

**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”),

**Monadnock Paper Mills, Inc.**

is authorized to discharge from the facility located at

**117 Antrim Road  
Bennington, New Hampshire 03442**

to receiving water named

**Contoocook River (Hydrologic Code: 01070003)**

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 sixty (60) days after signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on July 10, 2007.

This permit consists of 12 pages including the cover page and Part I, containing effluent limitations and monitoring requirements, and state permit conditions; 8 pages in Attachment A – Freshwater Acute Toxicity Test Procedure and Protocol (February 2011), 7 pages in Attachment B – Freshwater Chronic Toxicity Test Procedure and Protocol (March 2013), and 25 pages in Part II – Standard Conditions.

Signed this 18th day of September, 2015

/S/SIGNATURE ON FILE

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Kenneth Moraff, Director  
Office of Ecosystem Protection  
U.S. Environmental Protection Agency  
New England Region  
Boston, Massachusetts

**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 (process water from paper manufacturing, recycled non-contact cooling water overflow, mechanical pump seal water, sand filter backwash water, boiler blowdown, tank and machine wash water, storm water, R&D lab wastewater, and neutralized groundwater well rehabilitation wastewater) from **Outfall 001** into the Contoocook River. Such discharges shall be limited and monitored by the Permittee as specified below.

<b>Effluent Characteristic</b>	<b>Discharge Limitations</b>		<b>Monitoring Requirements<sup>1</sup></b>	
<b>Parameter</b>	<b>Average Monthly</b>	<b>Maximum Daily</b>	<b>Sampling Frequency<sup>2</sup></b>	<b>Sample Type</b>
Flow	1.0 MGD	1.3 MGD	Continuous	Recorder <sup>3</sup>
Biochemical Oxygen Demand, 5 day December 1 - March 31 <sup>4</sup>	400 lbs/day	500 lbs/day	1/Week	Grab
Biochemical Oxygen Demand, 5 day April 1 - November 30 <sup>4</sup>	300 lbs/day	400 lbs/day	1/Week	Grab
Total Suspended Solids <sup>4</sup>	300 lbs/day	400 lbs/day	1/Week	Grab
Copper, Total Recoverable <sup>5</sup>	Report µg/l	14.5 µg/l	2/Month	Grab
pH Range <sup>6</sup>	6.5 - 8.0 s.u.		1/Day	Grab
Total Phosphorus <sup>7</sup>	---	Report	2/Year	Grab
Total Phosphorus, receiving water <sup>8</sup>	---	Report	2/Year	Grab

Table continued on next page.

Footnotes are listed on pages 5 and 6.

## PART I.A.1., continued

Effluent Characteristic Whole Effluent Toxicity <sup>8,9,10</sup>	Discharge Limitations Maximum Daily	Monitoring Requirements <sup>1</sup>	
		Sampling Frequency <sup>2</sup>	Sample Type
LC <sub>50</sub> <sup>11</sup>	≥100%	1/Year	Grab
C-NOEC <sup>12</sup>	≥10.4%	1/Quarter	Grab
Hardness	Report mg/l	1/Quarter	Grab
Total Residual Chlorine (TRC)	Report mg/l	1/Quarter	Grab
Alkalinity	Report mg/l	1/Quarter	Grab
pH	Report s.u.	1/Quarter	Grab
Specific Conductance	Report µmhos/cm	1/Quarter	Grab
Total Solids	Report mg/l	1/Quarter	Grab
Total Dissolved Solids	Report mg/l	1/Quarter	Grab
Ammonia	Report mg/l	1/Quarter	Grab
Total Organic Carbon	Report mg/l	1/Quarter	Grab
Aluminum, Total Recoverable	Report mg/l	1/Quarter	Grab
Cadmium, Total Recoverable	Report mg/l	1/Quarter	Grab
Copper, Total Recoverable	Report mg/l	1/Quarter	Grab
Lead, Total Recoverable	Report mg/l	1/Quarter	Grab
Nickel, Total Recoverable	Report mg/l	1/Quarter	Grab
Zinc, Total Recoverable	Report mg/l	1/Quarter	Grab

Table continued on next page.

Footnotes are listed on pages 5 and 6.

**PART I.A.1., continued**

<b>Receiving Water Chemical Analysis Whole Effluent Toxicity<sup>8,10</sup></b>	<b>Discharge Limitations Maximum Daily</b>	<b>Monitoring Requirements<sup>1</sup></b>	
		<b>Sampling Frequency<sup>2</sup></b>	<b>Sample Type</b>
Hardness	Report mg/l	1/Quarter	Grab
Alkalinity	Report mg/l	1/Quarter	Grab
pH	Report s.u.	1/Quarter	Grab
Specific Conductance	Report µmhos/cm	1/Quarter	Grab
Ammonia	Report mg/l	1/Quarter	Grab
Total Organic Carbon	Report mg/l	1/Quarter	Grab
Aluminum, Total Recoverable	Report mg/l	1/Quarter	Grab
Cadmium, Total Recoverable	Report mg/l	1/Quarter	Grab
Copper, Total Recoverable	Report mg/l	1/Quarter	Grab
Lead, Total Recoverable	Report mg/l	1/Quarter	Grab
Nickel, Total Recoverable	Report mg/l	1/Quarter	Grab
Zinc, Total Recoverable	Report mg/l	1/Quarter	Grab

Footnotes are listed on pages 5 and 6.

**Footnotes:**

1. Effluent samples shall be representative of the discharge and shall be taken from the flow measuring flume located after the treatment lagoons during the discharge of effluent to the Contoocook River. Changes in sampling location must be approved in writing by the U.S. Environmental Protection Agency (EPA). Sampling discharges from the facility must yield data representative of the discharge under authority of CWA Section 308(a) and in accordance with 40 Code of Federal Regulations (C.F.R.) § 122.41(j), §122.44(i), and §122.48.
2. Sampling frequency of 2/Month is defined as the sampling of two discharge events in each calendar month. Sampling frequency of 1/Quarter is defined as the sampling of one discharge event in each quarter. Quarters are defined as the interval of time between the months of: January through March, inclusive; April through June, inclusive; July through September, inclusive; and October through December, inclusive. Sampling frequency of 2/year is defined as the sampling of one discharge event in semiannual period. Semiannual periods are defined as the interval of time between the months of: January through June, inclusive and July through December, inclusive.

The results of sampling for any parameter above its required frequency must also be reported to EPA, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR §122.41(1)(4)(ii). Whole Effluent Toxicity 1/Year samples shall be conducted during the calendar quarter ending September 30<sup>th</sup> for each calendar year. 1/Quarter and 1/Year sampling shall be performed concurrently with one of the bi-monthly monitoring events. If no analytical result can be reported during one or more of the monitoring periods defined above, samples shall be collected during the next sampling period and the Permittee must report a No Data Indicator Code found in Attachment E of *NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, available on the EPA Region 1 web site at <http://www.epa.gov/region1/enforcement/water/dmr.html>

3. Effluent discharge shall be monitored by a continuous recording flow meter containing a totalizer at the discharge flume of Outfall 001.
4. BOD<sub>5</sub> and TSS shall be reported in pounds per day (lbs/day). The daily loadings are to be calculated using the following equation: Quantity (lbs/day) = Flow (MGD) X concentration (mg/L) X 8.34 (conversion factor). The monthly average effluent loading is calculated by dividing the sum of the daily discharge loadings for the month by the number of sample measurements taken during the month.
5. At a minimum, there shall be fourteen (14) days between sampling events for copper, unless additional sampling (i.e., >2/month) is conducted during the monthly reporting period.
6. This is a New Hampshire State certification requirement. The pH of the effluent shall not be less than 6.5 nor greater than 8.0 at any time (instantaneous maximum) unless in compliance with the conditions specified in Part I.B.2. Report minimum and maximum values. Parts I.B.2 and I.D.3 provides instructions for the Permittee to request alternative pH limits.
7. One of the semi-annual monitoring events for total phosphorus must include groundwater well rehabilitation effluent and the other must include the nutrient addition to the treatment lagoons.

**Footnotes, continued**

8. The dilution water/receiving water sample for phosphorus and WET testing shall be collected from a reasonably accessible location, immediately upstream of the Outfall 001, at a point outside the zone of influence of the discharge. If the toxicity test using receiving water as diluent shows the receiving water to be toxic or unreliable, the Permittee shall either follow procedures outlined in Attachments A and B in order to obtain an individual approval for use of an alternate dilution water, or the Permittee shall follow the Self-Implementing Alternative Dilution Water Guidance which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, which may be found on the EPA Region 1 web site at <http://www.epa.gov/Region1/enforcementandassistance/dmr.html>
9. The Permittee shall conduct acute whole effluent toxicity (WET) tests and chronic WET tests in accordance with test procedures and protocols specified in Attachments A and B of this permit. The samples taken in accordance with the WET testing requirements may be used to satisfy other sampling requirements specified in the table above. Acute toxicity test samples shall be collected during the calendar quarter ending September 30<sup>th</sup> for each calendar year. Chronic toxicity test samples shall be collected and tests completed four (4) times per year during each calendar quarter, unless in compliance with the conditions specified in Part I.B.1. Part I.B.1 provides instructions for the Permittee to request a reduction in WET testing requirements. Toxicity test results shall be submitted with the DMR's, no later than the 15th day of the month following the completed reporting period.
10. In conjunction with each WET test, the Permittee shall report on the appropriate Discharge Monitoring Report (DMR) pH measurements and the concentrations of Ammonia, Hardness, Alkalinity, Specific Conductance, and Total Recoverable Aluminum, Cadmium, Copper, Lead, Nickel, and Zinc found in both the 100% effluent and receiving water control (0% effluent) samples. In addition, Total Residual Chlorine, Total Solids, and Total Dissolved Solids shall be reported for each WET test's 100% effluent. Each chemical analysis shall be determined to at least the Minimum Quantification Level (MLs) shown in Attachments A and B, or as amended. The Permittee should also note that all chemical parameter results must still be reported in the appropriate WET test report.
11. LC<sub>50</sub> (lethal concentration 50 percent) is the concentration of wastewater causing mortality to 50 % of the test organisms. Therefore, a  $\geq 100$  % limit means that a sample of 100 % effluent (no dilution) shall cause no greater than a 50 % mortality rate in that effluent sample. This limit is considered to be a maximum daily limit.
12. C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in the EPA WET Method Manual EPA 821-R-02-013, Section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship. The  $\geq 10.4\%$  limit is defined as a sample which is composed of 10.4% (or greater) effluent, the remainder being dilution water.

