conservation and Recovery Act (RCRA) Subtitle D Non-Hazardous Waste Landfill, which falls under Subpart B of 40 CFR Part 445. The ELGs for the Landfills Point Source Category at 40 CFR Part 445 apply to both active and closed landfills. However, since this landfill is a "captive" landfill – defined as those landfills associated with other industrial or commercial operations – it is not subject to the ELGs as noted in the *Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Landfills Point Source Category; Final Rule*.[7]

In addition, in accordance with CWA § 402(a)(1)(B) and 40 CFR § 125.3(c)(2), EPA may establish effluent limitations on a case-by-case basis using BPJ. The NPDES regulations in 40 CFR §125.3(c)(2) state that permits developed on a case-by-case basis under Section 402 (a)(1) of the CWA shall apply the appropriate factors listed in 40 CFR § 125.3(d) and must consider 1) the appropriate technology for the category class of point sources of which the applicant is a member, based on available information, and 2) any unique factors relating to the applicant.

### 3.1.2 Measure of Production

In accordance with 40 CFR § 122.45(b)(2), EPA based the calculation of effluent limitations applicable under the ELGs for BPT upon a reasonable measure of actual production of the Facility. EPA determined that the measure of production appropriate for this Facility is the maximum anticipated pounds of product produced per day. The Permittees provided the maximum anticipated amount of product produced per day on their permit renewal application, 1.0 tons per day. Setting effluent limitations in terms of this anticipated amount of production is merited in this specific case given the research-scale of the Facility's operations; the anticipated production amount, though higher than observed production, is well below historic facility capacity.

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[6] Page 97 of EPA's October 1982 *Development Document for Effluent Limitations Guidelines and Standards for the Pulp, Paper, and Paperboard and the Builders' Paper and Board Mills Point Source Categories*, EPA 440/1-82/025. See also comments to the Final Rule on p. 52018 of Federal Register Vol. 48, No. 223, November 18, 1982.
[7] EPA. *Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Landfills Point Source Category; Final Rule. January 19, 2000. F.R. Vol 65 No. 12.*

## 3.2 Location and Type of Discharge

The Facility discharges treated process wastewater from papermaking, miscellaneous equipment and pump seal water, boiler blowdown, water softener backwash water, vacuum pump water, filter backwash water, non-contact cooling water, stormwater from roof drains, and landfill leachate through Outfall 001. Outfall 001 is located at Latitude 42° 16' 31.404", Longitude -73° 16' 6.528" on the northern bank of the Housatonic River, downstream from the water intake. A water flow diagram is provided in Figure 4.

Water enters the process stream through an intake located in a dredged lagoon off of the Housatonic River. The intake consists of a submersible pump with a design intake flow (DIF) of 325 gallons per minute (0.468 MGD). The pump is run continuously and water travels from the river intake to the process water treatment plant. A manual valve in the process water treatment plant restricts flow as necessary; the Permittees estimate actual intake flow (AIF) is about 0.4 MGD.

At the process water treatment plant, aluminum sulfate (alum) is added to the river water before passing through settling bays for solids removal. After settling, the water is sent through sand filters. This pretreated water is then piped to the Morart building. The wastewater produced from pretreatment – including filter backwash water, desludger flow discharging wastewater high in solids from the settling bay, and overflow water not needed for paper manufacturing is routed to the wastewater treatment plant. Approximately three quarters of the water that makes it to the wastewater treatment plant is wastewater produced during these pretreatment steps.

The pretreated water, approximately 100,000 gallons per day (GPD), is used for a variety of paper manufacturing processes. About 30,000 GPD is used as non-contact cooling water to condense steam in the dryer section of the paper machine. About 20,000 GPD is used in the stock prep and paper machine. The remaining water is used for miscellaneous paper making and plant operations, e.g. as seal water for pumps and equipment, or to clean the manufacturing plant floor. This miscellaneous water is fed through floor drains and piped to the wastewater treatment plant where it joins the other wastewater streams, including landfill leachate and stormwater from roof drains. Stormwater does not contact any raw materials before comingling with the other wastewater streams. The combined wastewater is treated through a primary clarifier, one rotating biological contractor and one secondary clarifier before discharging through Outfall 001 into the Housatonic River.

The river water pretreatment system is not designed as efficiently as possible given current operations. The system was designed to be used by a much larger paper mill with greater process water needs. The system is run at approximately 10% of its rated capacity. As a result, three times as much wastewater is produced (backwash, desludger, and overflow) than is used in paper manufacturing (Fig. 4). In addition, there is a possibility that treatment by dilution is occuring with uncontaminated stormwater and overflow pretreated water commingling with wastewater at the treatment plant. EPA has considered these factors in its development of technology-based effluent limitations in the corresponding parts of Section 5.1 below.

Potable water is purchased from the Town of Lee to be used for sanitary systems and limited manufacturing usage. Sanitary wastewater is sent to the Town of Lee's wastewater treatment plant. The discharge of sanitary wastewater is not authorized by the Draft Permit.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the Permittees, including Discharge Monitoring Reports (DMRs), from November 1, 2015 through October 31, 2020, is provided in Appendix A of this Fact Sheet.

EPA notes that the Permittees submitted additional monitoring data since October 31, 2020. EPA reviewed these additional data to ensure that the results are consistent with the data used to derive the effluent limitations and conditions in the Draft Permit. EPA finds that these additional data are consistent. As a result, these additional data are not included in Appendix A or discussed further in this Fact Sheet.

## 4.0 Description of Receiving Water and Dilution

### 4.1 Receiving Water

The Facility discharges through Outfall 001 to the Housatonic River (Segment ID MA21-19). This segment of the Housatonic River is 19.9 miles long and starts at the outlet of the Woods Pond Dam (NATID: MA00731) to the north, runs through the towns of Lee and Lenox, and ends at Risingdale Impoundment Dam (NATID: MA00250) to the south in Great Barrington. The Housatonic River flows southward past the border between Massachusetts and Connecticut and discharges into Long Island Sound (LIS).

The Housatonic River is classified as Class B, warm water fishery in the Massachusetts WQSs, 314 Code of Massachusetts Regulations (CMR) 4.06 Table 2. Class B waters are described in the Commonwealth of Massachusetts Water Quality Standards (314 CMR 4.05(3)(b)) as follows: *"designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated in 314 CMR 4.06, they shall be suitable as a source of public water supply with appropriate treatment ("Treated Water Supply"). Class B waters shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value."*

This segment of the Housatonic River is listed in the *Massachusetts Year 2016 Integrated List of Waters* ("303(d) List") as a Category 5 "Waters Requiring a TMDL.[8] The causes of impairment listed are algae, Polychlorinated Biphenyls (PCBs) alone and in Fish Tissue, and Total Phosphorus. In addition, zebra mussels are a source of impairment, although they are not considered a pollutant and do not require a TMDL. The status of each designated use is

[8] *Massachusetts Year 2016 Integrated List of Waters*. MassDEP Division of Watershed Management Watershed Planning Program, Worcester, Massachusetts; December, 2019; CN 470.1.

presented in Table 3, derived from the *Housatonic River Watershed 2002 Water Quality Assessment Report*.[9]

**Table 3. Summary of Designated Uses and Listing Status**

| Designated Use | Status | Cause |
|---|---|---|
| Aquatic Life | Impaired | PCBs in fish and sediment; total phosphorus |
| Aesthetics | Impaired | Objectionable algal growth |
| Primary Contact Recreation | Impaired | Objectionable algal growth |
| Secondary Contact Recreation | Impaired | Objectionable algal growth |
| Fish Consumption | Impaired | PCBs |

To EPA's knowledge, the Facility does not discharge PCBs; however, nutrients that could contribute to objectionable algal growth and total phosphorus impairments are present in the Facility's effluent. These discharge parameters are discussed in the effluent limitations section below.

To date no TMDL has been developed for this segment of the Housatonic River in Massachusetts. However, in December 2000, the Connecticut Department of Energy and Environmental Protection (CT DEEP) and New York State Department of Environmental Conservation (NYSDEC) completed a TMDL for addressing nitrogen-driven eutrophication impacts in LIS. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont point sources discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL. For the Draft Permit, EPA has evaluated the discharge of nitrogen relative to the TMDL goals.

## 4.2 Available Dilution

To ensure that discharges do not cause or contribute to violations of WQSs under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water.[10] The critical flow is some measure of the low flow of the receiving water and may stipulate the magnitude, duration, and frequency of allowable excursions from the magnitude component of criteria in order to prevent adverse impacts of discharges on existing and designated uses. State WQSs specify the hydrologic condition at which water quality criteria must be applied.

For rivers and streams in Massachusetts, the lowest flow condition at and above which aquatic life criteria must be applied is the lowest mean flow for seven consecutive days, expected once in 10 years, or 7-day 10-year low flow (7Q10). *See* 314 CMR 4.03(3)(a). In addition, for rivers and streams whose flows are regulated by dams or similar structures, human health criteria may be applied at the harmonic mean flow. *See* 314 CMR 4.03(3)(d). This segment of the Housatonic

[9] *Housatonic River Watershed 2002 Water Quality Assessment Report*. MassDEP Division of Watershed Management, Worcester, Massachusetts; September, 2007, Report Number: 21-AC-4.
[10] EPA Permit Writer's Manual, Section 6.2.4

River is bounded by the Woods Pond Dam to the north and Risingdale Impoundment Dam to the south.

The Massachusetts's Department of Environmental Protection calculated the 7Q10 and harmonic mean flow for the Housatonic River based on data from the United States Geological Survey (USGS) low-flow frequency statistics for the nearest USGS gauging station to the Facility along the Housatonic River (station number 01197500, 0.5 miles upstream from Williams River[11]) for a 30-year period of record, and the USGS StreamStats for Massachusetts watershed delineation tool.[12] The 7Q10 and harmonic mean flow in the receiving water upstream of the discharge was then calculated as follows:

Drainage $Area_{gage}$ = 282 $mi^2$
Drainage $Area_{Laurel}$ = 241 $mi^2$
$7Q10_{USGS\text{-}gage}$ = 65.74 cfs
Harmonic Mean $Flow_{gage}$ = 275 cfs

$$Flow_{Laurel} = \frac{(Drainage\ Area_{Laurel})(Flow_{gage})}{(Drainage\ Area_{gage})}$$

7Q10 = 56.2 cfs (36.3 MGD)

Harmonic mean = 235.02 cfs (151.9 MGD)

Using the above-calculated 7Q10 ($Q_s$), the dilution factor (DF) was calculated using the permitted daily maximum flow ($Q_d$) as follows:

$$DF = (Q_s + Q_d) / Q_d$$

Where:

$Q_S$ = 7Q10 in million gallons per day
$Q_d$ = Daily maximum discharge flow

Therefore:

DF = (36.3 MGD + 1.5 MGD) / 1.5 MGD = 25

EPA used the 7Q10, discharge flow, harmonic mean flow, and/or the dilution factor (DF) in its analysis of the reasonable potential for pollutants to exceed water quality criteria and its quantitative derivation of WQBELs for those pollutants in the Draft Permit.

[11] USGS StreamStats National Data Collection Station Report for Station 01197500: https://streamstatsags.cr.usgs.gov/gagepages/html/01197500.htm
[12] USGS StreamStats for Massachusetts Interactive Map: http://water.usgs.gov/osw/streamstats/massachusetts.html

## 5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State WQSs are described below. These proposed effluent limitations and conditions, the basis of which is discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit.

### 5.1 Effluent Limitations and Monitoring Requirements

The State and Federal regulations, data regarding discharge characteristics, and data regarding ambient characteristics described above, were used during the effluent limitations development process. Discharge data for Outfall 001 are included in Appendix A. EPA's Reasonable Potential Analyses are included in Appendix B and C and results are discussed in the applicable sections below.

#### 5.1.1 Effluent Flow

From November 1, 2015 through October 31, 2020, at Outfall 001 monthly average effluent flow has ranged from 0.16 MGD to 0.55 MGD and daily maximum effluent flow has ranged from 0.19 MGD to 0.74 MGD (Appendix A). The Facility's 2012 Permit does not include limitations on effluent flow. For permit reissuance, EPA has determined that effluent flow limitations are necessary. Flow limitations are used to ensure water quality-based standards are met, as they are used in dilution factor calculations and assessments of the effluent's reasonable potential to cause or contribute to violations of water quality standards. EPA has the authority to limit effluent flow under CWA §§ 402(a)(2) and 301(b)(1)(C). For additional regulatory basis see 40 CFR §§ 122.4(a) and (d), 122.43, and 122.44(d) or the summary provided above in Section 2.3 of this Fact Sheet.

The Draft Permit includes new limitations on metals due to the finding that there is reasonable potential for the Facility to violate water quality criteria for those metals. The derivation of these limits requires a reasonable estimate of worst-case effluent flow. The Draft Permit includes a maximum daily flow limitation of 1.5 MGD and a monthly average flow limitation of 1.0 MGD. These limits were chosen to be representative of historical discharges while also allowing for a reasonable increase in flow due to changes in production or seasonal variability. The Facility's flow through Outfall 001 has been below these limits since the start of the 2012 Permit term in November and has been significantly below these limits over the last five years. The Draft Permit requires continuous monitoring of effluent flow using a recording device, such as a flow meter, when the Facility is discharging.

#### 5.1.2 Total Suspended Solids

Solids could include inorganic (e.g., silt, sand, clay, and insoluble hydrated metal oxides) and organic matter (e.g., flocculated colloids and compounds that contribute to color). Solids can clog fish gills, resulting in an increase in susceptibility to infection or asphyxiation. Suspended solids can increase turbidity in receiving waters and reduce light penetration through the water column or settle to form bottom deposits in the receiving water. Suspended solids also provide a medium for the transport of other adsorbed pollutants, such as metals, which may accumulate in

settled deposits that can have a long-term impact on the water column through cycles of re-suspension.

The 2012 Permit includes bi-weekly TSS monitoring, a monthly average load limitation of 100 lb/day and a daily maximum load limitation of 250 lb/day. EPA used its BPJ authority in accordance with CWA § 402(a)(1)(B) and 40 CFR § 125.3(c)(2) to establish these limitations, using the the secondary wastewater treatment standards found at 40 CFR § 133.102(b)[13] to inform this determination. At the time, EPA found that the treatment used at the Facility was equivalent to secondary treatment used at Publicly Owned Treatment Works (POTW), including the use of influent screening, clarification, biological treatment, and sludge removal. . One difference between the 2012 permit determination in the secondary standards relates to using 45 mg/l as a daily maximum rather than as a 7-day average (see 40 CFR Part 133). The 2012 Permit's TSS limitations were more stringent than the ELG-based limitations from the 2005 Permit.[14]

One contributing factor to not applying technology ELGs in the 2012 Permit was that the Facility's discharge through Outfall 001 is only made up of a small percentage of wastewater that is directly involved in papermaking, with about 5% of wastewater being used directly in paper manufacturing (Fig. 4). The vast majority of the wastewater reaching the treatment plant is filter house backwash and overflow water (0.3 MGD or 75% on average). Landfill leachate (0.1 MGD) and stormwater are additional non-papermaking water sources. The remaining water includes 0.03 MGD of non-contact cooling water (NCCW) to condense steam from the paper machine and the miscellaneous water flows and leaks associated with equipment and pump seals. While these sources were not considered papermaking wastewater during the development of the 2012 Permit, they were considered as such in the development of the Pulp and Paper Mill industry ELGs.[15]

From November 1, 2015 through October 31, 2020, monthly average TSS load has ranged from below minimum levels to 64.07 lb/day and daily maximum TSS load has ranged from below minimum levels to 695 lb/day (Appendix A). There was one exceedance of the daily maximum permit limit – 695 lb/day during December 2015 – believed to be caused by an error in sampling. The Facility was not required to report TSS concentrations; however, EPA calculated monthly TSS concentrations using the reported TSS load, the Facility's flow and a conversion factor (see footnote 13). Daily maximum TSS concentrations ranged from non-detect to 167 mg/L during

[13] Load limitations are calculated from the secondary treatment concentration standards (30 mg/L for monthly average limits and 45 mg/L for daily maximum limits) using the following equation: Mass limitation lb/day = Concentration Standard mg/L * design flow MGD * 8.34. Design flows of 0.4 and 1.0 MGD were chosen for monthly average and daily maximum flow, respectively.

[14] The 2005 Permit limited TSS to a monthly average less than 657 lb/day and a daily maximum less than 1225 lb/day based on a production amount of 55 tons/day and prorated across the wood and cotton fiber furnish subdivisions of Subpart K.

[15] See EPA's *Development Document for Effluent Limitations Guidelines and Standards for the Pulp, Paper, and Paperboard and the Builders' Paper and Board Mills Point Source Categories* (October 1982). Cooling water is referenced throughout Section 7, for instance, the Segregation of Cooling Water on page 281. Vacuum pump seal water is referenced in Table II-14 on page 64.

this five-year period and monthly average TSS concentrations ranged from non-detect to 20.2 mg/L.