**PART I.A EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)****2. Water Quality Requirements**

- a. Discharges shall neither cause a violation of the water quality standards nor jeopardize any Class B use of the Contoocook River.
- b. Discharges to the Contoocook River shall be adequately treated to ensure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible substances. It shall be adequately treated to ensure that the surface waters remains free from pollutants which produce odor, color, taste or turbidity in the receiving waters that are not naturally occurring and would render the receiving water unsuitable for its designated uses.
- c. The effluent shall not contain any pollutant and/or material or in combinations which are hazardous or toxic to aquatic life or which would impair the uses designated by the classification of the receiving waters.
- d. Discharges to the Contoocook River shall not result in the dominance of nuisance species or interfere with recreational activities.

**3. Additional Intake and Discharge Requirements**

- a. The Permittee shall not use Contoocook River water for non-contact cooling purposes except when the cooling water is used in a manufacturing process as process water either before or after it is used for cooling.
- b. The Permittee shall notify EPA and NHDES prior to circumventing one or more of the treatment lagoons.
- c. The Permittee shall maintain a vinyl screen or similar method in the fourth (final) lagoon to prevent "short- circuiting" at all times.
- d. The Permittee shall notify the regulatory agencies if any water withdrawal causes the Contoocook River to drop below the 7Q10 flow of 16.5 cubic feet per second (cfs).
- e. The Permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from Outfall 001, as described in Part I.A of this permit. Discharges of wastewater from any other point sources not authorized by this permit shall be reported in accordance with Part II.D Standard Conditions.
- f. The Permittee shall comply with all existing federal, state, and local laws and regulations that apply to the reuse or disposal of solids, such as those which may be removed from the waste treatment operations and equipment cleaning. At no time shall these solids be discharged to the Contoocook River.
- g. The Permittee shall neither utilize chlorophenolic containing biocides nor discharge pentachlorophenol or trichlorophenol. The Permittee shall submit an annual certification

that states chlorophenolic-containing biocides are not used at the facility in accordance with 40 C.F.R. §§ 430.114 and 430.124.

- h. The Permittee shall notify the regulatory agencies if any Contoocook River water withdrawal is used for process water.

#### **4. Statutory and Regulatory Requirements**

- a. All existing manufacturing, commercial, mining and silvicultural dischargers must notify the EPA as soon as they know or have reason to believe:

(1) 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”:

- (i) One hundred micrograms per liter (100 µg/l);
- (ii) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
- (iii) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
- (iv) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and New Hampshire regulations.

(2) 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”:

- (i) Five hundred micrograms per liter (500 µg/l);
- (ii) One milligram per liter (1 mg/l) for antimony;
- (iii) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
- (iv) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and New Hampshire regulations.

- b. 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. SPECIAL CONDITIONS****1. WET Test Requirement Adjustment**

The Permittee may request a reduction in toxicity testing requirements after submitting a minimum of four consecutive sets of WET test results, all of which must be valid tests and demonstrate compliance with the WET permit limits. Until written notice is received by certified mail from EPA-Region 1 indicating that the WET testing requirements have been changed, the Permittee is required to continue testing as specified in this permit.

**2. pH Limit Adjustment**

The Permittee may submit a written request to the EPA-Region 1 requesting a change in the permitted pH limit range to be not less restrictive than 6.0 to 9.0 Standard Units found in the applicable National Effluent Limitation Guideline (pulp and paper industry at 40 C.F.R. §§ 430.112 and 430.122) for this facility. The Permittee's written request must include the State's approval letter (see Part I.D.3 below) containing an original signature (no copies). The State's letter shall state that the Permittee has demonstrated to the State's satisfaction that as long as discharges to the receiving water from a specific outfall are within a specific numeric pH range the naturally occurring receiving water pH will be unaltered. That letter must specify the associated numeric pH limit range for Outfall 001. Until written notice is received by certified mail from the EPA-Region 1 indicating the pH limit range has been changed, the Permittee is required to meet the permitted pH limit range in the respective permit.

**C. MONITORING AND REPORTING**

The monitoring program in the permit specifies sampling and analysis, which will provide continuous information on compliance and the reliability and effectiveness of the installed pollution abatement equipment. The approved analytical procedures found in 40 CFR Part 136 are required unless other procedures are explicitly required in the permit. The Permittee is obligated to monitor and report sampling results to EPA and the NHDES within the time specified within the permit.

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 and the Use of NetDMR**

- a. **Beginning the effective date of the permit** the Permittee must submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and NHDES no later than the 15th day of the month following the completed reporting period. **For a period of six months from the effective date of the permit**, the Permittee may submit its monthly monitoring data in DMRs to EPA and NHDES either in hard copy form, as described in Part I.C.5, or in DMRs electronically submitted using NetDMR. NetDMR is a web-based tool that allows permittees to electronically submit DMRs and other required reports via a secure internet connection. NetDMR is accessed from: <http://www.epa.gov/netdmr>.
- b. **Beginning no later than six months after the effective date of the permit**, the Permittee shall begin reporting monthly monitoring data using NetDMR, unless, in accordance with Part I.C.7, the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs. The Permittee must continue to use the NetDMR after the Permittee begins to do so. When a

Permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs to EPA or NHDES.

## **2. Submittal of Reports as NetDMR Attachments**

After the Permittee begins submitting DMR reports to EPA and NHDES electronically using NetDMR, the Permittee shall electronically submit all reports to EPA and NHDES as NetDMR attachments rather than as hard copies, unless otherwise specified in this permit. (See Part I.C.6. 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 15<sup>th</sup> day of the month), 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/OEP**

- a. The following requests, reports, and information described in this permit shall be submitted to the EPA/OEP NPDES Applications Coordinator in the EPA Office Ecosystem Protection (OEP):
  - (1) Transfer of Permit notice;
  - (2) Request for changes in sampling location;
  - (3) Request for reduction in WET testing frequency;
  - (4) Report on unacceptable dilution water/request for alternative dilution water for WET testing; and
  - (5) Request for change in pH limitations.
- b. These reports, information, and requests shall be submitted to EPA/OEP electronically at [R1NPDES.Notices.OEP@epa.gov](mailto:R1NPDES.Notices.OEP@epa.gov) or by hard copy mail to the following address:

U.S. Environmental Protection Agency  
Office of Ecosystem Protection  
EPA/OEP NPDES Applications Coordinator  
5 Post Office Square - Suite 100 (OEP06-03)  
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 to EPA in hard copy, with a cover letter describing the submission;
  - (1) Written notifications required under Part II;
  - (2) Notice of unauthorized discharges;
  - (3) Reports and DMRs submitted prior to the use of NetDMR;
  - (4) Annual chlorophenolic-containing biocides certification;
  - (5) Circumventing treatment lagoons notification;
  - (6) Water withdrawal causing river to drop below the 7Q10 notification; and
  - (7) River water withdrawal used for process water.

- b. This information shall be submitted to EPA/OES at the following address:

U.S. Environmental Protection Agency  
Office of Environmental Stewardship (OES)  
Water Technical Unit  
5 Post Office Square, Suite 100 (OES04-SMR)  
Boston, MA 02109-3912

## **5. State Reporting**

Unless otherwise specified in this permit, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.C.2, I.C.3, and I.C.4 also shall be submitted to the State at the following addresses:

New Hampshire Department of Environmental Services  
Water Division  
Wastewater Engineering Bureau  
P.O. Box 95  
Concord, New Hampshire 03302-0095

## **6. Submittal of NetDMR Opt-Out Requests**

NetDMR opt-out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the Permittee submits a renewed opt-out request and such request is approved by EPA. All opt-out requests should be sent to the following addresses:

Attn: NetDMR Coordinator  
U.S. Environmental Protection Agency, Water Technical Unit  
5 Post Office Square, Suite 100 (OES04-4)  
Boston, MA 02109-3912

And

Attn: Compliance Supervisor  
New Hampshire Department of Environmental Services (NHDES)  
Water Division  
Wastewater Engineering Bureau  
P.O. Box 95  
Concord, New Hampshire 03302-0095

**7. Verbal Reports and Verbal Notifications**

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 NHDES. This includes verbal reports and notifications which require reporting within 24 hours. (As examples, see Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.) Verbal reports and verbal notifications shall be made to EPA's Office of Environmental Stewardship at:

617-918-1510

**D. STATE PERMIT CONDITIONS**

The Permittee shall comply with the following conditions which are included as State Certification requirements.

1. The Permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).
2. This NPDES Discharge Permit is issued by the EPA under Federal and State law. Upon final issuance by the EPA, the NHDES-WD may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13. Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of the Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation.
3. The Permittee may request a change in the permitted pH range of 6.5-8.0 standard units (s.u.) if the Permittee can demonstrate to NHDES-WD: (1) that the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring receiving water pH is not significantly altered by the Permittee's discharge. The scope of any demonstration project must receive prior approval from NHDES-WD. The upstream or background sampling location identified by the facility shall be approved by NHDES prior to the initiation of sampling. In addition, the upstream and effluent sampling is to occur as close in time as possible, but not greater than 1 hour apart. In no case, shall the above procedure result in pH limits less restrictive than 6.0–9.0 s.u. A letter from NHDES-WD must be submitted to EPA for consideration of this change (see Part I.B.2 above).
4. This NPDES Discharge Permit is issued by the EPA under Federal and State law. Upon final issuance by the EPA, the NHDES-WD may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13. Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of the Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation.

## ATTACHMENT A

### 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](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°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<sup>1</sup>**

1. Test type	Static, non-renewal
2. Temperature (°C)	20 ± 1°C or 25 ± 1°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 <u>Selenastrum</u> to newly released organisms while holding prior to initiating test
12. Aeration	None
13. Dilution water <sup>2</sup>	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q <sup>R</sup> 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

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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<sup>1</sup>**

1. Test Type	Static, non-renewal
2. Temperature (°C)	20 ± 1 ° C or 25 ± 1°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 <sup>2</sup>	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q <sup>R</sup> 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	≥ 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.

<u>Parameter</u>	Effluent	Receiving Water	ML (mg/l)
Hardness <sup>1</sup>	x	x	0.5
Total Residual Chlorine (TRC) <sup>2, 3</sup>	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:

- 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)
- 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
- 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-Kärber
- Trimmed Spearman-Kärber
- 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.



## ATTACHMENT B

# 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° 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.  $\geq 3$  standard deviations for IC25 values and  $\geq$  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.

<u>Parameter</u>	Effluent	Receiving Water	ML (mg/l)
Hardness <sup>1, 4</sup>	x	x	0.5
Total Residual Chlorine (TRC) <sup>2, 3, 4</sup>	x		0.02
Alkalinity <sup>4</sup>	x	x	2.0
pH <sup>4</sup>	x	x	--
Specific Conductance <sup>4</sup>	x	x	--
Total Solids <sup>6</sup>	x		--
Total Dissolved Solids <sup>6</sup>	x		--
Ammonia <sup>4</sup>	x	x	0.1
Total Organic Carbon <sup>6</sup>	x	x	0.5
Total Metals <sup>5</sup>			
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 than 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  
(January, 2007)

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NPDES PART II STANDARD CONDITIONS  
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PART II. 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) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

- a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the 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, even if the permit has not yet been modified to incorporate the requirements.
- b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements 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.
- c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

Note: See 40 CFR §122.41(a)(2) for complete “Duty to Comply” regulations.

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 notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator 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 Regional Administrator, upon request, copies of records required to be kept by this permit.

NPDES PART II STANDARD CONDITIONS  
(January, 2007)

4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including “sludge-only facilities”), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. 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).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

- a. In accordance with 40 CFR 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 CFR 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 as defined in 40 CFR §2.302(a)(2).
- c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §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.

NPDES PART II STANDARD CONDITIONS  
(January, 2007)

8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, 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 Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. 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 and with the requirements of storm water pollution prevention plans. 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 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.

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- (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 be reasonably 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 provision of Paragraphs B.4.c. and 4.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.
- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

### d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- (2) 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
- (3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.  
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator 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



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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;
  - (3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
  - (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.

PART II. 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 for 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 five years (or longer as required by 40 CFR Part 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 except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator 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 results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.
- e. 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

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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 Regional Administrator 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 CWA, any substances or parameters at any location.

## PART II. D. REPORTING REQUIREMENTS

### 1. Reporting Requirements

- a. **Planned Changes.** The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required 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 CFR§122.29(b); or
  - (2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§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 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 Regional Administrator 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 Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

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incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 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.
  - (2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the 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 submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission 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.
  - (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 CFR §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 Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)
  - (3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

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- f. Compliance Schedules. Reports of compliance or noncompliance with, 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.
- 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 Regional Administrator, it shall promptly submit such facts or information.

### 2. Signatory Requirement

- a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §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 noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

### 3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. 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 Regional Administrator. 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.

## PART II. E. DEFINITIONS AND ABBREVIATIONS

### 1. Definitions for Individual NPDES Permits including Storm Water Requirements

*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 to, 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 and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

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*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.

*Average* means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

*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” measured during the calendar week divided by the number of “daily discharges” measured during the 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.

*Best Professional Judgment (BPJ)* means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

*Coal Pile Runoff* means the rainfall runoff from or through any coal storage pile.

*Composite Sample* means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

*Construction Activities* - The following definitions apply to construction activities:

- (a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.
- (b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.
- (c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

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- (d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.
- (e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

*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) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

*Daily Discharge* means the discharge of a pollutant measured during the 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.

*Director* normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

*Discharge Monitoring Report Form (DMR)* means the EPA standard 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 (See “Point Source” definition).

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

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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 Regional Administrator 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”.

*EPA* means the United States “Environmental Protection Agency”.

*Flow-weighted composite sample* means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

*Grab Sample* – An individual sample collected in a period of less than 15 minutes.

*Hazardous Substance* means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

*Indirect Discharger* means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

*Interference* means a discharge 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 (CWA), 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 which is not a land application unit, surface impoundment, injection well, or waste pile.

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

*Large and Medium municipal separate storm sewer system* means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

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populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

*Maximum daily discharge limitation* means the highest allowable “daily discharge” concentration that occurs only during a normal day (24-hour duration).

*Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO)* is defined as “maximum concentration” or “Instantaneous Maximum Concentration” during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean “a value that shall not be exceeded” during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of “Maximum Daily Discharge” and “Average Daily Discharge” concentrations are specifically limited to the daily (24-hour duration) values.

*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 tribe organization, or a designated and approved management agency under Section 208 of the CWA.

*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 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 rig 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 Regional Administrator 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 Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).



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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 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).

*Permit* means an authorization, license, or equivalent control document issued by EPA or an “approved” State.

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

*Point Source* means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

*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.

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*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 CFR Part 122.

*Privately owned treatment works* means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (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 any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a “State” or “municipality”.

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

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

*Secondary Industry Category* means any industry which is not a “primary industry category”.

*Section 313 water priority chemical* means a chemical or chemical category which:

- (1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);
- (2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
- (3) satisfies at least one of the following criteria:
  - (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
  - (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
  - (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

*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, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

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*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, 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 EPCRA Section 313, 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 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 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 CFR §122.1(b)(3).

*State* means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

*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 which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

*Time-weighted composite* means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

*Toxic pollutants* 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 wastewater 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 wastewater 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 Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR 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 CFR Part 503.

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

*Waters of the United States* 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 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 the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

*Wetlands* means those areas that are inundated or saturated by surface or ground water at a frequency and duration 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. (See Abbreviations Section, following, for additional information.)

### 2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

*Active sewage sludge unit* is a sewage sludge unit that has not closed.

## NPDES PART II STANDARD CONDITIONS

(January, 2007)

*Aerobic Digestion* is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

*Agricultural Land* is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

*Agronomic rate* is the whole sludge application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

*Air pollution control device* is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

*Anaerobic digestion* is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

*Annual pollutant loading rate* is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

*Annual whole sludge application rate* is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

*Apply sewage sludge or sewage sludge applied to the land* means land application of sewage sludge.

*Aquifer* is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

*Auxiliary fuel* is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

*Base flood* is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

*Bulk sewage sludge* is sewage sludge that is not sold or given away in a bag or other container for application to the land.

*Contaminate an aquifer* means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

*Class I sludge management facility* is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2,

## NPDES PART II STANDARD CONDITIONS (January, 2007)

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 sewage sludge use or disposal practice to affect public health and the environment adversely.

*Control efficiency* is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

*Cover* is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

*Cover crop* is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

*Cumulative pollutant loading rate* is the maximum amount of inorganic pollutant that can be applied to an area of land.

*Density of microorganisms* is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

*Dispersion factor* is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

*Displacement* is the relative movement of any two sides of a fault measured in any direction.

*Domestic septage* is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

*Domestic sewage* is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

*Dry weight basis* means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

*Fault* is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

*Feed crops* are crops produced primarily for consumption by animals.

*Fiber crops* are crops such as flax and cotton.

*Final cover* is the last layer of soil or other material placed on a sewage sludge unit at closure.

*Fluidized bed incinerator* is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

*Food crops* are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

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(January, 2007)

*Forest* is a tract of land thick with trees and underbrush.

*Ground water* is water below the land surface in the saturated zone.

*Holocene time* is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

*Hourly average* is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

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

*Industrial wastewater* is wastewater generated in a commercial or industrial process.

*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 with a high potential for public exposure* is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

*Land with low potential for public exposure* is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

*Leachate collection system* is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

*Liner* is soil or synthetic material that has a hydraulic conductivity of  $1 \times 10^{-7}$  centimeters per second or less.

*Lower explosive limit for methane gas* is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

*Monthly average (Incineration)* is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

*Monthly average (Land Application)* is the arithmetic mean of all measurements taken during the month.

*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.

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*Other container* is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

*Pasture* is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

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

*Permitting authority* is either EPA or a State with an EPA-approved sludge management program.

*Person* is 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; a measure of the acidity or alkalinity of a liquid or solid material.

*Place sewage sludge or sewage sludge placed* means disposal of sewage sludge on a surface disposal site.

*Pollutant (as defined in sludge disposal requirements)* is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

*Pollutant limit (for sludge disposal requirements)* is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

*Public contact site* is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

*Qualified ground water scientist* is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

*Range land* is open land with indigenous vegetation.