For the Draft Permit, EPA has reassessed the appropriate TSS effluent limitations by looking at the more stringent of technology-based ELGs and State WQSs. State WQSs for Class B waters provide narrative criteria for solids, "These waters shall be free from floating, suspended and settleable solids in concentrations and combinations that would impair any use assigned to this Class, that would cause aesthetically objectionable conditions, or that would impair the benthic biota or degrade the chemical composition of the bottom." *See* 314 CMR 4.05(3)(b)5. In 1981, MassDEP released a Water Quality Management Plan for the Housatonic River that included a wasteload allocation for TSS and BOD at Laurel Mill.[16] The WLA set a monthly average TSS limit of 256 lb/day for Laurel Mill. This limit is less stringent than the current BPJ-based monthly average limit of 100 lb/day. The Water Quality Management Plan did not include a daily maximum limit.

As discussed previously, EPA has determined that the Facility does not fit into a single ELG subpart and subdivision; and, papermaking technology-based limitations for miscellaneous nonintegrated mills can be determined on a case-by-case basis. The 2012 Permit established TSS limitations based on secondary treatment standards. These limitations were BPJ technology-based limits, in line with EPA's discretion to apply case-by-case limits for miscellaneous mills.

EPA finds that application of the more stringent ELG-based requirements (Subpart K, wood fiber furnish subdivision) for this permit reissuance is inappropriate for Laurel Mill. Production and flow rates for Laurel Mill's research paper machine are significantly lower than production and flow rates used to derive effluent limitations, such that applying the most stringent ELG-based requirements for TSS (Subpart K wood fiber furnish) would result in the following:

$$Limit = BPT\ effluent\ limitation\ lb/1000lb * production\ amount\ in\ lb/day$$

$$Monthly\ Average\ Limit = 5.9\ lb/1000lb\ * 2000\ lb/day = 3.0\ lb/day$$

$$Daily\ Maximum\ Limit = 11.0\ lb/1000lb\ * 2000\ lb/day\ = 5.5\ lb/day$$

Given current Facility flows, the effluent would have to be treated to TSS concentrations of 2.8 – 14.0 mg/L, approaching the minimum levels for CWA-approved TSS analytical methods, to achieve these load limitations. Furthermore, the treatment required to achieve such reductions in TSS, e.g. sand or membrane filtration, is not the same as the recommended BPT treatment for the nonintegrated subparts K and L.[17] Instead, Subpart K BPT was based on biological treatment, and Subpart L BPT was based on primary treatment, both of which are currently employed at the Facility. In developing the ELGs, EPA found that these treatment methods were able to achieve

[16] Massachusetts Department of Environmental Quality Engineering, 1981 *Water Quality Management Plan – The Housatonic River*.
[17] Id. See page 393 for a summary of BPT technology basis for the nonintegrated subparts and Figure VIII-1 page 293 for corresponding TSS concentrations for such technology.

TSS concentrations ranging from 37 – 75 mg/L.[18] Due to the variable and small magnitude production at Laurel Mill, applying the ELGs for this nonintegrated miscellaneous paper mill is not appropriate.

Given the inapplicability of the ELGs, EPA has again looked towards the secondary treatment standards as a technology-basis for the Draft Permit's TSS limitations. The secondary treatment regulations at 40 CFR § 133.102(b) state that the 30-day average concentrations of TSS shall not exceed 30 mg/L and the 7-day average TSS shall not exceed 45 mg/L. The 2012 Permit applied these standards as load limitations using the design flow; apart from using the 7-day average as a daily max, as stated above. Updating the design flow to the Draft Permit's flow limitations results in the following loads,

$$Limit = Concentration\ (mg/L)\ * Design\ Flow\ (MGD) * 8.34$$

$$Monthly\ Average\ Limit = 30\ mg/L * 1.0\ MGD * 8.34 = 250\ lb/day$$

$$Daily\ Maximum\ Limit = 45\ mg/L * 1.5\ MGD\ * 8.34 = 562\ lb/day$$

These are less stringent than those loads implemented in the 2012 Permit; therefore, the load limitations from the 2012 Permit are carried forward in the Draft Permit in accordance with anti-backsliding regulations, *see* CWA §§ 402(o). In addition, the Draft Permit has added TSS concentration limits based on the secondary treatment standards to ensure those standards are being met in their entirety. The Draft Permit contains monthly average limitations of 100 lb/day and 30 mg/L; and, daily maximum limitations of 250 lb/day and 45 mg/L, sampled bi-weekly by composite sample. These limitations were established using BPJ pursuant to CWA § 402(a)(1) and are in accordance with anti-backsliding requirements found in 40 CFR § 122.44(1). The limitations are based upon the TSS concentrations estimated to be achievable by using secondary treatment including, influent screening, clarification, biological treatment, and sludge removal. Performance data from the Facility indicate that these TBELs are routinely achievable.

### 5.1.3 Biochemical Oxygen Demand

Biochemical oxygen demand (BOD), measures the amount of oxygen consumed by microorganisms in decomposing organic matter in water. BOD also measures the chemical oxidation of inorganic matter (i.e., the extraction of oxygen from water via chemical reaction). The rate of oxygen consumption in a waterbody is affected by several variables: temperature, pH, the presence of microorganisms, and the type of organic and inorganic material. BOD directly affects the amount of dissolved oxygen in rivers and streams. The greater the BOD, the more rapidly oxygen is depleted in the stream. Depletion of the in-stream oxygen levels cause aquatic organisms to become stressed, suffocate, and die.

The 2012 Permit included bi-weekly BOD5 (5-day BOD) monitoring, a monthly average load limitation of 8.5 lb/day and a daily maximum load limitation of 16.4 lb/day. These limitations were based on the ELGs for the wood fiber furnish subdivision of the Subpart K ELGs. The 2012

[18] Id.

Permit load limitations were calculated by multiplying the ELG BPT value (in pounds per 1,000 pound) by daily production (in lb/day). For the 2012 Permit a production amount of 1.0 tons/day was assumed.

From November 1, 2015 through October 31, 2020, monthly average BOD load has ranged from 0 (measurements below minimum levels) to 14.88 lb/day and daily maximum BOD load has ranged from 0 to 90.8 lb/day (Appendix A). During this period, there have been two exceedances of the monthly average limit and four exceedances of the daily maximum limit. During an October 26, 2020 conference call, Onyx indicated that these exceedances primarily occur during the winter months when the rotating biological contractors (RBCs) are shut down and wastewater bypasses these units going straight to the secondary clarifier. The RBCs are turned off to avoid damage from freezing due to the low flows and low heat load from the effluent relative to the design capacity of the treatment system.

For the Draft Permit EPA has reassessed the appropriate BOD effluent limitations by looking at the more stringent of technology-based ELGs and State WQSs. State WQSs do not contain numeric criteria for BOD; however, they do require that the dissolved oxygen concentration in Class B surface waters is not less than 5.0 mg/L in warm water fisheries such as the Housatonic River. *See* 314 CMR 4.05(3)(b)1. Limiting BOD load will help ensure that organic materials discharged from the Facility will not contribute to oxygen impairments in the Housatonic River. In addition, as with TSS, the 1981 Water Quality Management Plan developed by the Massachusetts Department of Environmental Quality Engineering includes a BOD5 WLA for Laurel Mill – a monthly average WLA of 434 lb/day. This WLA is less stringent than the current BPJ-based monthly average limit of 8.5 lb/day.

In contrast to TSS, when using secondary treatment and biological treatment (rotating biological contractors), the Facility has been able to meet ELG-based limits for BOD. A potential reason explaining the inability of the treatment plant to meet the ELG-imposed limits for one parameter and not the other is that the wastewater has a higher initial load of TSS and not of BOD. BOD is a measure of the dissolved oxygen depletion from carbonaceous and nitrogenous compounds; however, there are few sources of nitrogenous materials that would elevate BOD levels beyond that of the source water. In contrast, solids are likely added to the wastewater stream during pretreatment (from the backwash and overflow streams) and during the papermaking process. The low BOD levels after treatment could therefore be a result of the low BOD levels coming into the treatment plant. The combined waste streams (pretreatment backwash, overflow, landfill leachate, stormwater, and process water) are negatively impacting TSS removal performance relative to the levels prescribed by the ELGs (but not those of the secondary treatment standards), while the low initial levels of BOD added from these sources has not had a similar effect.

Given the Facility's demonstrated ability to meet historical ELG-based limits for BOD, EPA finds that continuing to use the ELGs directly to set BOD limits for the Facility is appropriate. However, since operations at Laurel Mill have changed since the ELG limitations were imposed, EPA has recalculated the effluent limitations for BOD based on current operations. Currently, the cotton fiber furnish subdivision most closely resembles the Facility's operations. Cotton fiber furnish mills are defined in 40 CFR § 430.111(b) as "those mills where significant quantities of

cotton fibers (equal to or greater than 4 percent of the total product) are used in the production of fine papers." In addition, the Permittees have reported on their permit renewal application that a production amount of 1.0 tons (2000 pounds) is the anticipated daily production rate for the new permit term. Effluent limitations for the cotton fiber furnish subdivision of the Subpart K ELGs are as follows:

$$Limit = BPT\ effluent\ limitation\ lb/1000lb * production\ amount\ in\ lb/day$$

$$Monthly\ Average\ Limit = 9.1\ lb/1000lb * 2000\ lb/day = 18.2\ lb/day$$

$$Daily\ Maximum\ Limit = 17.4\ lb/1000lb * 2000\ lb/day\ = 34.8\ lb/day$$

The Draft Permit includes a monthly average BOD limit of 18.2 lb/day and a daily maximum BOD limit of 34.8 lb/day monitored biweekly by composite sample. These limitations are less stringent than those in the previous permit. Since material and substantial alterations to the permitted facility have occurred – i.e., a change in the types of paper produced following a change in ownership and production volume – an exception to the CWA's anti-backsliding provision applies, which allows an increase in the BOD TBELs. *See* CWA § 402(o) and 40 CFR § 122.44(l)(2)(i)(A).

### 5.1.4 pH

The hydrogen-ion concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (S.U.). Solutions with pH 7.0 S.U. are neutral, while those with pH less than 7.0 S.U. are acidic and those with pH greater than 7.0 S.U. are basic. Discharges with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Sudden pH changes can kill aquatic life. pH can also have an indirect effect on the toxicity of other pollutants in the water.

State WQSs for Inland Water, Class B at 314 CMR 4.05(3)(b)3, require that the pH of the receiving water be in the range of 6.5 to 8.3 S.U., while the technology-based ELGs for this point source category limit pH to a range of 5.0 to 9.0 S.U. The 2012 Permit limits pH at Outfall 001 to a range of 6.0 to 9.0 S.U. carried forward from previous permit issuances. From November 1, 2015 through October 31, 2020, pH has ranged from 6.83 to 8.33 S.U. (Appendix A). Effluent pH exceeded the WQS range only once during this time period, in September, 2020; there were no permit limit exceedances.

In setting effluent limitations, EPA must use the more stringent of applicable technology-based effluent limitations or State WQS-based limitations. Since the State WQSs for pH are defined in terms of the receiving water, they are not necessarily more stringent than technology-based limits and effluent samples outside of this pH range could still meet State WQSs. In a previous permit issuance, EPA determined that given the substantial dilution afforded the effluent in the receiving water, the discharge would meet State WQSs for pH at the current permit limit range of 6.0 to 9.0 S.U. Looking further back at historical data from 2007 through 2020, EPA found that the Facility can and has met the Class B WQS for pH in all but two months (October 2014

and September 2020), with no result greater than 8.4 S.U. Given that dilution determined for this permit is less than for previous permits (25:1 compared to 38:1) and that the majority of the time the Facility can meet State WQSs, the Draft Permit has set the pH limitations equivalent to State WQS.

The Draft Permit requires a pH range of 6.5 to 8.3 S.U. at Outfall 001 when the Facility is discharging, monitored weekly by grab samples. These limitations are based on CWA § 301(b)(1)(C) and 40 CFR § 122.44(d).

### 5.1.5 Temperature

Section 502(6) of the Clean Water Act defines heat as a "pollutant." *See* 33 U.S.C. § 1362(6). Water temperature affects the metabolic and reproductive activities of aquatic organisms and can determine which fish and macroinvertebrate species can survive in a given water body. Certain cold-blooded species cannot regulate their body temperature through physiological means, so their body temperatures reflect the temperatures of the water they inhabit. Rapid increases or decreases in ambient water temperature can directly affect aquatic life, particularly fish. Ambient water temperature can indirectly affect aquatic life by influencing water quality parameters such as dissolved oxygen, by which the solubility of oxygen decreases as water temperature increases.

The state waterbody classification for the Housatonic River is Class B. The WQSs at 314 CMR 4.05(3)(b)2 require that the instream temperature, "shall not exceed 83°F (28.3°C) in warm water fisheries. The rise in temperature due to a discharge shall not exceed 5°F (2.8°C) in rivers and streams designated as warm water fisheries (based on the minimum expected flow for the month." In addition, "natural seasonal and daily variations that are necessary to protect existing and designated uses shall be maintained. There shall be no changes from natural background conditions that would impair any use assigned to this Class, including those conditions necessary to protect normal species diversity, successful migration, reproductive functions or growth of aquatic organisms."

The 2012 Permit includes a WQBEL for maximum daily temperature of 90°F based on dilution of the effluent in the receiving water. From November 1, 2015 through October 31, 2020, daily maximum temperature has been consistently less than 80°F, while monthly average temperature stayed below 77°F (Appendix A). For permit reissuance, EPA reassessed whether a 90°F maximum daily effluent limit would still ensure the Facility meets WQSs.

EPA performed a simple mass-balance calculation to determine the effluent temperature that would be required to exceed the 5°F rise in temperature WQS.

$$T_{downstream} = \frac{T_{ambient}(Q_{ambient}) + T_{effluent}(Q_{effluent})}{Q_{ambient} + Q_{effluent}}$$

$T_{ambient}$ is the water temperature of the Housatonic River;
$T_{effluent}$ is the water temperature of the effluent discharged through Outfall 001;
$Q_{ambient}$ is the 7Q10 flow;
$Q_{effluent}$ is the daily maximum effluent flow limitation; and

$T_{downstream}$ is the downstream water temperature after mixing.

Assuming that the WQS is just met, $T_{downstream}$ would be equal to the ambient temperature plus 5 degrees, such that:

$$T_{downstream} = T_{ambient} + 5°F = \frac{T_{ambient}(Q_{ambient}) + T_{effluent}(Q_{effluent})}{Q_{ambient} + Q_{effluent}}$$

Rearranging the equation with the corresponding flow values:

$$T_{ambient} + 5°F = \frac{T_{ambient}(36.3\ MGD) + T_{effluent}(1.5\ MGD)}{37.8\ MGD}$$

$$37.8T_{ambient} + 189°F = 36.3T_{ambient} + 1.5T_{effluent}$$

$$189°F + 1.5T_{ambient} = 1.5T_{effluent}$$

$$126°F + T_{ambient} = T_{effluent}$$

For the WQS to be violated, the effluent temperature would have to be 126°F greater than the ambient temperature. Therefore, the 90°F limitation ensures this never would occur. A similar calculation can be done to show that if the Facility discharged 90°F effluent and the receiving water temperature was at the WQS limit of 83°F, the receiving water would increase by no more than half a degree fahrenheit – demonstrating that the WQS would only be violated in exceptionally rare scenarios. EPA has found no evidence that the Housatonic River's temperature at this point along its reach has risen above 81°F.[19] Given this finding and the above calculation, EPA concludes that the current daily maximum effluent temperature limitation is sufficient to meet WQSs. Therefore, the Draft Permit has continued weekly monitoring and reporting of monthly average and daily maximum temperature and maintained the previous daily maximum temperature permit limit of 90°F.

### 5.1.6 Total Residual Chlorine

Chlorine and chlorine compounds are toxic to aquatic life. Free chlorine is directly toxic to aquatic organisms and can react with naturally occurring organic compounds in receiving waters to form toxic compounds such as trihalomethanes. Bleaching is used during paper making to alter pulp color and could lead to the discharge of toxic quantities of chlorine if not properly treated. The 2012 Permit includes weekly monitoring requirements for total residual chlorine (TRC). From November 1, 2015 through October 31, 2020, daily maximum TRC ranged between 0.01 and 0.17 mg/L and monthly average TRC ranged between 0.003 and 0.073 mg/L (Appendix A).

[19] See temperature results from the *Housatonic River Watershed 2002 Water Quality Assessment Report*. MassDEP Division of Watershed Management, Worcester, Massachusetts; September, 2007, Report Number: 21-AC-4.

The *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) specifies that "Waters shall be protected from unnecessary discharges of excess chlorine." State WQSs further require the use of federal water quality criteria where a specific pollutant could reasonably be expected to adversely affect existing or designated uses. *See* 314 CMR 4.05(5)(e). EPA's *National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002* for aquatic life in freshwater for TRC are as follows:

19 µg/L (0.019 mg/L) acute criterion
11 µg/L (0.011 mg/L) chronic criterion

In order to assess whether the discharge of TRC from the Facility has a reasonable potential to cause or contribute to an exceedance of water quality criteria, EPA performed a reasonable potential analysis (Appendix B). From this analysis EPA found that the discharge does not have a reasonable potential to cause or contribute to an exceedance of water quality criteria; therefore, the Draft Permit does not contain any permit limits. Due to continued detections of TRC above criteria, the weekly TRC monitoring requirement is maintained in the Draft Permit and TRC limits may be established in the future if changes in ambient conditions or the Facility's discharge will lead to exceedances of water quality criteria.