*Reclamation site* is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.



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(January, 2007)

*Risk specific concentration* is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

*Runoff* is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

*Seismic impact zone* is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

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

*Sewage sludge feed rate* is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

*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 CFR §122.2.

*Sewage sludge unit boundary* is the outermost perimeter of an active sewage sludge unit.

*Specific oxygen uptake rate (SOUR)* is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

*Stack height* is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

*State* is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

*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.

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

## NPDES PART II STANDARD CONDITIONS (January, 2007)

*Total hydrocarbons* means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

*Total solids* are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

*Treat or treatment of sewage sludge* is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

*Treatment works* is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

*Unstable area* is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

*Unstabilized solids* are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

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

*Volatile solids* is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

*Wet electrostatic precipitator* is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

*Wet scrubber* is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

### 3. 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 <sub>2</sub>	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

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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)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M <sup>3</sup> /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 <sub>3</sub> -N	Ammonia nitrogen as nitrogen
NO <sub>3</sub> -N	Nitrate as nitrogen
NO <sub>2</sub> -N	Nitrite as nitrogen
NO <sub>3</sub> -NO <sub>2</sub>	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

NPDES PART II STANDARD CONDITIONS  
(January, 2007)

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)
ug/l	Microgram(s) per liter
WET	“Whole effluent toxicity” is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	“Chronic (Long-term Exposure Test) – No Observed Effect Concentration”. 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.
A-NOEC	“Acute (Short-term Exposure Test) – No Observed Effect Concentration” (see C-NOEC definition).
LC <sub>50</sub>	LC <sub>50</sub> is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC <sub>50</sub> = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND - REGION I  
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: **NH0000230**

PUBLIC NOTICE START AND END DATES: May 7, 2015 thru June 5, 2015

NAME AND MAILING ADDRESS OF APPLICANT:

**Monadnock Paper Mills, Inc.  
117 Antrim Road  
Bennington, New Hampshire 03442**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Monadnock Paper Mills, Inc.  
117 Antrim Road  
Bennington, New Hampshire 03442**

RECEIVING WATER: **Contoocook River**

CLASSIFICATION: **Class B**

SIC CODE: **2621**

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Attachment A: Monadnock Paper Mills Facility Location

Attachment B: Monadnock Paper Mills Process Water and Wastewater Flow

Attachment C: Ambient and Effluent Data for Outfall 001

Attachment D: 7Q10 and Dilution Factor

Attachment E: Statistical Approach for Metal Effluent Data (95<sup>th</sup> percentile)

### **Monadnock Paper Mills (main entrance)**



Source: <http://www.panoramio.com/photo/51289666>

## **1.0 PROPOSED ACTION, TYPE OF FACILITY AND DISCHARGE LOCATION**

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### **1.1 Proposed Action**

Monadnock Paper Mills, Inc. (the Permittee) owns and operates Monadnock Paper Mills (the facility, the Mill, or MPM) in Bennington, New Hampshire and has applied to the U.S. Environmental Protection Agency (EPA, Region 1 or the Region) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge treated effluent into the Contoocook River. The existing permit (2007 Permit) was issued on July 10, 2007, became effective on October 1, 2007 and expired on September 30, 2012. EPA received a permit renewal application from Monadnock Paper Mills, Inc. dated August 20, 2012 and received a final and complete application on June 19, 2013. The permit has been administratively continued pursuant to 40 C.F.R. §122.6 and §122.21(d). The Draft Permit is based on, in part, the information provided in the application and during a site visit on September 10, 2014. Monadnock Paper Mills, Inc. also applied for and received a Multi-Sector General Permit (MSGP) from EPA for their storm water discharge from the Mill (Permit Tracking No. NHR05BU27). As a result of the MSGP, storm water discharges from the paper mill site are not discussed in this Fact Sheet.

### **1.2 Type of Facility and Discharge Location**

“Monadnock Paper Mills, Inc. is the oldest continuously operating small paper mill in America.” <http://www.answers.com/topic/monadnock-paper-mills-inc>. The location of the facility, the outfalls and the receiving water can be found in Attachment A. The Mill is non-integrated and therefore does not produce its own pulp (i.e., no wood pulp mill on site). The Mill produces a variety of base and coated papers from purchased pulp.

Monadnock provides printers and designers with papers for annual reports, brochures, direct mail, corporate identity, desktop publishing, and corporate communications of all kinds. In addition to its premium-branded lines, Monadnock manufactures specialty printing papers for applications such as fine art prints, papeteries [luxury packaging], and conservation [made to last]. The company's papers are distributed through an extensive network of stocking merchant partners throughout the United States, Canada, the United Kingdom, and other select offshore markets. Furthermore, Monadnock produces technical specialty and converting products for a wide range of uses, including high internal-bond abrasive backing; tape system components; durable book coverings; controlled porosity, sterilizable medical packaging; high porosity [non-woven] vacuum filter media; and latex-treated, aqueous-emulsion-coated, strippable wallcovering.

*Id.*<sup>1</sup> Paper is produced on two paper machines and, when necessary, the paper is coated on one paper coater machine. Water removed from the paper slurry that enters the paper making machines is recirculated for reuse. Any excess recirculated water is sent to the wastewater treatment plant. Excess liquid additives applied during the paper making process either are

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<sup>1</sup> The Permittee has since clarified that filter paper is no longer made at Monadnock. Personal communication between B. Maloy, MPM and S. DeMeo, EPA, 2/4/2015.



barreled for reuse or, if their chemical usefulness is degraded, are directed to the wastewater treatment plant.

## **2.0 RECEIVING WATER DESCRIPTION**

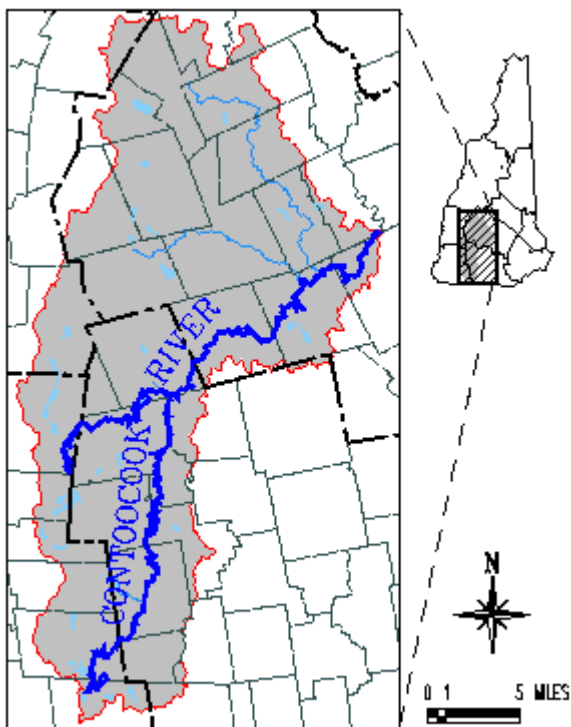
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“The Contoocook River is a 71-mile-long ... river in New Hampshire. It flows from Pool Pond and Contoocook Lake on the Jaffrey/Rindge border to Penacook (just north of Concord), where it empties into the Merrimack River. It is one of only a few rivers in New Hampshire that flow in a predominantly northward direction.” [http://en.wikipedia.org/wiki/Contoocook\\_River](http://en.wikipedia.org/wiki/Contoocook_River). The entire length of this river was designated into the NH Rivers Management and Protection Program in June 1991. For 30 years Atlantic salmon fry were stocked each spring in the Merrimack River watershed. However, on September 5<sup>th</sup>, 2012, “the U.S. Fish and Wildlife Service announced that, facing federal budget cuts and stubbornly low annual returns of sea-run Atlantic salmon, it will end its investment in the more than 30-year-long Atlantic salmon restoration in the Merrimack River watershed.”

[http://www.wildlife.state.nh.us/Newsroom/2013/Q3/salmon\\_Merrimack\\_restoration\\_091313.html](http://www.wildlife.state.nh.us/Newsroom/2013/Q3/salmon_Merrimack_restoration_091313.html).

The segment of the river used by the Mill is a recommended recreational fishing location for rainbow trout and smallmouth bass.

[http://www.wildlife.state.nh.us/Fishing/fishing\\_forecast/Locations\\_Southwest.htm](http://www.wildlife.state.nh.us/Fishing/fishing_forecast/Locations_Southwest.htm). Although the NH Fish and Game Department (NHFG) stock the Contoocook River with brown and rainbow trout for recreational fishing, these cold water fish are not expected to survive the summer. The native fish in this area are warm water fish and therefore, this reach is considered a warm water fishery by NH F&G. *See* email from J. Andrew, NHDES to S. DeMeo, EPA dated 1/30/2015.



*The Contoocook and North Branch Rivers and their watershed.*

Source:

[http://des.nh.gov/organization/divisions/water/wmb/rivers/cont\\_river.htm](http://des.nh.gov/organization/divisions/water/wmb/rivers/cont_river.htm)

## 2.1 River Classification

The Contoocook River is designated as a Class B water body in the vicinity of the Monadnock Paper Mills. *See* Legislative Classification of Surface Waters in New Hampshire, 8/15/91, p. 11. Pursuant to New Hampshire Law at Revised Statutes Annotated (RSA) 485-A:8, II,

Class B waters shall be of the second highest quality and shall have no objectionable physical characteristics, shall contain a dissolved oxygen content of at least 75 percent of saturation.... The pH range for said waters shall be 6.5 to 8.0 except when due to natural causes. Any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class. The waters of this classification shall be considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies....

RSA 485-A:8, VIII also states that

[i]n prescribing minimum treatment provisions for thermal wastes discharged to interstate waters, the department shall adhere to the water quality requirements and recommendations of the New Hampshire [F]ish and [G]ame [D]epartment, the New England Interstate Water Pollution Control Commission, or the United States Environmental Protection Agency, whichever requirements and recommendations provide the most effective level of thermal pollution control.

In this case, the permit application indicates that the temperature of the discharge is 32-48°F in the winter and 49-86°F in the summer. Based on 2010 and 2012 ambient temperature data and a maximum discharge temperature of 86°F, the highest rise in river temperature (delta T) would be 1.1°F and at no time would the river temperature exceed 83°F.<sup>2</sup> See two emails from J. Andrews, NHDES to S. DeMeo, EPA dated 2/3/2015. Based on this information, EPA has determined that there is no reasonable potential to violate water quality standards and therefore no need for temperature limits in the Draft Permit. NHDES agrees with this assessment (i.e., there is no need to develop temperature limits to ensure water quality is maintained).

Furthermore, the New Hampshire Code of Administrative Rules, Chapter Env-Wq 1700 - Surface Water Quality Regulations (hereinafter “NH Standards”) provides expanded and refined interpretations of the State Statute (RSA 485-A:8). The NH Standards were re-adopted and became effective on May 21, 2008. Env-Wq 1703.03(c) states that:

[t]he following physical, chemical and biological criteria shall apply to all surface waters:

- (1) All surface waters shall be free from substances in kind or quantity which:
  - a. Settle to form harmful deposits;
  - b. Float as foam, debris, scum or other visible substances;
  - c. Produce odor, color, taste or turbidity which is not naturally occurring and would render it unsuitable for its designated uses;
  - d. Result in the dominance of nuisance species; or
  - e. Interfere with recreational activities....

## 2.2 Water Quality Assessment

Sections 305(b) and 303(d) of the CWA require that States complete a water quality inventory and develop a list of impaired waters. Specifically, Section 303(d) of the CWA requires States to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, requires the development of a Total Maximum Daily Load (TMDL) for each pollutant that is prohibiting the waterbody’s designated use(s) from being attained. A TMDL is essentially a pollution budget designed to restore the health of a water body. A TMDL typically identifies the source(s) of the pollutant from direct and indirect discharges, determines the maximum amount of pollutant, including a margin of safety that can be discharged to a specific water body while maintaining water quality standards for designated uses, and outlines a plan to meet the goal.

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<sup>2</sup> Although NH Standards does not specify numeric temperature limits for warm water fisheries, “the 83 Deg F is a historical value that came from the fisheries biologists at NH Fish & Game Department. It has been the limit used in the Non-Contact Cooling Water General Permit for a warm water fishery for years and several permit terms.” 3/25/2015 email from J. Andrews, NHDES to S. DeMeo, EPA. EPA also notes that 83°F is the maximum daily temperature for Class B warm water fisheries in the Massachusetts Standards.

The section of Contoocook River where the Monadnock Paper Mills outfall discharges - Assessment Unit NHRIV700030108-15 - is listed as severely impaired on The New Hampshire Department of Environment Services' (NHDES) FINAL 2012 Section 303(d) Surface Water Quality List Submitted to EPA. The 303(d) list was submitted on July 19, 2013 to the EPA for review and approval. Each Assessment Unit has six designated use descriptions: Aquatic Life, Drinking Water after Adequate Treatment, Fish Consumption, Primary Contact Recreation, Secondary Contact Recreation and Wildlife. The Aquatic Life category rating is "Impaired/TMDL needed – Severe" for dissolved oxygen saturation and dissolved oxygen because of Industrial/Municipal Source Discharges, "Impaired/TMDL needed – Marginal" for pH from an unknown source, and "Supports Parameter marginally above criteria" for Benthic-Marcoinvertebrates Bioassessments. The use of this section of the river as "Drinking Water after Adequate Treatment" is rated as "Good" (Fully Supported). Fish Consumption is rated "Poor" (Not Support, Marginal) due to atmospheric deposition of mercury - a state-wide listing. Primary Contact Recreation, i.e., swimming, and Secondary Contact Recreation, i.e., boating, are rated as "Insufficient Information/No Data." Wildlife is labeled as "No Data." See [http://www2.des.nh.gov/onestoppub/SWQA/010700030108\\_2012.pdf](http://www2.des.nh.gov/onestoppub/SWQA/010700030108_2012.pdf).

NHDES has scheduled the Contoocook River Assessment Unit NHRIV700030108-15 for a dissolved oxygen TMDL in 2017 and a pH impairment TMDL for 2025. Mercury is currently covered by the Northeast Regional Mercury Total Maximum Daily Load, developed in 2007. See <http://www.epa.gov/region1/eco/tmdl/pdfs/ne/Northeast-Regional-Mercury-TMDL.pdf>.

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### **3.0 PERMIT BASIS: STATUTORY AND REGULATORY AUTHORITY**

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#### **3.1 General Background**

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 C.F.R. §§ 122, 124, 125, and 136. The general conditions of the Draft Permit are based on 40 C.F.R. §122.41 and consist primarily of management requirements common to all permits. The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308(a) of the CWA in accordance with 40 C.F.R. §122.41(j), §122.44(i) and §122.48.

When developing permit limits, EPA must consider the most recent technology-based treatment and water quality-based requirements. Subpart A of 40 C.F.R. §125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA-promulgated effluent limitations and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA. EPA is required to consider technology and water quality-based requirements as well as all limitations and requirements in the existing permit when developing permit limits. Compliance

with the more stringent of technology-based and water quality-based effluent limitations is required.

### 3.2 Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (*See* 40 C.F.R. §125 Subpart A) 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.

Subpart A of 40 C.F.R. §125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA promulgated effluent limitations and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA.

In general, technology-based effluent guidelines 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 C.F.R. §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 Section 402(a)(1)(B) of the CWA to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ).

#### 3.2.1 *Pulp, Paper and Paperboard Manufacturing Point Source Category*

EPA has established National Effluent Limitation Guidelines (ELGs) for the pulp, paper, and paperboard manufacturing point source category. *See* 40 C.F.R. Part 430 - *Pulp, Paper and Paperboard Manufacturing Point Source Category*. The regulation for this point source category was revised on April 15, 1998 into what is commonly referred to as the Cluster Rule.

The Cluster Rule reorganized 26 sub-categories of the pulp, paper, and paperboard industry found in the previous regulations into 12 new sub-categories by grouping mills with similar processes. Contrary to information provided in several past Fact Sheets,<sup>3</sup> the applicable Subparts of the new regulations for Monadnock Paper Mills based on the most recent production information submitted by the facility are:

**Subpart K** (40 C.F.R. §430.110), *Fine and Lightweight Papers from Purchased Pulp Subcategory*, and

**Subpart L** (40 C.F.R. §430.120), *Tissue, Filter, Non-Woven and Paperboard from Purchased Pulp Subcategory*.

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<sup>3</sup> Past fact sheets erroneously indicate that the effluent guidelines found in 40 C.F.R. § 430 could not be directly applied to the Monadnock Paper Mills. Therefore, limits were established using Best Professional Judgment (BPJ), informed by these effluent guidelines, specifically Subpart K – “Fine and Lightweight Papers from Purchased Pulp Subcategory.”

The ELGs establish applicable limitations for existing dischargers representing; 1) best practicable control technology currently available (BPT) for conventional pollutants, 2) best conventional pollutant technology economically achievable (BCT) for conventional pollutants, and 3) best available technology economically achievable (BAT) for toxic and non-conventional pollutants. The ELG regulations establish limitations and monitoring requirements on the final outfall to the receiving waterbody as well as internal waste stream(s) in certain cases. The ELGs also establish limitations based on several methodologies including monthly average and/or daily maximum mass limits based on production of pulp and paper produced or concentration limitations based on BPT, BCT or BAT. The applicable ELGs are summarized in the table below:

**Table 3.1 - Effluent Limitation Guidelines (ELGs) applicable to Monadnock Paper Mills**

40 C.F.R. § 430 Subpart	BOD5			TSS			pH
	Kg/kg (or pounds per 1,000 lb) of product			Kg/kg (or pounds per 1,000 lb) of product			Range
	Continuous dischargers		Non-Continuous Dischargers (annual average)	Continuous dischargers		Non-Continuous Dischargers (annual average)	
	Max for any 1 day	Average of daily values for 30 consecutive days		Max for any 1 day	Average of daily values for 30 consecutive days		
Subpart K (fine - wood fiber)	8.2	4.25	2.4	11.0	5.9	3.2	5.0-9.0
Subpart L (paperboard)	6.5	3.6	2.0	5.8	2.8	1.6	5.0-9.0

Mass-based ELGs are expressed as an allowable mass of pollutant discharge per unit of production and are directly related to a particular mill's production. The production rate is determined by dividing the annual production in tons by the number of operating days during that annual period and is reported in terms of tons per day (tons/day). The Permittee confirmed that MPM still produces 105 tons/day of fine paper, lightweight paper, and tissue on average. The breakdown for these products is the following:

33.1 tons/day of non-integrated fine paper (ELG Subpart K – Fine/wood fiber)

71.9 tons/day of non-integrated papers (ELG Subpart L - paperboard)

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105 tons/day<sup>4</sup>

The pulp and paper production values cited for each of the ELG subpart categories were utilized to calculate the permissible mass-based limits that could be used in the Draft Permit for conventional pollutants, which include BOD and TSS. The calculated limits based on the applicable ELGs are summarized in the table below.

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<sup>4</sup> Based on 2013-2014 production data. See email from B. Maloy, MPM to S. DeMeo, EPA dated 2/6/2015.