The ML for TRC is 20 µg/L.[20] This ML is based on the method that has the lowest method detection limit of the analytical methods approved under 40 CFR Part 136 and is calculated in accordance with 40 CFR Part 136.

### 5.1.7 Ammonia

Ammonia (NH3) is the unionized form of ammonia nitrogen. Elevated levels of ammonia can be toxic to aquatic life. Temperature and pH affect the toxicity of ammonia to aquatic life. The toxicity of ammonia increases as temperature increases and ammonia concentration and toxicity increase as pH increases. Ammonia can affect fish growth, gill condition, organ weights, and hematocrit levels, and can result in excessive plant and algal growth, which can cause eutrophication. Ammonia can also affect dissolved oxygen through nitrification, in which oxygen is consumed as ammonia is oxidized. Low oxygen levels can then, in turn, increase ammonia by inhibiting nitrification. Total ammonia-nitrogen concentrations in surface waters tends to be lower during summer than during winter due to uptake by plants and decreased ammonia solubility at higher temperatures. Ammonia as a component of total nitrogen will be discussed in relation to nutrient pollution in Section 5.1.8.

The 2012 Permit included monthly monitoring for ammonia. From October 1, 2015 to September 30, 2020, ammonia concentrations ranged from below laboratory minimum levels to 0.84 mg/L (Appendix A). EPA conducted an analysis to determine if discharges of ammonia have a reasonable potential to cause or contribute to an excursion above the State WQS (Appendix B). EPA found no such reasonable potential. Therefore, the Draft Permit does not include effluent limitations for ammonia. Given the low concentrations and the majority of non-

[20] Standard Method 4500-Cl E, low-level amperometric direct method (low-level amperometric titration method).

detect ammonia samples, ammonia monitoring is now only required quarterly in conjunction with Whole Effluent Toxicity testing discussed below.

### 5.1.8 Nitrogen

Nitrogen is an essential nutrient for plant growth. However, elevated concentrations of nitrogen can result in eutrophication, where nutrient concentrations lead to excessive plant and algal growth. Respiration and decomposition of plants and algae under eutrophic conditions reduce dissolved oxygen in the water and can create poor habitat for aquatic organisms. Total Nitrogen is the sum of Total Kjeldahl Nitrogen (TKN) (ammonium, organic and reduced nitrogen) and nitrate-nitrite. It is derived by individually monitoring for organic nitrogen compounds, ammonia, nitrate, and nitrite and adding the components together.

The Facility discharges to the Housatonic River, which drains to Long Island Sound (LIS). In December 2000, the Connecticut Department of Energy and Environmental Protection (CT DEEP) and New York State Department of Environmental Conservation (NYSDEC) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in LIS. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont point sources discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The TMDL estimated that in 1998, the baseline total nitrogen loading for out-of-basin point sources in the Housatonic River watershed was 3,286 lb/day, which includes discharges from publicly and privately owned treatment works (wastewater treatment plants or WWTPs) and industrial dischargers.[21] The 25% reduction stipulated by the TMDL would mean a target of 2464 lb/day. Based on data from 2015 through 2019, the maximum annual average total nitrogen loading for the Housatonic River from permitted non-stormwater point sources is 1707 lb/day.[22] Therefore, the TMDL target is being met, with approximately a 48% reduction from the 1998 baseline.

The 2012 Permit includes monthly monitoring for Total Nitrogen and all its components (total ammonia nitrogen, total kjeldahl nitrogen, and nitrate-nitrite). In addition, to monitoring requirements, the 2012 Permit includes a special condition to optimize the Facility's biological treatment system for the minimization of nitrogen discharges. Using the concentration and monthly average flow data from the Facility's DMR's, the calculated[23] annual average[24] total nitrogen loading from the Facility ranged from 4 to 7.9 lb/day from 2015 to 2019 and averaged

[21] Estimated loading from TMDL. See Appendix 3 to CT DEEP "Report on Nitrogen Loads to Long Island Sound," April 1998.
[22] Data came from EPA's ECHO Water Pollution Search Web tool, https://echo.epa.gov/trends/loading-tool/water-pollution-search. The 2015-2019 date range was used since the annual loading for 2020 was not available at the time of Draft Permit development.
[23] Monthly Average TN (mg/L) * Monthly Average Flow * 8.345 = Monthly Average TN (lb/day)
[24] Sum of Monthly Average TN (lb/day) in a year ÷ 12 months = Annual Average

6.5 lb/day. The Facility makes up less than 1% of the total loading from the 10 out-of-basin point sources, with the Pittsfield WWTP comprising the vast majority (1,220 lb/day from 2015-2019).

For industrial dischargers which tend to make up a small portion of the total out-of-basin load, EPA has historically relied on nutrient optimization monitoring requirements (such as the special condition cited above) rather than numeric limitations. While substantial TN out-of-basin load reductions have occurred at some facilities by means of optimization requirements alone, concerns raised in recent public comments by the downstream state (Connecticut) and concerned citizens[25] have highlighted the need for clearly enforceable, numeric, loading-based effluent limits to ensure that the annual aggregate nitrogen loading from out-of-basin point sources are consistent with the TMDL WLA of 2,464 lb/day and to ensure that current reductions in loading do not increase, given the continued impairment status of LIS.

While EPA agrees with the concerns raised by the downstream state and the public, implementation of numeric limitations for Laurel Mill's discharge is not straightforward and is likely unnecessary. Baseline data from 1998 is not available to assess what a 25% reduction would be for the Facility's discharge. Furthermore, the TMDL target has been met by quite some measure; and since Laurel Mill comprises such a small percentage of total nitrogen load, a substantial increase in load from Laurel Mill would have little impact on whether the WLA was met.

Given the success of the TMDL and the small load from the Facility, EPA has not added numeric nitrogen limitations to the Draft Permit. Instead, EPA is including a more comprehensive nitrogen optimization requirement in line with other out-of-basin sources of similar discharge magnitude. The optimization condition in the Draft Permit requires the Permittees to evaluate alternative methods of operating their treatment plant to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts.

Specifically, the Draft Permit requires the continued evaluation of treatment facility operations to minimize nitrogen discharges, along with annual reports to summarize progress and activities related to optimizing nitrogen removal efficiencies and track trends relative to previous years. In addition to the optimization requirements, the Draft Permit continues monthly monitoring for total nitrogen (TN). For compliance reporting on monthly DMRs, the Draft Permit requires the reporting of monthly average TN load and concentration along with its components: total kjeldahl nitrogen, nitrite and nitrate.

### 5.1.9 Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within

[25] Connecticut Department of Energy and Environmental Protection letters to EPA dated February 7, 2018 and April 27, 2018; Connecticut Fund for the Environment letter to EPA dated February 7, 2018; and Connecticut River Conservancy letter to EPA dated February 18, 2018.

the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter; 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; 6) producing toxic cyanobacteria during certain algal blooms.

The 2012 Permit includes weekly monitoring for total phosphorus with no numeric limitations. The justification for this monitoring requirement was the impairment of the Housatonic River for total phosphorus. EPA, upon further examination of facility operations, finds that monitoring for total phosphorus under current treatment conditions is not warranted at the Facility. Wastewaters discharged from paper mills are generally nutrient deficient and treatment operators at other mills often have to add nutrients such as ammonia and phosphate to ensure adequate operation of biological treatment systems.[26] The Permittees have indicated that they do not add any additional phosphorus containing materials in their process or wastewater treatment. Therefore, the phosphorus discharged from their Facility is mainly comprised of phosphorus withdrawn from the Housatonic River itself. The Draft Permit has modified the phosphorus requirement to only be required when the Facility uses phosphorus-containing nutrients as part of their biological treatment.

### 5.1.10 Metals

Metals are naturally occurring constituents in the environment and generally vary in concentration according to local geology. Metals are neither created nor destroyed by biological or chemical processes. However, metals can be transformed through processes including adsorption, precipitation, co-precipitation, and complexation. Some metals are essential nutrients at low levels for humans, animals, plants and microorganisms, but toxic at higher levels (e.g., copper and zinc). Other metals have no known biological function (e.g., lead). The environmental chemistry of metals strongly influences their fate and transport in the environment and their effects on human and ecological receptors. In aquatic systems, metal bioavailability refers to the concentration of soluble metal that adsorb onto, or absorb into and across, membranes of living organisms. The greater the bioavailability, the greater the potential for bioaccumulation, leading to increased toxicological effects.[27] Toxicity results when metals are biologically available at toxic concentrations affecting the survival, reproduction and behavior of an organism.

The Permittees have obtained quarterly monitoring data for total recoverable aluminum, cadmium, copper, lead, nickel and zinc in the discharge and the receiving water in conjunction with Whole Effluent Toxicity testing. In addition, due to the use of aluminum containing materials, the Permittees were required to monitor total aluminum monthly. All five metals were detected above laboratory minimum levels for the reporting period of November 1, 2015 through October 31, 2020 (Appendix A). Therefore, EPA completed an analysis to determine if these

[26] See p. 271 of EPA's October 1982 *Final Development Document for Effluent Limitations Guidelines and Standards for the Pulp, Paper, and Paperboard and the Builders' Paper and Board Mills Point Source Categories*, EPA 440/1-82/025.
[27] Magelhaes, Danielly et al. 2015. *Metal bioavailability and toxicity in freshwaters.* Environmental Chemistry Letters. DOI 10.1007/s10311-015-0491-9.

discharges cause, or have a reasonable potential to cause, or contribute to an excursion above State WQSs using EPA's 2002 *National Recommended Water Quality Criteria* for metals (Appendix B).

State WQSs contain minimum criteria applicable to all surface waters for toxic pollutants, which requires the use of EPA's *National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002* where a specific pollutant is not otherwise listed in 314 CMR 4.00. *See* 314 CMR 4.05(5)(e). The applicable criteria are presented in Appendix C.

The results of EPA's analysis indicate discharges of lead, nickel, and zinc do not cause, or have a reasonable potential to cause, or contribute to an excursion above WQSs. As a result, the Draft Permit does not include effluent limitations for these metals. Regardless, quarterly monitoring for total recoverable lead, nickel, and zinc in the discharge and the receiving water continue to be required in conjunction with Whole Effluent Toxicity Testing, discussed further below.

The results of EPA's analysis indicate discharges of aluminum, cadmium, and copper cause, or have a reasonable potential to cause, or contribute to an excursion above their respective chronic aquatic life water quality criterion. In part, the cause of the reasonable potential result is that copper and aluminum are already at concentrations in the receiving water at or above the chronic aquatic life criteria. The Facility's copper concentration from WET test data is lower than the receiving water data. For aluminum, the Facility discharges aluminum at higher concentrations than observed in the receiving water. Given that the instream concentrations of copper and aluminum are already above criteria, the Draft Permit includes average monthly effluent limitations set at the chronic aquatic life water quality criterion. For cadmium, where the receiving water is not already impaired, EPA has calculated a monthly average limit that accounts for dilution. To summarize, the Draft Permit includes average monthly effluent limitations of 87 µg/L for total recoverable aluminum, 11.3 µg/L for total recoverable cadmium, and 10.7 µg/L for total recoverable copper and monitoring at a frequency of 2/month for all three metals.

The final aluminum effluent limit is based on current Massachusetts, EPA approved, aluminum criteria to protect freshwater aquatic life. However, EPA is aware of ongoing efforts by MassDEP to soon revise the Massachusetts aluminum criteria based, at least in part, on new EPA aluminum criteria recommendations which were finalized in 2018. MassDEP proposed the revisions to its aluminum criteria in 2019, but the revisions have not yet been finalized. For three years after the effective date of the permit, MassDEP will inform EPA at reasonable intervals of its progress on the development and promulgation of new aluminum criteria.

EPA's aluminum criteria recommendations indicate that the new aluminum criteria recommendations may be higher than the current recommendations. Because MassDEP has indicated to EPA that its planned revisions to its aluminum criteria will be based on EPA's recommended criteria, EPA reasonably expects its new criteria may also be higher. EPA has therefore determined that it is appropriate to include a schedule of compliance, pursuant to 40 CFR § 122.47, in the Draft Permit which provides the Permittees with a 3-year period to achieve compliance with the final aluminum effluent limit. Additionally, the Permittees may apply for a permit modification to allow additional time for compliance if Massachusetts has adopted new

aluminum criteria but has not yet submitted the criteria to EPA for review or EPA has not yet acted on the new criteria. If new aluminum criteria are adopted by Massachusetts and approved by EPA, and before the final aluminum effluent limit goes into effect, the Permittees may apply for a permit modification to amend the permit based on the new criteria. If warranted by the new criteria and a reasonable potential analysis, EPA may relax or remove the effluent limit to the extent consistent with anti-degradation requirements. Such a relaxation or removal would not trigger anti-backsliding requirements as those requirements do not apply to effluent limits which have yet to take effect pursuant to a schedule of compliance. *See American Iron and Steel Institute v. EPA*, 115 F.3d 979, 993 n.6 (D.C. Cir. 1997) ("EPA interprets § 402 to allow later relaxation of [an effluent limit] so long as the limit has yet to become effective.").

### 5.1.11 Per- and polyfluoroalkyl substances (PFAS)

As explained at https://www.epa.gov/pfas, PFAS are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. PFAS manufacturing and processing facilities, facilities using PFAS in production of other products, airports, and military installations can be contributors of PFAS releases into the air, soil, and water. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Exposure to some PFAS above certain levels may increase risk of adverse health effects.[28]

Although the Massachusetts water quality standards do not include numeric criteria for PFAS, the Massachusetts narrative criterion for toxic substances at 314 CMR 4.05(5)(e) states:

> All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

The narrative criterion is further elaborated at 314 CMR 4.05(5)(e)2 which states:

> Human Health Risk Levels. Where EPA has not set human health risk levels for a toxic pollutant, the human health-based regulation of the toxic pollutant shall be in accordance with guidance issued by the Department of Environmental Protection's Office of Research and Standards. The Department's goal is to prevent all adverse health effects which may result from the ingestion, inhalation or dermal absorption of toxins attributable to waters during their reasonable use as designated in 314 CMR 4.00.

On November 22, 2020, EPA issued an "*Interim Strategy for Per- and Polyfluoroalkyl Substances in Federally Issued National Pollutant Discharge Elimination System Permits*." This guidance memo sets out the workgroup's recommendation for including phased-in monitoring and best management practices (as appropriate), when PFAS compounds are expected to be present in point source wastewater discharges. Paper and packaging manufacturing facilities such as Laurel Mill have been identified as potential point sources of PFAS.

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[28] EPA, *EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan,* EPA 823R18004, February 2019. Available at: https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the Draft Permit requires that the Facility conduct quarterly effluent sampling for PFAS chemicals, six months after EPA notifies the Permittees that an EPA multi-lab validated test method for wastewater is available to the public on EPA's CWA methods program website (https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical and https://www.epa.gov/cwa-methods).

The purpose of this monitoring and reporting requirement is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality-based effluent limits on a facility-specific basis. EPA is authorized to require this monitoring and reporting by CWA § 308(a), which states:

> "SEC. 308. (a) Whenever required to carry out the objective of this Act, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this Act; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section; or (4) carrying out sections 305, 311, 402, 404 (relating to State permit programs), 405, and 504 of this Act—
>
> > A. the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, , (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require…."

Since an EPA method for sampling and analyzing PFAS in wastewater is not currently available, the PFAS sampling requirement in the Draft Permit includes a compliance schedule which delays the effective date of this requirement until six months after EPA notifies the Permittees that EPA's multi-lab validated method for wastewater is available to the public on EPA's CWA methods program website. *See* https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical and https://www.epa.gov/cwa-methods. EPA expects this method will be available by the end of 2021. This approach is consistent with 40 CFR § 122.44(i)(1)(iv)(B) which states that in the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters. After one year of monitoring, if all samples are non-detect for all six PFAS compounds, using EPA's multi-lab validated method for wastewater, the Permittee may request to remove the requirement for PFAS monitoring.

### 5.1.12 Whole Effluent Toxicity

CWA §§ 402(a)(2) and 308(a) provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Whole effluent toxicity (WET) testing is conducted to ensure that the additivity, antagonism, synergism, and persistence of the pollutants in the discharge do not cause toxicity, even when the individual pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the Facility does not discharge combinations of pollutants into the receiving water in amounts that would be toxic to aquatic life or human health.

In addition, under CWA § 301(b)(1)(C), discharges are subject to effluent limitations based on WQSs. Under CWA §§ 301, 303 and 402, EPA and the States may establish toxicity-based limitations to implement narrative water quality criteria calling for "no toxics in toxic amounts." *See also* 40 CFR § 122.44(d)(1). The Massachusetts WQSs at 314 CMR 4.05(5)(e) state, "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife." In addition, the Massachusetts WQSs at 314 CMR 4.03(2)(a) require no lethality to organisms passing through a mixing zone.

In accordance with current EPA guidance and State policy,[29] whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the $LC_{50.}$ The recommended criterion from both EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) (referred to herein as the "TSD") and the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) (referred to herein as the "Mass Toxics Policy") to prevent acutely toxic effects is 0.3 T.U. For chronic toxicity, the TSD recommends a criterion of 1.0 T.U., while the Mass Toxics Policy states that the NOEC measured in percent must be greater than or equal to the receiving water concentration (RWC). The Mass Toxics Policy provides further guidance that, in general, acute toxicity is the preferred permitting method and the chronic toxicity criterion (NOEC ≥ RWC) should be applied primarily when a facility's dilution factor is less than 10.

The 2012 Permit includes an acute WET limit of LC50 ≥ 100% and a C-NOEC monitoring requirement, for the test species *Ceriodaphnia dubia*, the daphnid. From November 1, 2015 through October 31, 2020, WET test results indicated toxicity in none of the acute tests and eight of the chronic tests (Appendix A). Therefore, the discharge does not have a reasonable potential to cause an excursion above the State WQSs acute criterion of 0.3 T.U., specified in the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990). However, the discharge has exceeded the State WQSs chronic criterion of NOEC ≥ RWC. Since the dilution factor for Laurel Mill is

[29] *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters*. February 23, 1990.

above the state cutoff of 10, assessing reasonable potential using this criterion is not straightforward. Typically for Massachusetts POTWs, EPA compares toxic values against the percent reciprocal of the dilution factor.[30] If it is found that toxicity is present at levels above this value, it is concluded that there is reasonable potential to violate water quality standards and a limitation is put in place. Since this heuristic was based on dilutions between 0 and 10, it may not be an appropriate way to evaluate reasonable potential; when facility dilution is greater than 10, exceedingly lower toxicity values are required to trigger a reasonable potential result.

In order to adequately assess the effluent's reasonable potential to violate water quality standards for chronic toxicity, EPA took a two-pronged approach. EPA compared chronic toxicity values with the percent reciprocal of the dilution factor and also conducted a reasonable potential analysis using the TSD methodology and recommended criterion of 1.0 T.U. (see Appendix C). Using both techniques, EPA found that the Facility's effluent does not have reasonable potential to exceed water quality standards. Therefore, no chronic limits are included in the Draft Permit.

In accordance with regulations at 40 CFR § 122.44(d), the Draft Permit continues the acute WET limit from the 2012 Permit and the chronic effects testing. Toxicity testing must be performed in accordance with EPA Region 1's test procedures and protocols specified in **Attachment A,** *Freshwater Acute Toxicity Test Procedure and Protocol* (February 2011), and **Attachment B,** *Freshwater Chronic Toxicity Test Procedure and Protocol* (March 2013) of the Draft Permit.

## 5.2 Cooling Water Intake Structure – CWA 316(b) Requirements

During the issuance or reissuance of a NPDES permit, EPA is required to evaluate or re-evaluate compliance with applicable standards, including the technology standard specified in Section 316(b) of the CWA for cooling water intake structures (CWIS). Section 316(b) requires that:

> [a]ny standard established pursuant to section 301 or section 306 of this Act and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

33 U.S.C. § 1326(b). The operation of CWISs can cause or contribute to a variety of adverse environmental effects, such as killing or injuring fish larvae and eggs entrained in the water withdrawn from a water body and sent through a facility's cooling system, or by killing or injuring fish and other organisms by impinging them against the intake structure's screens. The effects of impingement and entrainment are referred to as adverse environmental impacts (See 79 FR 48303). CWA § 316(b) applies if a point source discharger seeks to withdraw cooling water from a water of the United States through a CWIS.

On August 15, 2014, EPA published *National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities*

[30] See, for example, the 2019 Great Barrington Wastewater Treatment Plant Permit (No. MA0101524).

*and Amend Requirements at Phase I Facilities; Final Rule* (Final Rule)[31]. For existing facilities, the Final Rule codified Best Technology Available (BTA) requirements to reduce impingement and entrainment of fish and other aquatic organisms at CWISs at existing facilities with a design intake flow (DIF) greater than 2 MGD and which use at least 25 percent of the water withdrawn exclusively for cooling purposes. 40 CFR § 125.91. The 2014 Final Rule established BTA standards for impingement mortality (40 CFR § 125.94(c)) and entrainment (40 CFR § 124.94(d)). The Final Rule does not apply to the Laurel Mill Facility because its DIF is less than 2 MGD; instead, 40 CFR § 125.90(b) dictates that "*Cooling water intake structures not subject to requirements under §§125.94 through 125.99 or subparts I or N of this part must meet requirements under section 316(b) of the CWA established by the Director on a case-by-case, best professional judgment (BPJ) basis.*" As a result, EPA has developed technology-based requirements for the Facility's CWIS by applying CWA § 316(b) on a case-by-case, BPJ basis.

Neither the CWA nor EPA regulations dictate a specific methodology for developing BPJ-based limits under § 316(b). In the preamble to the proposed regulations for CWISs at existing facilities, EPA indicates that the Agency has broad discretion in determining the "best" available technology for minimizing adverse environmental impact (See 76 FR 22196). EPA considered the location, design, construction, and capacity of the CWIS to establish BPJ-based requirements for the CWIS. In addition, EPA looked to the BTA standards of prior 316(b) rulemakings. EPA has not applied these standards specifically here because, as explained above, the Facility is not subject to these regulations. However, EPA is informed by the scientific underpinnings of the BTA standards on a BPJ basis.

### 5.2.1 State Water Quality Standards

In addition to satisfying technology-based requirements, NPDES permit limits for CWISs must also satisfy any more stringent provisions of State WQSs or other state legal requirements that may apply, as well as any applicable conditions of a state certification under CWA § 401. See CWA §§ 301(b)(1)(C), 401(a)(1), 401(d), 510; 40 CFR §§ 122.4(d), 122.44(d) and § 125.84(e). This means that permit conditions for CWISs must satisfy numeric and narrative water quality criteria and protect designated uses that may apply from the state's WQSs.

Massachusetts WQSs at 314 CMR 4.05(3)(b)(2)(d) for Class B waters states "in the case of a cooling water intake structure (CWIS) regulated by EPA under 33 USC § 1251 (FWPCA, §316(b)), the Department has the authority under 33 USC § 1251 (FWPCA, §401), M.G.L. c. 21, §§ 26 through 53 and 314 CMR 3.00 to condition the CWIS to assure compliance of the withdrawal activity with 314 CMR 4.00, including, but not limited to, compliance with narrative and numerical criteria and protection of existing and designated uses." In other words, MassDEP must impose the conditions it concludes are necessary to protect the designated uses of the river, including that it provide good quality habitat for fish and other aquatic life and be a recreational fishing resource. *See* 314 CMR 4.05(3)(b). In addition, 314 CMR 4.05(1) of the Massachusetts WQSs provides that each water classification "is identified by the most sensitive, and therefore

[31] EPA. *National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities; Final Rule*. August 15, 2014. F.R. Vol 79 No. 158.

governing, water uses to be achieved and protected." This means that where a classification lists several uses, permit requirements must be sufficient to protect the most sensitive use.

In summary, the Massachusetts WQSs apply to CWISs and the Draft Permit requirements must be sufficient to ensure that the Facility's CWIS neither causes nor contributes to violations of the WQSs and satisfy the terms of the State's water quality certification under § CWA 401. EPA anticipates that MassDEP will provide such certification before the issuance of the Final Permit.

### 5.2.2 Current Technology

Laurel Mill's CWIS consists of one submersible pump with a DIF of 325 gallons per minute (0.468 MGD). The pump and intake building are at the end of a dredged lagoon off the eastern bank of the Housatonic River. The pump operates continuously all year, with flow regulated by a manually operated valve in the filter house. At the intake building, water enters a holding bay through an opening in the intake wall which leads to two parallel 46.5-in long by 41.5-in wide screens. The screens have mesh-sizes of about 0.5-inches. The pump sits in the bay behind the screens. Currently, the Facility maintains the pump and screens only as needed when maintenance issues arise. Based on the dimensions of the screens and the size of their openings, and assuming the screens are continually submerged, EPA and the Permittee have estimated that the through screen velocity (TSV) is well under 0.1 fps.

NCCW is only used at the paper machine. Steam exiting the dryers passes through a non-contact heat exchanger that uses river water to condense the steam. Some water is recycled back into the paper machine while the rest (approximately 30,000 gallons per day) is discharged to the wastewater treatment plant. Under current operations, less than 10% of total river water intake is used for cooling purposes. See Figure 4.

### 5.2.3 BTA Assessment

As part of the evaluation of potential adverse environmental impacts related to the Facility's cooling water intake, EPA performed an assessment of the current operations and configuration of the CWIS, as well as the aquatic life in this section of the Housatonic River, to determine if the location, design, construction, and capacity of the CWIS is the BTA for minimizing adverse environmental impacts.

EPA evaluated whether Laurel Mill's cooling water withdrawal could impact anadromous fish traveling up the Housatonic River from its mouth at Long Island Sound. American shad and blueback herring, similar to most anadromous species, are broadcast spawners whose reproduction is characterized by scattering large numbers of eggs into the water column. This reproductive strategy makes the early life stages of these organisms (eggs and larvae) vulnerable to entrainment from a cooling water intake structure. Laurel Mill is located approximately 118 river miles from the mouth of the river, in a reach of the Housatonic that is exclusively freshwater. Anadromous fish species, such as the American shad, were historically reported to

travel approximately 44 miles upstream from the river's mouth.[32] Major dam construction on the Housatonic River in Connecticut, beginning in the 1800's, limited anadromous fish passage. Although some fish do take advantage of fish passage structures associated with dams, most upstream migration is halted by the dams. Currently, the furthest upstream that American shad and blueback herring (common species of anadromous fish in Massachusetts) can generally travel is the base of the Derby Dam, approximately 13 miles from the mouth of the river. The distance between the documented extent of anadromous species on the Housatonic River and Laurel Mill indicates that these fish are not present in the vicinity of the Laurel Mill CWIS. In this case, the geographic location of the Facility in the freshwater, upstream reach of the Housatonic River at River Mile 118, makes it highly unlikely for the Facility's CWIS to have an adverse impact (impingement or entrainment) on anadromous species such as American shad and blueback herring in the Housatonic River.

EPA also reviewed the resident freshwater fish species expected in this part of the river. Based on an aquatic habitat survey conducted in this area of the Housatonic River (Woodlot Alternatives, October 2005)[33], EPA developed a list of those species known to be present in the Housatonic River that also have a high percentage of suitable habitat in the vicinity of the Facility. The information is summarized in Table 4.

**Table 4. Resident Freshwater Species with Suitable Habitat (30% or greater) Upstream of Meadow Street Bridge, South Lee, Massachusetts, on the Housatonic River. Modified from Reach 7D (Woodlot Alternatives, October 2005).**

| Species | Common Name |
|---|---|
| *Micropterus dolomieui* | Smallmouth Bass |
| *Micropterus salmoides* | Largemouth Bass |
| *Lepomis macrochirus* | Bluegill |
| *Ameiurus nebulosus* | Brown Bullhead |
| *Cyprinus carpio* | Common Carp |
| *Carassius auratus* | Goldfish |
| *Perca flavescens* | Yellow Perch |
| *Esox niger* | Chain Pickerel |
| *Esox lucius* | Northern Pike |
| *Lepomis gibbosus* | Pumpkin Seed |
| *Notemigonus crysoleucas* | Golden Shiner |
| *Notropis hudsonius* | Spottail Shiner |
| *Catostomus commersoni* | White Sucker |
| *Salmo trutta* | Brown Trout |

[32] *American Shad Habitat Plan,* Connecticut Department of Energy and Environmental Protection Inland Fisheries & Marine Fisheries Divisions, February 6, 2014.
[33] *Housatonic River Aquatic Habitat Survey, Woods Pond Dam to Rising Pond Dam, Western Massachusetts.* Woodlot Alternatives, Inc., October 2005.

The fish species listed in Table 4 are generally expected to be present in a freshwater river in southern New England. Any of the various life stages of these species could be found in suitable habitat in this segment of the Housatonic River. While proximity to the intake structure could result in adverse impact (impingement and entrainment) from the operation of the intake structure, certain characteristics of these species, including spawning behavior, preferred habitat, and swimming speeds generally make life stages less vulnerable to adverse impacts from the CWIS. The resident species listed in Table 4 are not broadcast spawners. Instead, these species spawn and develop in benthic or near shore habitat. For example, the centrarchids residing in the Housatonic River (the bass and sunfish) are nest builders. Spawning and early life stage development takes place in depressions, or nests, fashioned in the substrate. Other species lay adhesive and demersal eggs that do not drift in the water column where they would be vulnerable to entrainment. Yellow perch eggs are deposited in gelatinous strings over weeds, roots, fallen trees and other vegetation in the shallows. The spawning behavior of resident fish suggests that the location of the CWIS helps to minimize adverse environmental impacts from entrainment.

In previous rulemakings, EPA considered that using a low percentage of the waterbody flow or volume for cooling could be a factor that minimizes impacts from entrainment, because entrainment of passive (floating) organisms is proportional to the volume withdrawn. *See* 79 FR 48331 and 66 FR 65277. Under current operations the Facility uses about 0.03 MGD for cooling purposes. See Figure 4. As explained in Section 4.2 of this Fact Sheet, the 7Q10 low flow of the Housatonic River at the Facility is 36.3 MGD. Therefore, the Facility uses less than 0.1% of the low flow of the river for cooling purposes. The extremely low volume (e.g., far less than 0.1%) of cooling water withdrawn relative to the low percentage of volume diverted for cooling minimizes the adverse impacts of entrainment. Therefore, the capacity of the cooling water intake is the BTA for minimizing entrainment at the Facility.

Finally, the velocity at the intake affects the risk of impingement mortality; an organism that can swim at a higher speed that the intake velocity can avoid becoming impinged. *See* 79 FR 48325 and 66 FR 65301. EPA has shown that a 0.5 fps velocity is lower than the swim speed of 96% of juvenile and adult fish studied. *See* 66 FR 65256.[34] Based on this evidence, EPA established a design or actual intake velocity less than 0.5 fps as a BTA standard for impingement mortality at existing facilities in the 2014 Final Rule. *See* 40 CFR §§ 125.94(c)(2) and (3). In this case, EPA has not applied the Final Rule because, as explained above, the Facility is not subject to these regulations. However, EPA is informed by the scientific underpinnings of the BTA standards in the Final Rule on a BPJ basis. As noted above, EPA and the Permittees have estimated that the TSV at the CWIS is under 0.1 fps. The swimming speed and strength of resident species in the Housatonic River will allow the fish to escape the influence of the CWIS based on a comparison of the through-screen velocity and swim speeds. For example, largemouth bass have a swimming speed of up to 17 ft/sec, but typically swim at about 2.7 ft/sec to 5.5 ft/sec[35]. Even the relatively poor swimming yellow perch has the ability to evade the CWIS, with a top swimming speed of

[34] Also see the Technical Development Document for the § 316(b) Existing Facilities Rule (pp. 6-66 to 6-67).
[35] James T. Davis and Joe T. Lock, *Largemouth Bass Biology and Life History*, Southern Regional Aquaculture Center, August 1997

1.8 ft/sec and an average closer to 0.9 ft/sec.[36] A study by the Electric Power Research Industry (EPRI) observed swim speeds consistently higher than 0.5 fps for fish in the families Centrarchidae (e.g., largemouth bass, smallmouth bass, pumpkinseed) and Cyprinidae (e.g., golden shiner, spottail shiner, goldfish), as well as brown bullhead, brown trout, white sucker, and northern pike.[37] Therefore, the design of the cooling water intake is the BTA for minimizing impingement at the Facility.

Overall, these factors support the judgment that, in this site-specific case, the resident species in the vicinity of the Laurel Mill have a minimal risk of adverse environmental impacts (impingement and entrainment) from the operation of the CWIS under its current configuration.

### 5.2.4 BTA Determination and Requirements

The 2012 Permit did not include 316(b) conditions and no determination has been made on the BTA to minimize adverse environmental impacts related to the Facility's cooling water withdrawal. The Permittees are not aware of any biological monitoring near the intake and visual inspection of the submerged pump and screen rarely occur, only when maintenance is required. In assessing the impacts of the use of cooling water, EPA has considered the current technology employed and its potential impact on aquatic life in this segment of the Housatonic River. In addition, EPA looked at permits for similar facilities in Massachusetts to assess how to permit the Facility to meet BTA going forward.

EPA's 2014 Noncontact Cooling Water General Permit for Massachusetts and New Hampshire (NCCW GP)[38] informed the determination of appropriate CWA 316(b) conditions for the Facility. The NCCW GP is an appropriate point of comparison, since it regulates facilities with cooling water flows of similar magnitude to the Facility and satisfies Massachusetts WQSs. The conditions in the NCCW GP are comprehensive and flexible in that they apply to a broad range of small magnitude cooling water intake facilities across Region 1. In addition to those conditions from the NCCW GP, EPA also considered site-specific factors related to the Facility's cooling water withdrawal:

- The life history characteristics of resident freshwater fish species in the Housatonic River potentially minimize the risk of impingement and entrainment.
- The Facility's current use of cooling water (0.03 MGD) is less than 0.1% of the low flow of the river.
- The actual TSV across the intake screen (<0.1 fps) is less than EPA's recommended TSV to allow for organisms to evade impingement and entrainment (0.5 fps).

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[36] Brown, T.G., Runciman, B., Bradford, M.J., and Pollard, S. 2009. A biological synopsis of yellow perch (Perca flavescens). Can. Manuscr. Rep. Fish. Aquat. Sci. 2883: v + 28 p., 2009.
[37] Electric Power Research Institute. 2000. *Technical Evaluation of the Utility of Intake Approach Velocity as an Indicator of Potential Adverse Environmental Impact under Clean Water Action Section 316(b)*. Technical Report 1000731.
[38] The NCCW GP can be found at https://www.epa.gov/npdes-permits/noncontact-cooling-water-general-permit-nccw-gp-massachusetts-new-hampshire.