**Table 3.2 - Summary of Calculated ELG Limits for BOD and TSS for MPM**

40 C.F.R. § 430 Subpart	Production Data (tons/day) <sup>1</sup>	BOD Monthly Average		BOD Daily Maximum		TSS Monthly Average		TSS Daily Maximum	
		ELG Factor <sup>2</sup>	ELG <sup>3</sup>	ELG Factor <sup>2</sup>	ELG <sup>3</sup>	ELG Factor <sup>2</sup>	ELG <sup>3</sup>	ELG Factor <sup>2</sup>	ELG <sup>3</sup>
Subpart K (fine -wood)	33.1	4.25	281	8.2	543	5.9	391	11	728
Subpart L (paperboard)	71.9	3.6	518	6.5	935	2.8	403	5.8	834
Total (lbs/day)	105	---	799	---	1478	---	794	---	1562

1. Production data is reported in terms of short tons, one short ton is equivalent to 2,000 pounds.

2. The ELG Factor is in units of lbs. /1000 lbs.

3. The calculated ELG is in units of lbs. /day.

The Permittee does not expect machine speed increases at the plant in the near future (i.e., no increase in production rates). Upon any change in production rates, MPM may submit a request to EPA for a permit modification to adjust the calculated ELG-based limits for TSS and BOD. EPA would consider such a request taking into account current limits and water quality concerns. Limits for pH, on the other hand, are water quality-based, as explained in Sections 5.1.3 of this Fact Sheet, and therefore cannot be changed. MPM would also need to submit updated production data with the modification request. EPA believes that a change in operations of this type would qualify as one of the defined exceptions under which relief from anti-backsliding provisions can be granted, allowing for modification of the ELG-based limits. *See* 40 C.F.R. 122.44(l)(i).

### 3.3 Water Quality-Based Requirements

Section 301(b)(1)(C) of the CWA requires that effluent limitations based on water quality considerations be established for point source discharges when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve State or Federal Water Quality Standards.

Generally, water quality standards 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) anti-degradation requirements to ensure that once a use is attained it will not be degraded. The New Hampshire Surface Water Quality Regulations, found in Chapter 1700 of the New Hampshire Code of Administrative Rules, include the three water quality based elements discussed above. The State Surface Water Quality Regulations limit or prohibit discharges of pollutants to surface waters and thereby assure that the surface water quality standards of the receiving water are protected, maintained, and/or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, be used unless a site-specific criteria is established. EPA regulations pertaining to permit limits based upon water quality standards and State requirements are contained in 40 C.F.R. §122.44(d).

Water quality based limits for specific toxic pollutants such as certain metals are determined from numeric chemical specific criteria derived from extensive scientific studies. The EPA has

summarized and published specific toxic pollutants and their associated toxicity criteria in Quality Criteria for Water, 1986, EPA 440/5 86 001 as amended, commonly known as the federal “Gold Book”. Each criteria consists of two values; an acute aquatic life criteria to protect against short term effects, such as death, and a chronic aquatic life criteria to protect against long term effects, such as poor reproduction or impaired growth. New Hampshire adopted these “Gold Book” criteria, with certain exceptions and included them as part of the State’s Water Quality Regulations promulgated on December 3, 1999. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's Draft Permit limit. Available dilution is discussed in Section 3.3.2 below.

Receiving water requirements are established according to numerical and narrative standards in the State’s water-quality standards adopted under state law for each stream classification. When using chemical-specific numeric criteria to develop permit limits, both the aquatic-life acute and chronic criteria, expressed in terms of maximum allowable in-stream pollutant concentration, are used. 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 limits are allowed under 40 C.F.R. §122.44 (d)(1) and are implemented under 40 C.F.R. §§122.45(d) and (f). Therefore, the Region establishes maximum daily and average monthly limits for chemical specific toxic pollutants based, in part, on a reasonable measure of the facility’s actual or projected flow rates on an average monthly and a maximum daily basis for all production-based facilities that have a continuous discharge. In addition, the dilution provided by the receiving water is factored into this process. Furthermore, narrative criteria from the state’s water-quality standards are often used to limit toxicity in discharges where: (1) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard; or (2) toxicity cannot be traced to a specific pollutant.

The NPDES permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity (WET)) that is or may be discharged at a level that causes or has “reasonable potential” to cause or contribute to an excursion above any water quality criterion. *See* C.F.R. §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

### ***3.3.1 Reasonable Potential***

In determining reasonable potential, EPA considers: (1) existing and planned controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from a permittee’s reissuance application, monthly DMRs, WET test reports, and State and Federal Water Quality Reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in Section 3 of the “Technical Support Document for Water Quality-based Toxics Control”, March 1991, EPA/505/2-90-001; and, where appropriate, (5) dilution of the effluent in the receiving water. The reasonable potential analyses for pollutants discharged from MPM are found in Sections 5.1.4 and 5.1.7 of this Fact Sheet.



### 3.3.2 7Q10 and Dilution Allowance for MPM

Water quality-based effluent limitations are established based on a calculated dilution factor derived from the available dilution in the receiving water at the point of discharge. New Hampshire's Code of Administrative Rules at Env-Wq 301 "State Surface Water Discharge Permits" states that

[w]here the receiving water is a river or stream, the 7Q10 flow shall be used to develop monthly average and maximum daily effluent limits for aquatic life criteria for toxics, human health criteria for non-carcinogens and for non-toxic pollutants, such as BOD.

Env-Wq 301.17(b)(2). *See also* Env-Wq 1705.02(d). The 7Q10 flow is the lowest average flow, which occurs for seven consecutive days on an annual basis with a recurrence interval of once in ten years on average. Use of the 7Q10 flow allows for the calculation of the available dilution under critical flow (worst-case) conditions, which in turn results in the derivation of conservative water quality-based effluent limitations. Furthermore, 10 percent of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations at Env-Wq 1705.01.<sup>5</sup>

NHDES has confirmed that the 7Q10 for the Contoocook River downstream of Outfall 001 remains, as it was during the development of the existing permit, at 16.47 cubic feet per second (cfs). *See* email from J. Andrews, NHDES to S. DeMeo, EPA, dated 11/26/2014. Attachment D of this Fact Sheet includes the derivation of 7Q10. The 7Q10 is applied when determining "reasonable potential" and for calculating the dilution factors used in development of certain pollutant effluent limits.

The dilution allowance (also referred to as the "dilution factor") in the Contoocook River for the process wastewater discharge (Outfall 001) is 9.6 for the chronic conditions and 7.4 for the acute conditions. Attachment D of this Fact Sheet also includes the calculations of these values. The chronic available dilution is based on the facility's permitted average monthly flow of 1.0 MGD (1.547 cfs), a 7Q10 low flow at Outfall 001 of 16.47 cfs, and a State of New Hampshire prescribed minimum 10% set aside for reserve. The acute available dilution is based on the facility's permitted maximum daily flow of 1.3 MGD (2.01 cfs), a 7Q10 low flow at Outfall 001 of 16.47 cfs, and a State of New Hampshire prescribed minimum 10% set aside for reserve. *See* 40 C.F.R. § 122.45(b)(2)(i).

### 3.3.3 Anti-Degradation

Federal regulations found at 40 C.F.R. §131.12 require states to develop and adopt a statewide anti-degradation policy which maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses, and maintains the quality of waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water.

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<sup>5</sup> "Env-Wq 1705.01 Assimilative Capacity. Except for combined sewer overflows where 99 percent of the assimilative capacity shall be used to determine compliance, not less than 10 percent of the assimilative capacity of the surface water shall be held in reserve to provide for future needs."

The New Hampshire Anti-degradation Policy, found at Env-Wq 1708, applies to any new or increased activity that would lower water quality or affect existing or designated uses, including increased loadings to a water body from an existing activity. The anti-degradation regulations focus on protecting high quality waters and maintaining water quality necessary to protect existing uses.

All existing in-stream uses and the level of water quality necessary to protect the existing uses of the Contoocook River shall be maintained and protected. Class B water body's in the State of New Hampshire are considered as being acceptable for fishing, swimming, and other recreational purposes and, after adequate treatment, for use as water supplies. This Draft Permit is being reissued with allowable effluent limits as stringent as or more stringent than the previous permit and accordingly will continue to protect the existing uses of the Contoocook River.

#### **3.3.4 State Certification**

Under section 401 of the CWA, EPA is required to obtain certification from the state in which the discharge is located that all water quality standards or other applicable requirements of state law, in accordance with Section 301(b)(1)(C) of the CWA, are satisfied. EPA permits are to include any conditions required in the state's certification as being necessary to ensure compliance with state water quality standards or other applicable requirements of state law. *See* CWA Section 401(a) and 40 C.F.R. §124.53(e). Regulations governing state certification are set out at 40 C.F.R. §§124.53 and 124.55. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. §122.44(d). Section 9.0 of this Fact Sheet includes the state certification requirements pertinent to MPM.

#### **3.4 Anti-Backsliding**

A permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA. *See* Sections 402(o) of the CWA and 40 C.F.R. §122.44(l)(1 and 2)]. EPA's anti-backsliding provisions prohibit the relaxation of permit limits, standards, and conditions except under certain circumstances. *See* 40 C.F.R. §122.44(l)(i). Anti-backsliding provisions apply to effluent limits based on technology, water quality, BPJ and State Certification requirements.

This Draft Permit complies with the anti-backsliding requirements of the CWA. All proposed limitations in the Draft Permit are at least as stringent as those included in the 2007 Permit except for the three following cases, which are discussed further below: 1) removal of the maximum daily limit for aluminum; 2) the reduction in frequency of acute WET testing; and 3) not applying Outfall 002 TRC limits to Outfall 001.

## 4.0 DESCRIPTION OF OUTFALLS AND INTAKE STRUCTURE

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### 4.1 Outfall 001

Wastewater from the paper making process is discharged through a wastewater treatment system to the Contoocook River via Outfall 001. The wastewater treatment plant receives the following wastewater streams: water from the paper making process which is not recycled (i.e., excess) or is contaminated with dirt or other undesirables, spent raw materials from the paper making or coating process (e.g., saturants,<sup>6</sup> fiber clay, etc. that are contaminated or in excess at the end of a paper run), recycled non-contact cooling water overflow, mechanical pump seal water, sand filter backwash water, boiler blowdown, tank and machine wash water, storm water, R&D lab, and (more recently) neutralized groundwater well rehabilitation wastewater. There is also a process testing laboratory, where primarily pH and turbidity tests are performed, but the sinks in this area are directed to the sanitary sewer system.

All the wastewater streams, except for neutralized groundwater well rehabilitation wastewater, flow past two bar racks into a 13,000 gallon wet well (i.e., sump) which also receives storm water<sup>7</sup> from four (out of 28) roof drains. If necessary, the wastewater is neutralized with sodium hydroxide. The wastewater is then pumped from the wet well to a clarifier. During transfer of the wastewater from the wet well to the clarifier, two polymers (a cationic coagulant and an anionic coagulant) are added to enhance the settling of suspended short paper fibers. After settling, the short paper fibers are pumped to a dewatering press. The filtrate from the press is returned to the wastewater treatment system via the wet well, and the solids are recycled offsite. After treatment in the clarifier, the treated wastewater sequentially flows through four lagoons, the middle two of which are aerated for secondary treatment. Bacteria and its nutrient rich packing media is only added to the lagoon treatment system during the spring and summer months. Sludge is continuously dredged from the lagoons during the day using a sediment control system called a “sludge sled.” See <http://www.environmentalleader.com/2014/03/05/monadnock-saves-1-5-million-with-sludge-sled/>. The sludge is directed back to the primary treatment system to be removed in the clarifier. After leaving the lagoons, the treated wastewater discharges to the Contoocook River through Outfall 001.

In addition, the facility is capable of circumventing up to two of the treatment lagoons. Therefore, the Draft Permit includes a provision that requires the Permittee to notify EPA and NHDES prior to any such circumvention. Furthermore, a vinyl screen is set up in the fourth (final) lagoon to prevent “short- circuiting”.<sup>8</sup> The Draft Permit requires that this system is maintained.

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<sup>6</sup> Saturant is a formulation that is applied to the size press and/or coating machines to impregnate the sheets and improve bulk strength properties, stiffness and tensile strength.

<sup>7</sup> As previously indicated, most of the storm water generated on site is covered by the facility’s Multi-Sector General Permit (tracking # NHR05BU27).

<sup>8</sup> “Short-circuiting” can happen when wastewater enters the lagoon and travels in a straight path to the outfall location. In this configuration, residence time is much reduced and the lagoon consists of areas where there is no movement of wastewater (i.e., dead space(s)).

The Mill's process water is predominately obtained from its one gravel-packed groundwater well, but during emergencies it can also be taken from the Contoocook River.<sup>9</sup> Each year, Monadnock Paper Mills rehabilitates the groundwater well. The rehabilitation, also referred to as redevelopment, involves chemically treating the well with a series of three different solutions. The process takes approximately seven days to complete. The wastewater generated from this process, which formally discharged through Outfall 002, is now directed to the treatment lagoons and discharged along with the other process wastewater through Outfall 001.

The first stage of the groundwater well rehabilitation involves adding a chemical mixture of hydrochloric acid and QC-21 (an acidic Layne Christensen priority solution). This mixture is used to break down well screen clogging mineral deposits (iron and manganese). The mixture is injected into the well where the solution is allowed to mix with the well clogging mineral deposits for 6 to 12 hours. It is then mechanically surged and backwashed into and out of the well screen for 4 hours. The resulting wastewater is pumped into a portable sedimentation/neutralization tank that is set up specifically for this process. Hydrated lime or light soda ash is added to neutralize any remaining acid and the wastewater is then transferred to the first lagoon.

The second treatment, which is optional, injects sodium hexametaphosphate into the well. Sodium hexametaphosphate is a sequestering agent, which facilitates the removal of fine sands, silt and clay from the aquifer formation adjacent to the well screen. The solution is pumped to the previously mentioned sedimentation/neutralization tank. Sodium hexametaphosphate does not require any special neutralization and therefore is routed to the first lagoon.

The final treatment consists of injecting chlorine (sodium or calcium hypochlorite) in the well to inhibit biological growth. The solution is allowed to react in the well for 6 to 12 hours. It is then mechanically surged and backwashed into and out of the well screen for 4 hours. The solution is then pumped into the sedimentation/neutralization tank where residual chlorine is neutralized using sodium metabisulfite. The solution is again transferred to the first treatment lagoon.

Since the well rehabilitation wastewater is directed through Outfall 001, Outfall 002 has been removed from the Draft Permit. The existing permit's Outfall 002 requirements include limitations for flow, total suspended solids (TSS), pH, and total recoverable chlorine (TRC), as well as monitoring only for total recoverable phosphorous and turbidity. TSS, pH and phosphorous are already included in the requirements for Outfall 001 and therefore do not need to be added to the Draft Permit to account for the change. TRC and turbidity requirements are not being added to the Draft Permit for Outfall 001 because these pollutants are not expected in measurable amounts in the final effluent discharged for the following reasons: 1) the volume of rehabilitation wastewater is small in comparison to the lagoon's treatment capacity; 2) residual chlorine is dechlorinated prior to entering the lagoons; and 3) the retention time in the lagoons (5-11 days) is sufficient to treat for settleable solids that contribute to turbidity, as well as

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<sup>9</sup> If the groundwater well is not operating for an extended period of time, MPM could use river water as process water. This has not been done for the past 7-8 years and is unlikely to occur in the future because the lower quality river water is unsuitable for in the production of certain grade papers. Furthermore, town water could also be used for process water. The Draft Permit requires Monadnock Paper Mills to inform the regulatory agencies if any Contoocook River water withdrawal is used for process water.

residual chlorine. Furthermore, TSS, which also may contribute to turbidity is, as mentioned, currently limited by the permit.

EPA has determined that the TRC limit for Outfall 002 need not be applied to Outfall 001 and that this change is considered an exception to the general prohibition against revising an existing water quality-based effluent limit. Specifically, the anti-backsliding provision found at CWA section 303(d)(4)(B) provides that relaxed limitations may be allowed where “the quality of such waters equals or exceeds levels necessary to protect the designated use” (the Contoocook River is in attainment for chlorine) and only if the change is consistent with the state’s anti-degradation policy. EPA believes that the Draft Permit is consistent with the state’s anti-degradation policy and will continue to protect the existing uses of the Contoocook River.

#### **4.2 Outfall 002 (removed)**

As explained above, each year the groundwater well that supplies the water used in the Mills’ paper making processes is rehabilitated. The rehabilitation wastewater previously was permitted to discharge to the Contoocook River through Outfall 002. Approximately three years ago, the Mill re-routed the treated well rehabilitation effluent to the Mill’s wastewater treatment lagoons as mentioned above. Given that Outfall 002 is no longer in use, all limits and monitoring requirements associated with that outfall have been eliminated from the Draft Permit.

#### **4.3 Fire Pump Testing**

Contoocook River water (or town water) is used in the Mill’s fire suppression system piping. Contrary to previous permitting actions, it has been determined that the discharge of fire pump testing water is not covered by the facility’s MSGP as an “allowable non-stormwater discharge.”

The Mill’s insurance company requires periodic testing of the fire suppression system to insure the pump can produce and sustain the required flow. A weekly test involves drawing Contoocook River water from the penstock that leads the Mill’s water wheel, circulating that water through the fire suppression piping and then discharging it back into the river at the Mill’s water wheel tailrace. The weekly test uses an average of 1000 gallons per minute (gpm); with a maximum water use of 1,800 gpm and takes approximately 10 minutes. The fire pump has sealed pillow block bearings, which are set about 4” from the pump. The gap is filled with synthetic packing to prevent water from contacting the bearings when the pump is turned on. The setup of this pump precludes the discharge of any lubricants with the fire pump water. Since river water is simply cycled through the fire suppression piping, with no chemicals or solutions added, EPA considers that this discharge does not qualify as a discharge of pollutants under the CWA and therefore does not require a NPDES permit. *See Los Angeles County Flood Control District v. Natural Resources Defense Council, Inc., et al.*, certiorari to the United States Court of Appeals for the Ninth Circuit, No. 11-460, January 8, 2013 at <http://caselaw.lp.findlaw.com/scripts/getcase.pl?court=US&vol=000&invol=11-460>

The annual fire pump test required by the facility’s insurance company usually takes place during May. Flow rate and pressure is checked by running river water through the system but

unlike the weekly test water that is discharged back to the river, the annual test water is directed to the lawn adjacent to the building.

#### **4.4 Cooling Water Intake Structure**

Just upstream of MPM, a part of the river is diverted to a canal that runs adjacent to the facility. The canal leads to a ten foot diameter penstock, where water is directed to the hydro unit through a series of louvers. When the facility is not generating power, the louvers are closed so that the hydro-wheel doesn't turn. When electricity is being generated, flow discharges through the wheel to the tail race.