Given these considerations and the NCCW GP as a reference point, EPA finds that the current configuration and operation of the CWIS is the BTA for impingement and entrainment. For entrainment, the Facility withdraws a low volume of cooling water relative to the 7Q10 flow of the river and, as a result, is expected to entrain a relatively low proportion of early life stages. In addition, the aquatic life likely to be present near the intake exhibit life history characteristics (e.g., nest building and demersal, adhesive eggs) that minimize the potential for entrainment. Future withdrawals no higher than current volumes is the BTA for entrainment. For impingement, current intake flows from the pump and the dimensions of the screen separating the pump from the dredged lagoon results in a TSV well below 0.5 fps. Continued operation of the pumps as described by the Facility, maintaining a fixed screen with a mesh-sizes of about 0.5-inches is the BTA for impingement.

The Draft Permit's 316(b) conditions in Parts I.C.1. and I.C.2. require the Facility to continue current operations of the pump and screening technology to minimize adverse environmental impacts related to impingement and entrainment. Relatedly, Part I.C.3. is included as a notification requirement to ensure that any CWIS design modifications will continue to meet BTA for impingement and entrainment. EPA is including a visually inspection of the intake structure for proper operations and maintenance at a frequency no less than quarterly in Part I.C.4. This condition is an extension of the Proper Operation and Maintenance standard condition in Part II.B of the Draft Permit and will ensure that the intake structure is functioning as outlined in this determination. For Part I.C.5., while Onyx, the operator of the intake structure, has not observed mortality of adult or juvenile fish associated with the intake pump, observation and notification of fish mortality in the future will alert both the Facility and the Agencies to reevaluate the operation of CWIS to minimize adverse environmental impact.

## 5.3 Special Conditions

### 5.3.1 Chlorophenolic-containing biocides

The ELGs for Subpart K and L of the Pulp, Paper and Paperboard category include BAT limitations for pentachlorophenol and trichlorophenol when chlorophenolic-containing biocides are used in the papermaking process, *see* 40 CFR §§ 430.114 and 430.124. The Permittees have verified that these are not used in their process. In addition, they were not detected above a minimum level of 10 µg/L in the Permittees' application. Therefore, the Draft Permit does not contain limitations or monitoring requirements for these compounds. The Draft Permit does include a special condition that the Permittees must certify that they are not using these biocides on their permit renewal application.

### 5.3.2 Discharges of Chemicals and Additives

Chemicals and additives include, but are not limited to: algaecides/biocides, antifoams, coagulants, corrosion/scale inhibitors/coatings, disinfectants, flocculants, neutralizing agents, oxidants, oxygen scavengers, pH conditioners, and surfactants. The Draft Permit allows the discharge of only those chemicals and additives specifically disclosed by the Permittees to EPA. A list of chemicals and additives disclosed by the Permittees is available upon request from EPA.

EPA recognizes that chemicals and additives in use at a Facility may change during the term of the permit. As a result, the Draft Permit includes a provision that requires the Permittees to notify EPA in writing of the discharge a new chemical or additive; allows for EPA review of the change; and provides the factors for consideration of such changes. The Draft Permit specifies that for each chemical or additive, the Permittees must submit the following information, at a minimum, in writing to EPA:

(1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
(2) Purpose or use of the chemical/additive;
(3) Safety Data Sheet (SDS), Chemical Abstracts Service (CAS) Registry number, and EPA registration number, if applicable, for each chemical/additive;
(4) The frequency (e.g., daily), magnitude (i.e., maximum application concentration), duration (e.g., hours), and method of application for the chemical/additive; and
(5) The vendor's reported aquatic toxicity, if available (i.e., NOAEL and/or $LC_{50}$ in percent for aquatic organism(s)).

The Permittees must also provide an explanation that demonstrates that the discharge of such chemical or additive: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

Assuming these requirements are met, discharges of a new chemical or additive is authorized under the permit upon notification to EPA unless otherwise notified by EPA.

## 6.0 Federal Permitting Requirements

### 6.1 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and habitat of such species that has been designated as critical (a “critical habitat”).

Section 7(a)(2) of the ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) administers Section 7 consultations for marine and anadromous species.

The Federal action being considered in this case is EPA’s proposed NPDES permit for the Laurel Mill Facility. The Draft Permit is intended to replace the 2012 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines

potential impacts to federally listed species, and initiates consultation, when required under Section 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in the expected action area of the outfall to determine if EPA's proposed NPDES permit could potentially impact any such listed species in this segment of the Housatonic River.

Regarding protected species under the jurisdiction of NOAA Fisheries, a number of anadromous and marine species and life stages are present in Massachusetts waters. Various life stages of protected fish, sea turtles and whales have been documented in these coastal and inland waters, either seasonally or year-round. In general, adult and subadult life stages of Atlantic sturgeon (*Acipenser oxyrinchus*) and adult shortnose sturgeon (*Acipenser brevirostrum*) are present in coastal waters. These sturgeon life stages are also found in some river systems in Massachusetts, along with early life stages of protected sturgeon and juvenile shortnose sturgeon. Protected sea turtles, including adult and juvenile life stages of leatherback sea turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), Kemp's ridley sea turtles (*Lepidochelys kempii*) and green sea turtles (*Chelonia mydas*) are found in coastal waters and bays in Massachusetts. Adult and juvenile life stages of North Atlantic right whales (*Eubalaena glacialis*) and fin whales (*Balaenoptera physalus*) have also been documented in coastal waters and bays. In addition, this coastal area has been designated as critical habitat for North Atlantic right whale feeding.

In this case, the Facility's outfall and action area are over 100 river miles upstream from Massachusetts coastal waters where protected marine species are found, Also, the Housatonic River has not been identified as a river where protected sturgeon are present. Therefore, there are no known federally listed threatened or endangered species or their critical habitat under the jurisdiction of NOAA Fisheries in the vicinity of the Laurel Mill discharge.[39] Because the action area of the discharge is not expected to overlap with these threatened or endangered species or critical habitat, consultation with NOAA Fisheries under Section 7 of the ESA is not required for this federal action.

For protected species under the jurisdiction of the USFWS, the dwarf wedgemussel (*Alasmidonta heterodon*), a listed endangered species, has been documented in Massachusetts in the Connecticut River watershed. Information obtained from the USFWS indicates that the dwarf wedgemussel is not found in the Housatonic River within the action area resulting from the Laurel Mill discharge.

However, one terrestrial listed threatened species, the northern long-eared bat (*Myotis septentrionalis*) was identified as potentially occurring in the action area of the Laurel Mill discharge. [40] According to the USFWS, the threatened northern long-eared bat is found in the following habitats based on seasons, "winter – mines and caves; summer – wide variety of

[39] See §7 resources for NOAA Fisheries at https://www.fisheries.noaa.gov/resource/map/greater-atlantic-region-esa-section-7-mapper.

[40] See §7 resources for USFWS at https://ecos.fws.gov/ipac/.

forested habitats." This species is not considered aquatic. However, because the Facility's projected action area in the Housatonic River and South Lee, Massachusetts area overlaps with the general statewide range of the northern long-eared bat, EPA prepared an Effects Determination Letter for the Laurel Mill NPDES Permit Reissuance and submitted it to USFWS. Based on the information submitted by EPA, the USFWS notified EPA by letter, dated February 11, 2021, that the permit reissuance is consistent with activities analyzed in the USFWS January 5, 2016, Programmatic Biological Opinion (PBO)[41]. The PBO outlines activities that are excepted from "take" prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.). The USFWS consistency letter concluded EPA's consultation responsibilities for the Laurel Mill NPDES permitting action under ESA Section 7(a)(2) with respect to the northern long-eared bat. No further ESA section 7 consultation is required with USFWS.

At the beginning of the public comment period, EPA notified USFWS and NOAA Fisheries Protected Resources Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

No ESA consultation is required as a result of this permitting action. However, initiation of consultation is required and shall be requested by the EPA or by USFWS/NOAA Fisheries where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the analysis; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this analysis; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted. If there is any incidental take of a listed species, initiation of consultation would be required.

### 6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 *et seq*., 1998), EPA is required to consult with NOAA Fisheries if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat". *See* 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". *See* 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH. 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

[41] USFWS Event Code: 05E1NE00-2021-E-04255, February 11, 2021.

EFH is only designated for fish species for which federal Fisheries Management Plans exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

The Federal action being considered in this case is EPA's proposed NPDES permit for Laurel Mill, which discharges though Outfall 001 into the Housatonic River (MA21-19) in Lee, Massachusetts. Based on available EFH information, including the NOAA Fisheries EFH Mapper,[42] EPA has determined that the Housatonic River is not covered by EFH designation for riverine systems at Latitude 42° 16' 31.404", Longitude -73° 16' 6.528" Therefore, consultation with NOAA Fisheries Habitat and Ecosystem Services Division under the Magnuson-Stevens Fishery Conservation and Management Act is not required.

At the beginning of the public comment period, EPA notified NOAA Fisheries Habitat and Ecosystem Services Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

## 7.0 Public Comments, Hearing Requests, and Permit Appeals

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

Nathan Chien
EPA Region 1
5 Post Office Square, Suite 100 (06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1649
Email: Chien.Nathan@epa.gov

Prior to the close of the public comment period, any person may submit a written request to EPA for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the Draft Permit, EPA will respond to all significant comments in a Response to Comments document attached to the Final Permit and make these responses available to the public at EPA's Boston office and on EPA's website.

Following the close of the comment period, and after any public hearings, if such hearings are held, EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 CFR § 124.19.

[42] NOAA EFH Mapper available at http://www.habitat.noaa.gov/protection/efh/efhmapper/

## 8.0 Administrative Record

The administrative record on which this Draft Permit is based may be accessed at EPA's Boston office by appointment, Monday through Friday, excluding holidays from Nathan Chien, EPA Region 1, 5 Post Office Square, Suite-100 (06-1), Boston, MA 02109-3912, or via email to chien.nathan@epa.gov.

4/1/2021
Date

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

**Figure 1: Location Map**

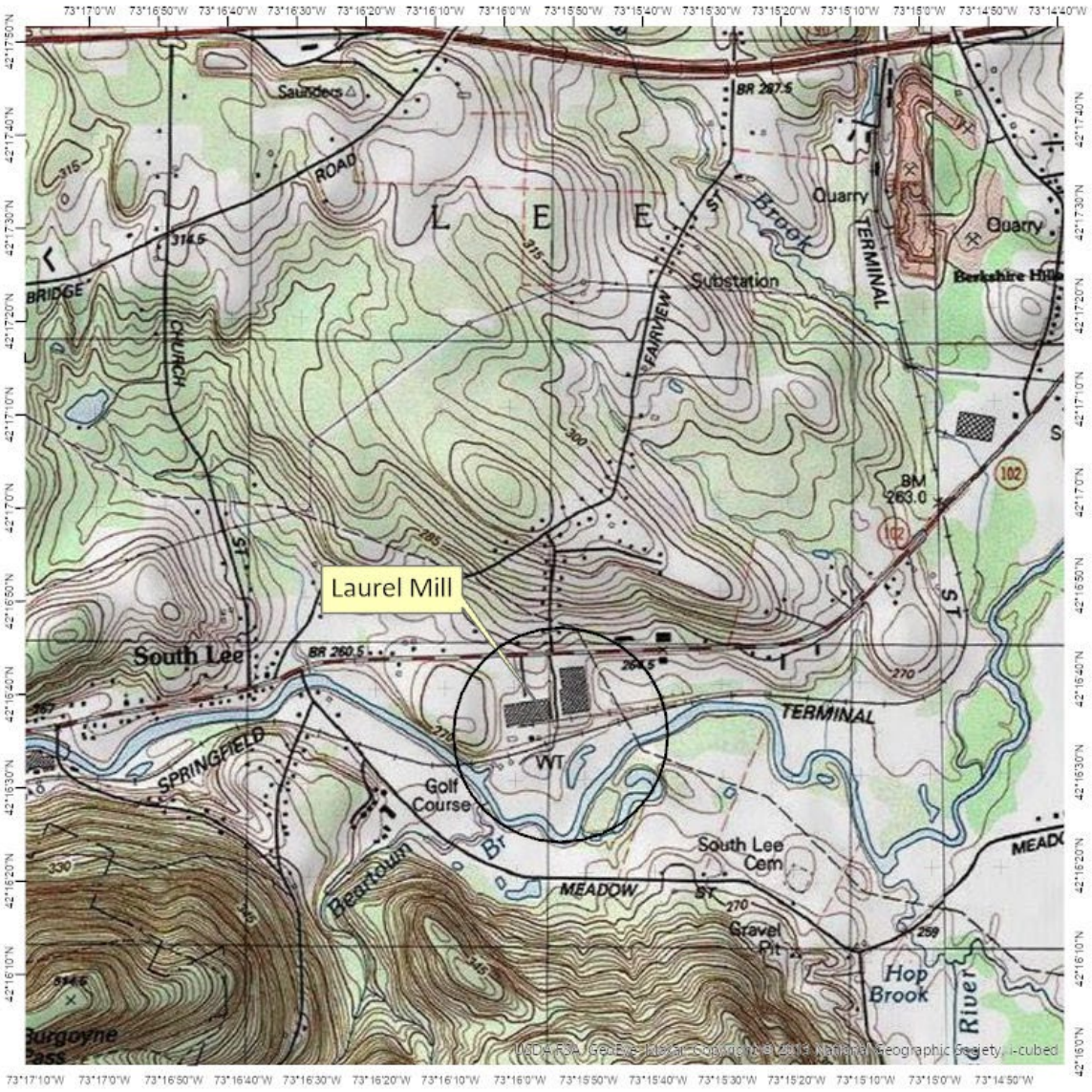



**FIGURE 1**
**Site Location Map**
Laurel Mill
1085 Pleasant St
South Lee, MA
EPA
10/26/2020

**Figure 2: Site Plan**

**Figure 3: Schematic of Paper Manufacturing**

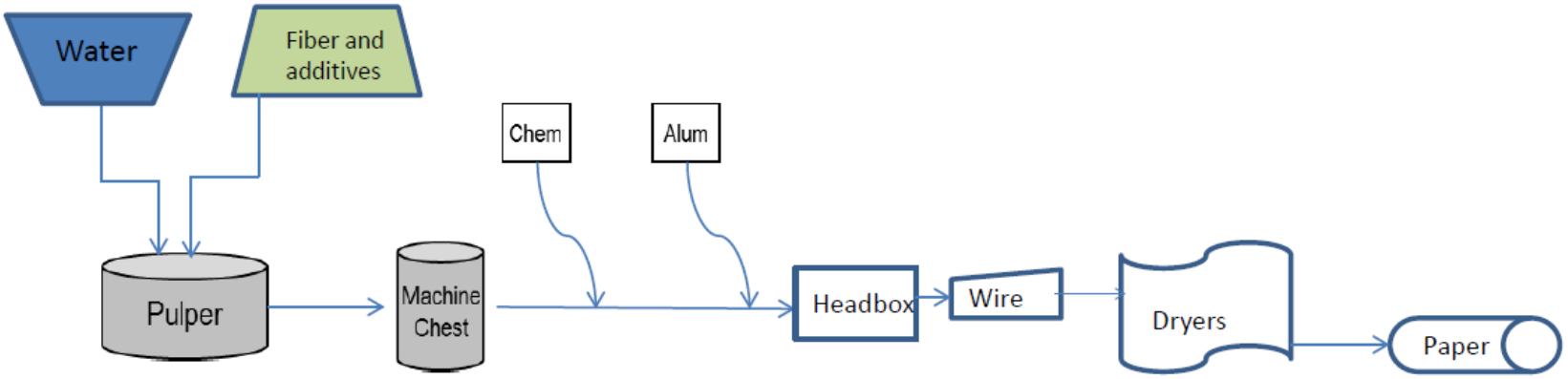
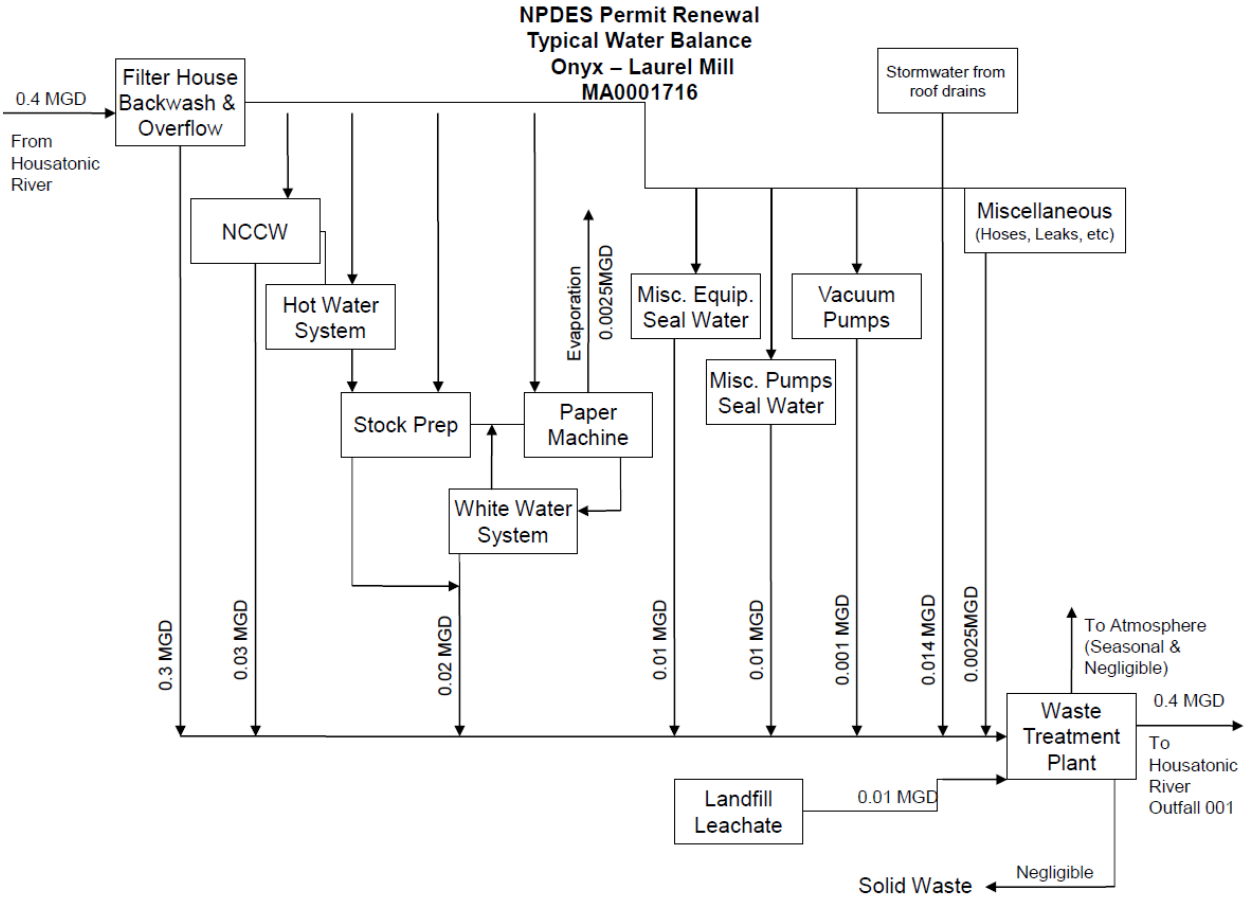


**Figure 4: Schematic of Water Flow**



## Appendix A: Discharge Monitoring Data

| **LAUREL MILL**<br>**Outfall Serial Number 001**<br>**Monthly Effluent Monitoring** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Flow** | **Flow** | **BOD5** | **BOD5** | **TSS** | **TSS** | **pH** | **pH** | **TRC** | **TRC** |
| | **Monthly Avg** | **Daily Max** | **Monthly Avg** | **Daily Max** | **Monthly Avg** | **Daily Max** | **Minimum** | **Maximum** | **Monthly Avg** | **Daily Max** |
| **Units** | **MGD** | **MGD** | **lb/d** | **lb/d** | **lb/d** | **lb/d** | **SU** | **SU** | **mg/L** | **mg/L** |
| **Effluent Limit** | **Report** | **Report** | **8.5** | **16.4** | **100** | **250** | **6** | **9** | **Report** | **Report** |
| **Minimum** | **0.164** | **0.19** | **0** | **0** | **0** | **0** | **6.83** | **6.99** | **0.003** | **0.01** |
| **Maximum** | **0.546** | **0.741** | **14.88** | **90.8** | **64.07** | **695** | **8.1** | **8.33** | **0.073** | **0.17** |
| **Median** | **0.2615** | **0.369** | **0** | **0** | **11.275** | **30.315** | **7.29** | **7.755** | **0.018** | **0.04** |
| **No. of Violations** | **N/A** | **N/A** | **2** | **4** | **0** | **1** | **0** | **0** | **N/A** | **N/A** |
| **Monitoring Period End Date** | | | | | | | | | | |
| 11/30/2015 | 0.423 | 0.52 | 0 | 0 | 27 | 68 | 7.3 | 7.6 | 0.015 | 0.02 |
| 12/31/2015 | 0.43 | 0.5 | 0 | 0 | 64.07 | **695** | 7.4 | 7.6 | 0.004 | 0.02 |
| 1/31/2016 | 0.306 | 0.46 | 0.875 | 7 | 12.375 | 48 | 7.1 | 7.2 | 0.073 | 0.11 |
| 2/29/2016 | 0.22 | 0.31 | 0 | 0 | 8.88 | 71 | 7.2 | 7.5 | 0.03 | 0.06 |
| 3/31/2016 | 0.166 | 0.19 | 3 | **18.48** | 19.78 | 75 | 7 | 7.2 | 0.013 | 0.03 |
| 4/30/2016 | 0.2 | 0.47 | 0.83 | 6.61 | 30.74 | 121.55 | 6.99 | 7.51 | 0.013 | 0.03 |
| 5/31/2016 | 0.164 | 0.233 | 0 | 0 | 3.58 | 22.72 | 7.5 | 7.82 | 0.02 | 0.04 |
| 6/30/2016 | 0.176 | 0.268 | 0 | 0 | 2.9 | 13.83 | 7.6 | 7.7 | 0.02 | 0.03 |
| 7/31/2016 | 0.183 | 0.235 | 0 | 0 | 7.32 | 18.24 | 7.7 | 7.8 | 0.023 | 0.05 |
| 8/31/2016 | 0.168 | 0.231 | 0 | 0 | 9.52 | 23.28 | 7.8 | 8 | 0.022 | 0.04 |
| 9/30/2016 | 0.224 | 0.293 | 0 | 0 | 10.58 | 36.61 | 7.9 | 8.2 | 0.018 | 0.04 |
| 10/31/2016 | 0.227 | 0.332 | 0 | 0 | 34 | 75.6 | 7.43 | 8 | 0.023 | 0.05 |
| 11/30/2016 | 0.187 | 0.32 | 0 | 0 | 2.28 | 18.27 | 7 | 7.6 | 0.022 | 0.06 |

**LAUREL MILL**
**Outfall Serial Number 001**
**Monthly Effluent Monitoring**

| Parameter | Flow | Flow | BOD5 | BOD5 | TSS | TSS | pH | pH | TRC | TRC |
|---|---|---|---|---|---|---|---|---|---|---|
| | Monthly Avg | Daily Max | Monthly Avg | Daily Max | Monthly Avg | Daily Max | Minimum | Maximum | Monthly Avg | Daily Max |
| 12/31/2016 | 0.169 | 0.276 | 0 | 0 | 22.25 | 71.55 | 7.1 | 7.4 | 0.01 | 0.04 |
| 1/31/2017 | 0.267 | 0.352 | 0 | 0 | 3.41 | 30.67 | 7.4 | 7.5 | 0.024 | 0.06 |
| 2/28/2017 | 0.258 | 0.404 | 0 | 0 | 11.54 | 37.66 | 7.3 | 7.5 | 0.003 | 0.01 |
| 3/31/2017 | 0.207 | 0.308 | 0 | 0 | 8.27 | 34.67 | 6.85 | 7.12 | 0.028 | 0.06 |
| 4/30/2017 | 0.258 | 0.654 | 0 | 0 | 18.43 | 98.72 | 7 | 7.8 | 0.025 | 0.05 |
| 5/31/2017 | 0.318 | 0.441 | 0 | 0 | 15.21 | 47.48 | 7.7 | 8 | 0.014 | 0.05 |
| 6/30/2017 | 0.248 | 0.373 | 0 | 0 | 11 | 29.53 | 7.57 | 7.97 | 0.018 | 0.02 |
| 7/31/2017 | 0.187 | 0.218 | 0 | 0 | 4.7 | 24.5 | 7.82 | 7.94 | 0.008 | 0.01 |
| 8/31/2017 | 0.196 | 0.34 | 0 | 0 | 3.99 | 15.84 | 7.33 | 7.8 | 0.012 | 0.03 |
| 9/30/2017 | 0.2 | 0.429 | NODI: M | NODI: M | 1.6 | 9.62 | 7.23 | 7.7 | 0.027 | 0.04 |
| 10/31/2017 | 0.237 | 0.428 | 0 | 0 | 4.28 | 19.32 | 7.13 | 7.8 | 0.012 | 0.03 |
| 11/30/2017 | 0.176 | 0.213 | 0 | 0 | 7.91 | 48.84 | 7.5 | 7.85 | 0.013 | 0.03 |
| 12/31/2017 | 0.285 | 0.617 | 0 | 0 | 16.57 | 46.72 | 7.11 | 7.41 | 0.058 | 0.17 |
| 1/31/2018 | 0.546 | 0.741 | 3.88 | **34.93** | 21.87 | 44.25 | 6.83 | 7.84 | 0.026 | 0.05 |
| 2/28/2018 | 0.454 | 0.64 | **14.88** | **57.6** | 14.6 | 29.96 | 6.96 | 7.51 | 0.043 | 0.1 |
| 3/31/2018 | 0.254 | 0.348 | 3.74 | 14.85 | 19.91 | 122.97 | 6.98 | 7.2 | 0.028 | 0.08 |
| 4/30/2018 | 0.248 | 0.269 | **10.91** | **90.8** | 7.14 | 21.12 | 7.07 | 7.94 | 0.013 | 0.04 |
| 5/31/2018 | 0.254 | 0.366 | 0 | 0 | 18.48 | 71.19 | 7.94 | 8.1 | 0.008 | 0.02 |
| 6/30/2018 | 0.322 | 0.573 | 0 | 0 | 31.69 | 41.39 | 8.1 | 8.16 | 0.015 | 0.04 |
| 7/31/2018 | 0.285 | 0.357 | 0 | 0 | 10.65 | 28.24 | 7.75 | 8.1 | 0.018 | 0.04 |
| 8/31/2018 | 0.315 | 0.461 | 0 | 0 | 12.53 | 20.75 | 7.87 | 8.02 | 0.023 | 0.04 |
| 9/30/2018 | 0.289 | 0.425 | 0 | 0 | 20.63 | 42.76 | 7.91 | 8.19 | 0.045 | 0.06 |
| 10/31/2018 | 0.305 | 0.5 | 0 | 0 | 31.53 | 75.47 | 7.13 | 8.11 | 0.05 | 0.08 |
| 11/30/2018 | 0.448 | 0.564 | 0 | 0 | 14.84 | 67.8 | 7.63 | 8 | 0.008 | 0.02 |
| 12/31/2018 | 0.366 | 0.501 | 0 | 0 | 11.37 | 29.23 | 6.95 | 7.88 | 0.018 | 0.03 |

**LAUREL MILL**
**Outfall Serial Number 001**
**Monthly Effluent Monitoring**

| Parameter | Flow | Flow | BOD5 | BOD5 | TSS | TSS | pH | pH | TRC | TRC |
|---|---|---|---|---|---|---|---|---|---|---|
| | Monthly Avg | Daily Max | Monthly Avg | Daily Max | Monthly Avg | Daily Max | Minimum | Maximum | Monthly Avg | Daily Max |
| 1/31/2019 | 0.442 | 0.625 | 0 | 0 | 28.49 | 65.37 | 7.2 | 7.57 | 0.008 | 0.02 |
| 2/28/2019 | 0.331 | 0.398 | 0 | 0 | 6.77 | 20 | 7.38 | 7.45 | 0.02 | 0.04 |
| 3/31/2019 | 0.326 | 0.413 | 0 | 0 | 13.6 | 51.14 | 7.19 | 7.45 | 0.015 | 0.04 |
| 4/30/2019 | 0.227 | 0.356 | 2.01 | 16.08 | 8.01 | 23.99 | 7.18 | 7.85 | 0.016 | 0.02 |
| 5/31/2019 | 0.269 | 0.323 | 0 | 0 | 15.33 | 28.11 | 7.36 | 7.59 | 0.048 | 0.06 |
| 6/30/2019 | 0.233 | 0.336 | 0 | 0 | 18.32 | 39.46 | 7.11 | 7.41 | 0.02 | 0.05 |
| 7/31/2019 | 0.268 | 0.377 | 0 | 0 | 11.38 | 22.14 | 7.39 | 7.82 | 0.032 | 0.1 |
| 8/31/2019 | 0.196 | 0.321 | 0 | 0 | 11.18 | 16.87 | 7.32 | 7.89 | 0.018 | 0.04 |
| 9/30/2019 | 0.191 | 0.24 | 0 | 0 | 9.26 | 21.44 | 6.84 | 6.99 | 0.015 | 0.04 |
| 10/31/2019 | 0.196 | 0.337 | 1.66 | 11.05 | 33.08 | 131.87 | 6.91 | 7.71 | 0.012 | 0.04 |
| 11/30/2019 | 0.223 | 0.362 | 0 | 0 | 10.99 | 25.54 | 7.1 | 7.49 | 0.035 | 0.12 |
| 12/31/2019 | 0.337 | 0.479 | 0 | 0 | 3 | 20.37 | 7.08 | 7.39 | 0.018 | 0.03 |
| 1/31/2020 | 0.268 | 0.372 | 0 | 0 | 1.63 | 14.66 | 7.12 | 7.33 | 0.015 | 0.02 |
| 2/29/2020 | 0.257 | 0.329 | 0 | 0 | 4.33 | 20.94 | 7.14 | 7.43 | 0.005 | 0.02 |
| 3/31/2020 | 0.3 | 0.417 | 1.13 | 10.2 | 2.6 | 16.02 | 7.24 | 7.47 | 0.032 | 0.08 |
| 4/30/2020 | 0.357 | 0.501 | 0 | 0 | 2.1 | 19.01 | 7.17 | 7.6 | 0.003 | 0.01 |
| 5/31/2020 | 0.31 | 0.355 | 0 | 0 | 0 | 0 | 7.28 | 7.71 | 0.013 | 0.03 |
| 6/30/2020 | 0.309 | 0.352 | 0 | 0 | 5.37 | 17.94 | 7.65 | 8.04 | 0.012 | 0.03 |
| 7/31/2020 | 0.275 | 0.413 | 0 | 0 | 0 | 0 | 7.77 | 7.83 | 0.02 | 0.07 |
| 8/31/2020 | 0.265 | 0.492 | 0 | 0 | 13.6 | 42 | 7.6 | 8.2 | 0.035 | 0.06 |
| 9/30/2020 | 0.292 | 0.324 | 0 | 0 | 23.55 | 52.63 | 8.06 | 8.33 | 0.024 | 0.05 |
| 10/31/2020 | 0.284 | 0.406 | 0 | 0 | 11.58 | 34.81 | 7.87 | 8.11 | 0.003 | 0.01 |

**LAUREL MILL**
**Outfall Serial Number 001**
**Monthly Effluent Monitoring – Continued**

| Parameter | TN | TN | Ammonia | TP | TP | Aluminum, total | Aluminum, total | Effluent Temperature (°F) | Effluent Temperature (°F) | Total production |
|---|---|---|---|---|---|---|---|---|---|---|
| | Monthly Avg | Daily Max | Daily Max | Monthly Avg | Daily Max | Daily Max | Monthly Avg | Monthly Avg | Daily Max | Monthly Avg |
| **Units** | **lb/d** | **lb/d** | **mg/L** | **mg/L** | **mg/L** | **mg/L** | **mg/L** | **deg F** | **deg F** | **ton/d** |
| **Effluent Limit** | **Report** | **Report** | **Report** | **Report** | **Report** | **Report** | **8.3** | **Report** | **90** | **Report** |
| **Minimum** | **0.77** | **0.77** | **0** | **0** | **0** | **0** | **0** | **33.75** | **35** | **0** |
| **Maximum** | **19.89** | **19.89** | **0.84** | **0.13** | **0.53** | **5.8** | **3.3** | **76.25** | **80** | **0.1** |
| **Median** | **4.355** | **4.495** | **0** | **0.01** | **0.023** | **0.95** | **0.95** | **54.375** | **59** | **0.0465** |
| **No. of Violations** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **0** | **N/A** | **0** | **N/A** |
| **Monitoring Period End Date** | | | | | | | | | | |
| 11/30/2015 | 11.14 | 11.14 | 0 | 0.014 | 0.05 | 2.2 | 2.2 | 47.5 | 49 | 0.033 |
| 12/31/2015 | 9.42 | 9.42 | 0 | 0.01 | 0.052 | 0.73 | 0.73 | 44.6 | 48 | 0.016 |
| 1/31/2016 | 10.026 | 10.026 | 0 | 0 | 0 | 0.74 | 0.74 | 37.5 | 38 | 0.032 |
| 2/29/2016 | 2.27 | 2.27 | 0 | 0 | 0 | 1.2 | 1.2 | 38.5 | 40 | 0.043 |
| 3/31/2016 | 8.431 | 8.431 | 0.7 | 0 | 0 | 0.52 | 0.52 | 45.5 | 48 | 0 |
| 4/30/2016 | 3.07 | 3.07 | 0 | 0.13 | 0.53 | 0.47 | 0.47 | 49.5 | 55 | 0.033 |
| 5/31/2016 | 2.98 | 2.98 | 0 | 0 | 0 | 0.46 | 0.46 | 59.2 | 69 | 0.01 |
| 6/30/2016 | 4.27 | 4.27 | 0 | 0.03 | 0.1 | 1.5 | 1.5 | 69.75 | 73 | 0.05 |
| 7/31/2016 | 1.19 | 1.19 | 0 | 0.017 | 0.067 | 1.9 | 1.9 | 75.25 | 78 | 0.04 |
| 8/31/2016 | 4.66 | 4.66 | 0 | 0.03 | 0.15 | 1.9 | 1.9 | 75.2 | 78 | 0.05 |
| 9/30/2016 | 4.55 | 4.55 | 0 | 0.07 | 0.15 | 2.4 | 2.4 | 70.25 | 72 | 0.04 |
| 10/31/2016 | 6.81 | 7.45 | 0 | 0.01 | 0.052 | 5.8 | 3.21 | 60.5 | 69 | 0.03 |
| 11/30/2016 | 7.22 | 7.22 | 0 | 0.023 | 0.09 | 0.4 | 0.4 | 47.4 | 50 | 0.01 |
| 12/31/2016 | 12.35 | 12.35 | 0.84 | 0.043 | 0.17 | 1.1 | 1.1 | 42 | 47 | 0.02 |
| 1/31/2017 | 5.61 | 5.61 | 0.59 | 0.05 | 0.25 | 0.79 | 0.78 | 39 | 40 | 0.02 |