The penstock is also where river water is diverted to either the fire suppression system, as described above, or for use as process water. An approximately 12-18 inch diameter intake pipe directs water from the penstock to a filter canister (or "strainer") and then to the fire suppression system or during emergencies to the settling basin for treatment and then the sand filters prior to use as process water. In the penstock the intake pipe is equipped with metal bars to prevent large objects from entering the filter canister.

Currently, a small portion of the diverted fire suppression water (18 gpm) is used to cool the fire pump. As explained to the Permittee, this once-through non-contact cooling water is subject to the provisions of CWA § 316(b). The Permittee has decided to use the town water to cool the fire pump and has made arrangements to change the piping. Therefore, the Draft Permit prohibits the use of river water for non-contact cooling purposes.

### **5.0 PROPOSED PERMIT EFFLUENT LIMITATIONS AND CONDITIONS**

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#### **5.1 Outfall 001**

##### **5.1.1 Effluent Flow**

The existing permit limits for effluent flow (1.0 MGD average monthly and 1.3 MGD maximum daily) at Outfall 001 are based on the facility's maximum treatment system design flow. These limits are maintained for the Draft Permit.

Generally, EPA uses maximum effluent flow both to determine the necessity for effluent limitations in a permit that comply with the CWA, and to calculate the limits themselves. EPA practice is to use design flow as a reasonable and important worst-case condition in EPA's reasonable potential and water quality-based effluent limitations (WQBEL) calculations to ensure compliance with water quality standards under Section 301(b)(1)(C). Should the effluent discharge flow exceed the flow assumed in these calculations, the in-stream dilution would decrease and the calculated effluent limits may not be protective (i.e., meet water quality standards (WQS)). Further, pollutants that do not have the reasonable potential to exceed WQS at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying the Region's reasonable potential analyses and derivation of permit effluent limitations remain sound for the duration of the permit, the Region may ensure its "worst-case" effluent flow assumption through imposition of

permit conditions for effluent flow.<sup>10</sup> Thus, the effluent flow limit is a component of WQBELs because the WQBELs are premised on a maximum level of flow. In addition, the flow limit is necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQS.

The limitation on effluent flow is within EPA's authority to condition a permit in order to carry out the objectives of the CWA. *See* CWA §§ Sections 402(a)(2) and 301(b)(1)(C); 40 C.F.R. §§ 122.4(a) and (d); 122.43 and 122.44(d). A condition on the discharge designed to protect EPA's WQBEL and reasonable potential calculations is encompassed by the references to "condition" and "limitations" in 402 and 301 and implementing regulations, as they are designed to assure compliance with applicable water quality regulations, including anti-degradation. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of effluent is consistent with the overall structure and purposes of the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 C.F.R. § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the facility's wastewater treatment systems as designed includes operating within the facility's design effluent flow. Thus, the permit's effluent flow limitation is necessary to ensure proper facility operation, which in turn is a requirement applicable to all NPDES permits. *See* 40 C.F.R. § 122.41.

### ***5.1.2 Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS)***

#### ***Permitting History***

The first NPDES permit containing the BOD<sub>5</sub> and TSS limits for the Monadnock Paper Mills effluent discharge was issued on July 13, 1973. This permit contained technology-based "tiered" permit limits. The first tier limited BOD<sub>5</sub> to 1100 pounds per day maximum and 750 pounds per day on an average monthly basis, while TSS was limited to 6000 pounds per day maximum and 4030 pounds per day on an average monthly basis. The second tier reduced the BOD<sub>5</sub> permit limits to 350 pounds per day maximum and 235 pounds per day on an average monthly basis. TSS permit limits were reduced in the second tier to 470 pounds per day maximum and 315 pounds per day on an average monthly basis. The first tier permit limits were based on a production level of 78.1 tons of paper per day (t/d). However, the lower, second tier permit limits were based on the construction and operation of a wastewater treatment plant at the facility by June 30, 1975. Therefore, the second tier's technology-based permit limits were developed using EPA's BPJ authority.

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<sup>10</sup> EPA's reasonable potential regulations require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," which is a function of both the effluent flow and receiving water flow. 40 C.F.R. § 122.44(d)(1)(ii). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *In re Washington Aqueduct Water Supply Sys.*, 11 E.A.D. 565, 584 (EAB 2004). EPA accordingly is authorized to carry out its reasonable potential calculations by presuming that a plant is operating at its maximum design flow (POTW's) or permitted flows (industrial dischargers) when assessing reasonable potential.



In the late 1970's the New Hampshire Water Supply and Pollution Control Commission (NH WS&PCC), the predecessor of the NHDES-Water Division, evaluated the BPJ determination that set the BOD<sub>5</sub> and TSS limits for Monadnock Paper Mills. That evaluation by the NH WS&PCC was explained in Staff Report No. 98 titled, "Water Quality Study & Load Allocation, Contoocook River, Bennington to West Henniker," which was issued in December 1978 (the 1978 Report). The 1978 Report concluded that

[I]load allocation results for Monadnock Paper Mills indicate that discharging at NPDES Operating Day Composite Quantity Limitations for BOD does not violate State Water Quality Standards. However, under low-flow conditions, this limit consumes a significant portion of the assimilative capacity of the Contoocook River. During winter months, when the Contoocook River experiences high flowrates and lower river water temperatures, the discharge from Monadnock Paper Mills of BOD loadings up to 500 pound per day would not jeopardize the integrity of the in-stream dissolved oxygen level for New Hampshire Class 'B' waters.

The 1978 Report, p. VII-1. Over the next several permit issuance cycles (1988, 1993, 2000 and 2007), both the BOD<sub>5</sub> and TSS levels were adjusted based on increased production levels and season (summer and winter).

### ***BOD Limitations***

Although the 1978 report determined that technology-based limits for BOD<sub>5</sub> were sufficient to protect the water-quality of the Contoocook River, the section of Contoocook River where the Monadnock Paper Mill discharges is listed as severely impaired on NHDES's FINAL 2012 Clean Water Act Section 303(d) Surface Water Quality List Submitted to EPA. Since 2002, the designated use "Aquatic Life" has been rated as "5-P; Severe Impairment" for Dissolved Oxygen Saturation (DO<sub>sat</sub>) and Dissolved Oxygen (DO) caused by municipal and industrial point sources.

NPDES regulations require that for all effluent discharges, "... the level of water quality to be achieved by limits ... is derived from and complies with all applicable water quality standards." See 40 C.F.R. § 122.44(d)(1)(vii). Further, the water quality regulations at 40 C.F.R. § 131.12(l) require that a State's anti-degradation policy ensure maintenance of, "... all levels of water quality necessary to protect the existing uses ..." These regulations apply both in waters that are attaining water quality standards and waters that are impaired (both before and after development of a TMDL). In order for the EPA to issue a new NPDES permit for Monadnock Paper Mill and for NHDES to certify the new permit protects the State's water quality standards, EPA must demonstrate the BOD<sub>5</sub> limits contained in the newly issued permit will not adversely affect any State water quality standard.

Based on the DMR BOD<sub>5</sub> effluent data contained in Attachment C, several statistical analyses of the data were conducted. The results are in the following table:

<b>BOD<sub>5</sub> DMR Effluent Data Analysis</b>				
	BOD <sub>5</sub> (Winter) Dec 1 – Mar 31		BOD <sub>5</sub> (Summer) Apr 1 – Nov 30	
(Units: lbs/day)	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Permit Limits (2007)	400	500	300	400
Average	128.7	193.17	46.74	66.98
Maximum Value for Monthly Ave/Daily Max	359	532	154	220
95 <sup>th</sup> Percentile <sup>1</sup>	312.6	482.4	82.5	116.4
95 <sup>th</sup> Percentile (Dilution Applied)	32.6	65.2	8.6	15.7

<sup>1</sup> As noted in the *Technical Support Document for Water Quality Based Toxics Control* (EPA 1991) (“TSD”), the 95<sup>th</sup> percentile value is used to determine whether a parameter contained in an effluent’s discharge has a reasonable potential to cause or contribute to an exceedance of a water quality standard. For this BOD<sub>5</sub> analysis, however, the 95<sup>th</sup> percentile value was calculated to illustrate the expected upper bound effluent concentration for BOD<sub>5</sub> in the Monadnock Paper Mill’s effluent discharge.

As the above data indicates, Monadnock Paper Mill’s effluent BOD<sub>5</sub> loadings are considerably lower than the permitted limits. Additionally, the calculated upper bound; i.e., the 95<sup>th</sup> percentile, values are also notably lower than the permitted limits—limits that were generally considered to be protective of water quality standards. Even though the current permit limits are approximately 2 to 4 times more stringent than what the effluent limitation guidelines would require (*See* Section 3.2.1 of this Fact Sheet), the existing seasonal average monthly and maximum daily limits for BOD<sub>5</sub> are continued in the Draft Permit. This determination is based on 1) accordance with anti-backsliding requirements at 40 C.F.R §§ 122.44(l)(1) and (2); 2) effluent data clearly demonstrating that MPM can meet these limits; 3) no plans to increase the mill’s paper production capacity; and 4) the Contoocook River’s severe impairment status for dissolved oxygen and a TMDL scheduled within this permit cycle (TMDL scheduled for completion in 2017).

### ***TSS Limitations***

The tiered limits for TSS, based on two paper production levels, contained in Monadnock Paper Mills existing NPDES permit have been eliminated in the Draft Permit. The existing TSS limits were determined using BPJ and were based on the Monadnock Paper Mills current paper making machinery, which has an average production capacity of 105 tons/day (t/d). The higher TSS limit would have been applied if Monadnock Paper Mills upgraded their paper making machinery, raising daily paper production above 105 t/d. Based on discussion between EPA and