**LAUREL MILL**
**Outfall Serial Number 001**
**Monthly Effluent Monitoring – Continued**

| Parameter | TN | TN | Ammonia | TP | TP | Aluminum, total | Aluminum, total | Effluent Temperature (°F) | Effluent Temperature (°F) | Total production |
|---|---|---|---|---|---|---|---|---|---|---|
| | Monthly Avg | Daily Max | Daily Max | Monthly Avg | Daily Max | Daily Max | Monthly Avg | Monthly Avg | Daily Max | Monthly Avg |
| 2/28/2017 | 1.99 | 1.99 | 0 | 0 | 0 | 0.94 | 0.94 | 40.25 | 44 | 0.05 |
| 3/31/2017 | 3.88 | 3.88 | 0.4 | 0 | 0 | 0.72 | 0.72 | 40.5 | 42 | 0.03 |
| 4/30/2017 | 16.81 | 16.81 | 0 | 0 | 0 | 1.2 | 1.2 | 50.25 | 54 | 0.03 |
| 5/31/2017 | 18.98 | 18.98 | 0 | 0 | 0 | 0.31 | 0.31 | 58.8 | 63 | 0.04 |
| 6/30/2017 | 10.57 | 10.57 | 0 | 0 | 0 | 0.7 | 0.7 | 68.75 | 73 | 0.02 |
| 7/31/2017 | 2.89 | 2.89 | 0 | 0 | 0 | 1.3 | 1.3 | 72.75 | 74 | 0.04 |
| 8/31/2017 | 3.25 | 4.59 | 0 | 0 | 0 | 0.88 | 0.61 | 72.4 | 75 | 0.07 |
| 9/30/2017 | 3.51 | 3.75 | 0 | 0.025 | 0.05 | 3.3 | 1.91 | 67.67 | 71 | 0.07 |
| 10/31/2017 | 4.41 | 4.71 | 0 | 0 | 0 | 2.1 | 2.1 | 61.4 | 66 | 0.05 |
| 11/30/2017 | 6.81 | 6.81 | 0 | 0 | 0 | 0.21 | 0.21 | 47.75 | 54 | 0.05 |
| 12/31/2017 | 7.81 | 7.81 | 0 | 0 | 0 | 1.9 | 1.9 | 40.5 | 44 | 0.02 |
| 1/31/2018 | 19.89 | 19.89 | 0 | 0 | 0 | 1.7 | 1.7 | 34.2 | 35 | 0.1 |
| 2/28/2018 | 13.88 | 13.88 | 0 | 0 | 0 | 0.87 | 0.87 | 44 | 57 | 0.07 |
| 3/31/2018 | 9.82 | 9.82 | 0 | 0 | 0 | 0.54 | 0.54 | 43.25 | 49 | 0.06 |
| 4/30/2018 | 11.77 | 11.77 | 0.67 | 0 | 0 | 0.68 | 0.68 | 45.33 | 48 | 0.07 |
| 5/31/2018 | 1.29 | 1.29 | 0 | 0 | 0 | 0.2 | 0.2 | 60.2 | 67 | 0.05 |
| 6/30/2018 | 1.66 | 1.66 | 0 | 0.091 | 0.24 | 3.3 | 3.3 | 68.5 | 71 | 0.03 |
| 7/31/2018 | 1.95 | 1.95 | 0 | 0.024 | 0.12 | 1 | 1 | 75.75 | 77 | 0.04 |
| 8/31/2018 | 2.72 | 2.72 | 0 | 0.037 | 0.098 | 1.7 | 1.7 | 73.5 | 76 | 0.05 |
| 9/30/2018 | 2.1 | 2.1 | 0 | 0.048 | 0.075 | 2.3 | 2.3 | 69.5 | 75 | 0.04 |
| 10/31/2018 | 12.06 | 12.06 | 0 | 0.092 | 0.17 | 1.6 | 1.6 | 57.2 | 64 | 0.06 |
| 11/30/2018 | 5.2 | 5.2 | 0 | 0 | 0 | 3.3 | 2.03 | 44.25 | 50 | 0.1 |
| 12/31/2018 | 11.56 | 11.56 | 0 | 0.03 | 0.061 | 0.83 | 0.83 | 39.75 | 41 | 0.05 |
| 1/31/2019 | 4.3 | 4.3 | 0 | 0 | 0 | 1.1 | 1.1 | 35.6 | 37 | 0.06 |
| 2/28/2019 | 2.41 | 2.41 | 0.21 | 0 | 0 | 2.2 | 2.2 | 33.75 | 36 | 0.09 |
| 3/31/2019 | 3.61 | 3.61 | 0 | 0 | 0 | 0.75 | 0.75 | 38.25 | 46 | 0.07 |

**LAUREL MILL**
**Outfall Serial Number 001**
**Monthly Effluent Monitoring – Continued**

| Parameter | TN | TN | Ammonia | TP | TP | Aluminum, total | Aluminum, total | Effluent Temperature (°F) | Effluent Temperature (°F) | Total production |
|---|---|---|---|---|---|---|---|---|---|---|
| | Monthly Avg | Daily Max | Daily Max | Monthly Avg | Daily Max | Daily Max | Monthly Avg | Monthly Avg | Daily Max | Monthly Avg |
| 4/30/2019 | 6.91 | 6.91 | 0 | 0.021 | 0.083 | 0.96 | 0.96 | 44 | 49 | 0.04 |
| 5/31/2019 | 5.31 | 5.31 | 0 | 0 | 0 | 0.88 | 0.88 | 53.25 | 58 | 0.1 |
| 6/30/2019 | 0.86 | 0.86 | 0 | 0 | 0 | 0 | 0 | 64 | 68 | 0.08 |
| 7/31/2019 | 0.77 | 0.77 | 0 | 0.03 | 0.15 | 0.88 | 0.88 | 71.8 | 75 | 0.08 |
| 8/31/2019 | 1.59 | 1.59 | 0 | 0.021 | 0.083 | 1.7 | 1.7 | 71.5 | 76 | 0.07 |
| 9/30/2019 | 3.02 | 4.38 | 0 | 0 | 0 | 2.4 | 1.75 | 65.5 | 67 | 0.05 |
| 10/31/2019 | 3.59 | 3.59 | 0 | 0.072 | 0.226 | 1.5 | 1.5 | 57.8 | 63 | 0.04 |
| 11/30/2019 | 9.2 | 9.2 | 0.07 | 0.02 | 0.027 | 1.37 | 1.37 | 46 | 53 | 0.07 |
| 12/31/2019 | 4.69 | 4.69 | 0.24 | 0.018 | 0.027 | 1.17 | 1.17 | 37.4 | 39 | 0.05 |
| 1/31/2020 | 2.92 | 2.92 | 0.06 | 0.021 | 0.047 | 0.56 | 0.56 | 38.25 | 44 | 0.06 |
| 2/29/2020 | 3.36 | 3.36 | 0.18 | 0.004 | 0.017 | 0.86 | 0.86 | 39.75 | 45 | 0.08 |
| 3/31/2020 | 4.44 | 4.44 | 0.17 | 0.011 | 0.017 | 0.44 | 0.44 | 44.2 | 48 | 0.06 |
| 4/30/2020 | 5.5 | 5.5 | 0.15 | 0.048 | 0.16 | 0.65 | 0.65 | 55.5 | 69 | 0.03 |
| 5/31/2020 | 6.03 | 6.03 | 0.19 | 0.006 | 0.023 | 0.43 | 0.43 | 58 | 68 | 0.02 |
| 6/30/2020 | 3.64 | 3.64 | 0.06 | 0.011 | 0.023 | 0.55 | 0.55 | 68.6 | 74 | 0 |
| 7/31/2020 | 4 | 4 | 0 | 0.007 | 0.019 | 0.37 | 0.37 | 76.25 | 80 | 0.03 |
| 8/31/2020 | 3.8 | 3.8 | 0 | 0.032 | 0.063 | 0.53 | 0.53 | 75.5 | 78 | 0.02 |
| 9/30/2020 | 3.92 | 3.92 | 0 | 0.05 | 0.082 | 2.76 | 2.76 | 66.4 | 70 | 0.07 |
| 10/31/2020 | 4.24 | 4.24 | 0 | 0.021 | 0.042 | 2.19 | 2.19 | 56.75 | 60 | 0.02 |

**LAUREL MILL**
**Outfall Serial Number 001**
**Quarterly WET Testing – Effluent**

| Parameter | LC50 Acute Ceriodaphnia | C-NOEC | Aluminum | Cadmium | Copper | Lead | Nickel | Zinc | Hardness as CaCO3 |
|---|---|---|---|---|---|---|---|---|---|
| | Daily Min | Daily Min | Daily Max | Daily Max | Daily Max | Daily Max | Daily Max | Daily Max | Daily Max |
| **Units** | % | % | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/L |
| **Effluent Limit** | 100 | Report | Report | Report | Report | Report | Report | Report | Report |
| **Minimum** | 100 | 12.5 | 360 | 0.3 | 0 | 0 | 0 | 2 | 2 |
| **Maximum** | 100 | 100 | 5780 | 26.3 | 6.4 | 7.4 | 1 | 144 | 144 |
| **Median** | 100 | 100 | 720 | 3.4 | 3 | Non-Detect | Non-Detect | 12 | 12 |
| **No. of Violations** | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Monitoring Period End Date** | | | | | | | | | |
| 1/31/2016 | 100 | 25 | 720 | 3.5 | < 2 | < .3 | < 1 | 11 | 126 |
| 4/30/2016 | 100 | 25 | 669 | 10.7 | 4 | 7.4 | < 1 | 35 | 128 |
| 7/31/2016 | 100 | 50 | 2190 | 0.3 | 3 | < .3 | < 1 | 6 | 162 |
| 10/31/2016 | 100 | 50 | 5780 | 0.7 | 3 | 0.5 | < 1 | 10 | 192 |
| 1/31/2017 | 100 | 12.5 | 1240 | 8.6 | < 2 | 0.3 | < 1 | 38 | 137 |
| 4/30/2017 | 100 | 25 | 912 | 26.3 | 3 | 0.8 | 1 | 144 | 150 |
| 7/31/2017 | 100 | 100 | 590 | 0.4 | < 1 | < .3 | < 1 | 4 | 124 |
| 10/31/2017 | 100 | 100 | 442 | 0.3 | 1.5 | < .3 | < 1 | 3 | 162 |
| 1/31/2018 | 100 | 100 | 1130 | 0.3 | 2.4 | < .3 | < 1 | 3 | 148 |
| 4/30/2018 | 100 | 100 | 648 | 17 | 5.9 | < .3 | 1 | 90 | 130 |
| 7/31/2018 | 100 | 100 | 994 | 0.6 | 3.5 | < .3 | < 1 | 5 | 134 |
| 10/31/2018 | 100 | 100 | 2020 | 6.1 | 6.1 | < .3 | 1 | 15 | 142 |
| 1/31/2019 | 100 | 50 | 946 | 7 | 3.4 | < .3 | < 1 | 26 | 123 |
| 4/30/2019 | 100 | 100 | 660 | 4.1 | 3.9 | < .3 | < 1 | 24 | 113 |

| **LAUREL MILL**<br>**Outfall Serial Number 001**<br>**Quarterly WET Testing – Effluent** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **LC50 Acute Ceriodaphnia** | **C-NOEC** | **Aluminum** | **Cadmium** | **Copper** | **Lead** | **Nickel** | **Zinc** | **Hardness as CaCO3** |
| | **Daily Min** | **Daily Min** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** |
| 7/31/2019 | 100 | 100 | 626 | 0.4 | 1.5 | < .3 | < 1 | 4 | 135 |
| 10/31/2019 | 100 | 50 | 2430 | 1 | 6.4 | < .3 | 1 | 12 | 171 |
| 1/31/2020 | 100 | 100 | 665 | 11.9 | 4.1 | < .3 | < 1 | 50 | 140 |
| 4/30/2020 | 100 | 100 | 533 | 3.4 | 2.6 | < .3 | < 1 | 13 | 111 |
| 7/31/2020 | 100 | 100 | 360 | 0.5 | 3.6 | < .3 | < 1 | 2 | 145 |
| 10/31/2020 | 100 | Not reported | 1490 | 0.7 | 4.3 | < .3 | < 1 | 5 | Not reported |

**LAUREL MILL**
**Outfall Serial Number 001**
**Quarterly WET Testing – Receiving Water**

| Parameter | Aluminum | Cadmium | Copper | Lead | Nickel | Zinc | Ammonia as N | Hardness (CaCO3) | pH |
|---|---|---|---|---|---|---|---|---|---|
| | Daily Max | Daily Max | Daily Max | Daily Max | Daily Max | Daily Max | Daily Max | Daily Max | Daily Max |
| Units | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/L | mg/L | SU |
| Effluent Limit | Report | Report | Report | Report | Report | Report | Report | Report | Report |
| Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78.6 | 7.48 |
| Maximum | 219 | 0 | 40.9 | 5.5 | 2 | 11 | 0.38 | 193 | 8 |
| Median | 78 | Non-Detect | 15 | 0.6 | Non-Detect | 5 | 0.08 | 116 | 7.78 |
| No. of Violations | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Monitoring Period End Date | | | | | | | | | |
| 1/31/2016 | 219 | < .1 | 6 | 1.1 | < 1 | 5 | < 0.05 | 101 | 7.48 |
| 4/30/2016 | 66 | < .1 | 27 | 5.5 | < 1 | 4 | < 0.05 | 82.3 | 7.58 |
| 7/31/2016 | 136 | < .1 | 26 | 1.3 | < 1 | 7 | 0.21 | 152 | 7.86 |
| 10/31/2016 | 29 | < .1 | < 2 | 0.3 | < 1 | < 2 | 0.07 | 193 | 7.67 |
| 1/31/2017 | 36 | < .1 | < 2 | < .3 | < 1 | < 2 | 0.14 | 116 | 7.89 |
| 4/30/2017 | 182 | < .1 | 13 | 1.6 | < 1 | 10 | < 0.05 | 78.6 | 7.7 |
| 7/31/2017 | 216 | < .1 | 34 | 3.2 | 1 | 3 | 0.19 | 137 | 7.61 |
| 10/31/2017 | 92 | < .1 | 2 | < .3 | < 1 | 2 | 0.13 | 157 | 7.93 |
| 1/31/2018 | 92 | < .1 | 5.2 | < .3 | < 1 | 5 | 0.38 | 147 | 8 |
| 4/30/2018 | 54 | < .1 | 3.3 | < .3 | < 1 | 3 | 0.08 | 104 | 7.85 |
| 7/31/2018 | 78 | < .1 | 2.7 | < .3 | < 1 | 3 | 0.2 | 151 | 7.99 |
| 10/31/2018 | 84 | < .1 | 40.9 | 2 | < 1 | 5 | < 0.05 | 109 | 7.83 |
| 1/31/2019 | 78 | < .1 | 10.5 | < .3 | < 1 | 3 | < 0.05 | 101 | 7.64 |
| 4/30/2019 | 85 | < .1 | 24.9 | 0.7 | < 1 | 4 | < 0.05 | 102 | 7.84 |
| 7/31/2019 | 76 | < .1 | 24.2 | < .3 | < 1 | 6 | 0.25 | 157 | 7.77 |

| **LAUREL MILL**<br>**Outfall Serial Number 001**<br>**Quarterly WET Testing – Receiving Water** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Aluminum** | **Cadmium** | **Copper** | **Lead** | **Nickel** | **Zinc** | **Ammonia as N** | **Hardness (CaCO3)** | **pH** |
| | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** | **Daily Max** |
| 10/31/2019 | < 10 | < .1 | 37.4 | 0.5 | < 1 | 11 | 0.12 | 176 | 7.66 |
| 1/31/2020 | 84 | < .1 | 17.9 | 0.6 | < 1 | 5 | 0.13 | 113 | 7.78 |
| 4/30/2020 | 62 | < .1 | 15 | 1 | < 1 | 6 | 0.06 | 107 | 7.54 |
| 7/31/2020 | 63 | < .1 | 32.1 | 0.7 | 2 | 9 | 0.08 | 136 | 7.94 |
| 10/31/2020 | Not reported | | | | | | | | |

Notes:

MGD = million gallons per day
lb/day = pounds per day
SU = standard units
mg/L = milligrams per liter
NODI: M = no data indicator: cause is laboratory error
deg F = degree fahrenheit
ton/d = tons per day
ug/L = micrograms per liter
0 or "<" = parameter not detected
NA = not applicable

## Appendix B: Metals and Ammonia Reasonable Potential Analysis

**Methodology**

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of the *Technical Support Document for Water Quality-based Toxics Control* (TSD)[1] to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory minimum levels). EPA used this methodology to calculate the 95$^{th}$ percentile.

EPA uses the calculated upper bound of the effluent data, along with a concentration representative of the parameter in the receiving water, the critical effluent flow, and the critical upstream flow to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$Q_s C_s + Q_e C_e = Q_d C_d$$

Where:

$C_d$ = downstream concentration
$C_s$ = upstream concentration (median value of available ambient data)
$C_e$ = effluent concentration (95$^{th}$ percentile of effluent concentrations)
$Q_s$ = upstream flow (7Q10 flow upstream of the outfall)
$Q_e$ = effluent flow of the Facility (permitted maximum daily or monthly average flow)
$Q_d$ = downstream flow ($Q_s + Q_e$)

Solving for the receiving water concentration downstream of the discharge ($C_d$) yields:

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

[1] USEPA, *Technical Support Document for Water Quality-Based Toxics Control*, Office of Water, Washington, D.C., March 1991.

When the downstream concentration exceeds the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above WQSs. *See* 40 CFR § 122.44(d). When EPA determines that a discharge causes, has the reasonable potential to cause, or contribute to such an excursion, the permit must contain WQBELs for the parameter. The limitation is calculated by rearranging the above mass balance equation to solve for the effluent concentration using the applicable criterion as the downstream concentration. *See* 40 CFR § 122.44(d)(1)(iii).

**Determination of Applicable Criteria**

State water quality criteria are derived from EPA's *National Recommended Water Quality Criteria: 2002*, which are incorporated into the state WQSs by reference at 314 CMR 4.05(5)(e).

Freshwater aquatic life criteria for total metals (aluminum, cadmium, copper, lead, nickel, and zinc) are established in terms of dissolved metals and are converted to total recoverable using published conversion factors. Additionally, the criteria for cadmium, copper, lead, nickel and zinc are hardness-dependent. EPA calculated hardness-dependent chronic and acute criteria for metals detected in the effluent using a flow-weighted average of the downstream hardness determined using the hardness values measured in the Facility's discharge and receiving water from WET testing (116.8 mg/L), see Appendix A. The applicable criteria are summarized in the table below.

**Summary of Applicable Criteria**

| Parameter | Applicable Criteria[1,2] | |
|---|---|---|
| | Acute Criteria (CMC) | Chronic Criteria (CCC) |
| **Units** | **µg/L** | **µg/L** |
| Aluminum | 750 | 87 |
| Cadmium | 2.5 | 0.3 |
| Copper | 16.2 | 10.7 |
| Lead | 99.5 | 3.9 |
| Nickel | 535.1 | 59.5 |
| Zinc | 136.7 | 136.7 |
| TRC | 19.0 | 11.0 |
| Ammonia (warm)[3] | 8.4 | 1.7 |
| Ammonia (cold)[3] | 8.4 | 3.3 |

[1] For hardness-dependent criteria, see *National Recommended Water Quality Criteria, Appendix B - Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent*: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm
[2] For dissolved to total recoverable metal conversion, see *Appendix A - Conversion Factors for Dissolved Metals:* http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm#appendxa; Required by 314 CMR 4.05(5)(e).
[3] Ammonia data was divided between warm weather months (April – October) and cold weather months (November – March). Ammonia criteria are calculated based on the temperature and pH of the receiving water. A temperature of 25°C was assumed for calculating warm weather criteria and a temperature of 5°C for cold weather criteria. A receiving water pH of 7.78 S.U. was calculated based on pH data from quarterly WET tests.

## Calculation of Reasonable Potential

EPA first calculated the upper bound of expected effluent concentrations for each parameter. EPA then used the calculated upper bound of expected effluent concentrations, the median value of the available ambient data, the permitted daily maximum effluent flow and the upstream 7Q10 flow to project the in-stream concentration downstream from the discharge. When this resultant in-stream concentration (C) exceeds the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above water quality standards. The results are summarized in the table below.

**Summary Statistics for Estimating 95th Percentile**

| | Aluminum | Cadmium | Copper | Lead | Nickel | Zinc | TRC | Ammonia (warm) | Ammonia (cold) |
|---|---|---|---|---|---|---|---|---|---|
| *k = number of samples =* | 60 | 19 | 19 | 19 | 19 | 19 | 60 | 34 | 25 |
| *r = number of non-detects =* | 1 | 1 | 3 | 14 | 14 | 0 | 0 | 30 | 15 |
| $u_y$ *= Avg of Nat. Log =* | 0.034 | -6.106 | -5.565 | -7.003 | -6.769 | -4.274 | -3.256 | -1.693 | -1.392 |
| *$s_y^2$ = estimated variance =* | 0.510 | 2.474 | 0.501 | 1.517 | 0.096 | 1.283 | 0.373 | 0.990 | 0.826 |
| $s_y$ *= Std Dev. of Nat Log =* | 0.714 | 1.573 | 0.708 | 1.232 | 0.310 | 1.132 | 0.611 | 0.995 | 0.909 |
| ***cv(x) = Coefficient of Variation =* | 21.125 | 0.258 | 0.127 | 0.176 | 0.0458 | 0.265 | 0.188 | 0.588 | 0.653 |
| $\delta$ *= # of nondetects / # of samples = r / k =* | 0.017 | 0.052 | 0.158 | 0.737 | 0.737 | 0 | 0 | 0.882 | 0.6 |
| **99th** | 5.3 | 0.0838 | 0.019 | 0.0081 | 0.002 | 0.194 | 0.16 | 0.720 | 1.475 |
| **95th** | 3.3 | 0.0284 | 0.012 | 0.0027 | 0.002 | 0.089 | 0.11 | 0.222 | 0.707 |
| **Max** | 5.8 | 0.0263 | 0.032 | 0.0074 | 0.002 | 0.144 | 0.17 | 0.67 | 0.53 |
| **Median** | 0.94 | 0.0034 | 0.003 | 0.0 | 0.0 | 0.012 | 0.04 | 0 | 0.023 |
| | | | | | | | | | |
| **Median Ambient Concentration** | 0.078 | 0.0 | 0.0 | 0.015 | 0.0 | 0.005 | No Data | 0.085 | 0.071 |

All concentration values (99th, 95th, Max, Median) are in mg/L
* For data without non-detects: $\sigma_y^2$ = estimated variance = (SUM[$(y_i - u_y)^2$]) / (k-1); for data with non-detects: $s_y^2$ = estimated variance = (S[$(y_i - u_y)$]) / (k-r-1)
**For data with <10 samples, a conservative CV of 0.6 was chosen as described in Box 3-2 of the Technical Support Document for Water Quality Based Toxics Control

EPA's review of ambient aluminum data revealed that this metal is consistently detected at concentrations above the chronic aquatic life criterion in the receiving water. Furthermore, the ambient aluminum concentrations measured at a downstream facility on the same segment of the Housatonic River (Willow Mill NPDES Permit No. MA0001848) found that the median ambient concentration consistently exceeded the chronic aquatic life criterion. The combined ambient aluminum dataset from both facilities indicates that any aluminum added to the Housatonic River above criterion will contribute to an aluminum impairment. Therefore, to ensure that limitations are representative of the aluminum impairment, EPA set the ambient aluminum concentration equal to the chronic criterion.

**Summary of Reasonable Potential Results**

| Parameter | Ambient Concentration[1] | Effluent Concentration[2] | Downstream Acute Concentration[3] | Downstream Chronic Concentration[3] | Acute Criterion | Chronic Criterion | Acute Reasonable Potential[4] | Chronic Reasonable Potential[4] |
|---|---|---|---|---|---|---|---|---|
| **Units** | **µg/L** | **µg/L** | **µg/L** | **µg/L** | **µg/L** | **µg/L** | **—** | **—** |
| Aluminum | 87 | 3,329.6 | 215.5 | 173.8 | 750 | 87 | N | **Y** |
| Cadmium | 0 | 28.4 | 1.12 | 0.76 | 2.5 | 0.3 | N | **Y** |
| Copper | 15 | 11.6 | 14.86 | 14.91 | 16.2 | 10.7 | N | **Y** |
| Lead | 0.6 | 2.7 | 0.68 | 0.66 | 99.5 | 3.9 | N | N |
| Nickel | 0 | 1.5 | 0.06 | 0.04 | 535.1 | 59.5 | N | N |
| Zinc | 5 | 89.7 | 8.34 | 7.25 | 136.7 | 136.7 | N | N |
| TRC | 0 | 105.3 | 4.14 | 2.80 | 19.0 | 11.0 | N | N |
| Ammonia (warm) | 85 | 222.1 | 90.44 | 88.67 | 8398.5 | 1659.1 | N | N |
| Ammonia (cold) | 85 | 706.9 | 109.68 | 101.67 | 8398.5 | 3260.9 | N | N |

[1] Values represent the median receiving water concentration from Whole Effluent Toxicity testing.
[2] Values represent the 95th percentile concentration calculated using the monitoring data reported by the Facility (*See* Appendix A).
[3] Values are calculated as described above, using the maximum daily flow limitation (1.5 MGD) for acute criteria and monthly average flow limitation (1.0 MGD) for chronic criteria.
[4] 'Y' indicates there is a reasonable potential, 'N' indicates there is no reasonable potential.

Aluminum, cadmium, and copper have a reasonable potential to cause or contribute to an excursion above water quality standards.

**Calculation of Effluent Limitations**

EPA calculated the effluent limitations for the parameters that have a reasonable potential to cause or contribute to an excursion above water quality standards by setting the maximum allowable downstream concentration equal to the applicable criterion and solving for the effluent concentration.

**Summary of Effluent Limitations**

| Parameter | Ambient Concentration | Ambient Flow | Chronic Criterion | Effluent Flow | Monthly Avg Effluent Limitation |
|---|---|---|---|---|---|
| **Units** | **µg/L** | **MGD** | **µg/L** | **MGD** | **µg/L** |
| Aluminum | 87.0 | 36.3 | 87.0 | 1.0 | 87.0 |
| Cadmium | 0 | | 0.3 | | 11.3 |
| Copper | 15 | | 10.7 | | 10.7 |

Note that since the ambient aluminum and copper concentrations are at or above criterion, the effluent limitation is set equal to the criterion. Because regulations at 40 CFR § 122.45(c) require, with limited exceptions, that effluent limits for metals in NPDES permits be expressed as total recoverable metals, effluent limitations are expressed as total recoverable metals. *See* EPA-823-B96-007, *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion:*1996.

## Appendix C: Whole Effluent Toxicity Reasonable Potential Analysis

The dilution factor determined for the Facility is 25, equivalent to approximately 4% effluent at the edge of the mixing zone. For discharges with dilution between 20 and 100, there is no recommended chronic criterion in the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990). However, EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) does recommend a criterion of 1.0 T.U. for assessing chronic toxicity. To determine whether discharges from the Facility have reasonable potential to cause or contribute to an excursion above this level of toxicity, EPA converted the C-NOEC results for the Facility to toxic units, defined as 100 divided by the C-NOEC, as shown below.

| Monitoring Period End Date | C-NOEC Ceriodaphnia | Toxic Units Equivalent |
|---|---|---|
| | % | T.U. |
| 1/31/2016 | 25 | 4 |
| 4/30/2016 | 25 | 4 |
| 7/31/2016 | 50 | 2 |
| 10/31/2016 | 50 | 2 |
| 1/31/2017 | 12.5 | 8 |
| 4/30/2017 | 25 | 4 |
| 7/31/2017 | 100 | 1 |
| 10/31/2017 | 100 | 1 |
| 1/31/2018 | 100 | 1 |
| 4/30/2018 | 100 | 1 |
| 7/31/2018 | 100 | 1 |
| 10/31/2018 | 100 | 1 |
| 1/31/2019 | 50 | 2 |
| 4/30/2019 | 100 | 1 |
| 7/31/2019 | 100 | 1 |
| 10/31/2019 | 50 | 2 |
| 1/31/2020 | 100 | 1 |
| 4/30/2020 | 100 | 1 |
| 7/31/2020 | 100 | 1 |

Using the toxic unit equivalents calculated above, EPA then determined the 95th percentile projected effluent concentration following the methodology described in the *Technical Support Document* above. Based on a dataset where n>10, the 95th percentile was calculated as 4.72 toxic units, or a **C-NOEC of 21.2%**. The projected downstream toxicity was calculated as **0.19 toxic units**, determined by multiplying the 95th percentile projected effluent concentration by the percent effluent at the edge of the mixing zone (or dividing the 95th percentile by the dilution factor, i.e., 4.72 T.U. / 25 = 0.19 T.U.).

The estimated downstream toxicity does not exceed the in-stream criterion of 1.0 T.U. Therefore, discharges from the Facility do not have a reasonable potential to cause or contribute to an excursion above State WQSs and a limitation for chronic toxicity is not required.

In addition, using the methodology employed for POTWs in Massachusetts, EPA compared the measured toxicity values from the table above with the percent reciprocal of the dilution factor:

$$Toxicity\ Threshold = \frac{1}{Dilution\ Factor} * 100$$
$$Toxicity\ Threshold = \frac{1}{25} * 100$$
$$Toxicity\ Threshold = 4\%$$

No values fell below 4%; therefore, discharges from the Facility do not have a reasonable potential to cause or contribute to an excursion above State WQSs and a limitation for chronic toxicity is not required.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY – REGION 1 (EPA)
WATER DIVISION
5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP)
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

EPA PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO WATERS OF THE UNITED STATES UNDER SECTION 402 OF THE CLEAN WATER ACT (CWA), AS AMENDED, AND MASSDEP PUBLIC NOTICE OF EPA REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE CWA.

PUBLIC NOTICE PERIOD: **4/1/2021 – 4/30/2021**

PERMIT NUMBER: **MA0001716**

PUBLIC NOTICE NUMBER: **MA-14-21**

NAME AND MAILING ADDRESS OF APPLICANT:

Onyx Specialty Papers, Inc.
P.O. Box 188
South Lee, MA 01260

WestRock
1000 Abernathy Road NE
Atlanta, GA 30328

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Laurel Mill
1085 Pleasant Street
South Lee, MA 01260

RECEIVING WATER AND CLASSIFICATION:

Housatonic River (Class B)

PREPARATION OF THE DRAFT PERMIT AND EPA REQUEST FOR CWA § 401 CERTIFICATION:

EPA is issuing for public notice and comment the Draft NPDES Permit for the Laurel Mill, which discharges treated wastewater from paper manufacturing, backwash water from sand filters, landfill leachate, non-contact cooling water, and stormwater from roof drains. The effluent limits and permit conditions imposed have been drafted pursuant to, and assure compliance with, the CWA, including EPA-approved State Surface Water Quality Standards at 314 CMR 4.00. MassDEP cooperated with EPA in the development of the Draft NPDES Permit. MassDEP retains independent authority under State law to issue a separate Surface Water Discharge Permit for the discharge, not the subject of this notice, under the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53.

In addition, EPA has requested that MassDEP grant or deny certification of this Draft Permit pursuant to Section 401 of the CWA and implementing regulations. Under federal regulations governing the NPDES program at 40 Code of Federal Regulations (CFR) § 124.53(e), state certification shall contain conditions that are necessary to assure compliance with the applicable provisions of CWA sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law, including any conditions more stringent than those in the Draft Permit that MassDEP finds necessary to meet these requirements. In addition, MassDEP may provide a statement of the extent to which each condition of the Draft Permit can be made

less stringent without violating the requirements of State law.

INFORMATION ABOUT THE DRAFT PERMIT:

The Draft Permit and explanatory Fact Sheet may be obtained at no cost at https://www.epa.gov/npdes-permits/massachusetts-draft-individual-npdes-permits or by contacting:

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Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any electronically available documents that are part of the administrative record can be requested from the EPA contact above.

PUBLIC COMMENT AND REQUESTS FOR PUBLIC HEARINGS:

All persons, including applicants, who believe any condition of this Draft Permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by April 30, 2021**,** which is the close of the public comment period. Comments, including those pertaining to EPA's request for CWA § 401 certification, should be submitted to the EPA contact at the address or email listed above. Upon the close of the public comment period, EPA will make all comments available to MassDEP.

Any person, prior to the close of the public comment period, may submit a request in writing to EPA for a public hearing on the Draft Permit under 40 CFR § 124.10. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice if the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this Draft Permit, the Regional Administrator will respond to all significant comments and make the responses available to the public.

Due to the COVID-19 National Emergency, if comments are submitted in hard copy form, please also email a copy to the EPA contact above.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and notify the applicant and each person who has submitted written comments or requested notice.

KEN MORAFF, DIRECTOR
WATER DIVISION
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY – REGION 1

LEALDON LANGLEY, DIRECTOR
DIVISION OF WATERSHED MGMT
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION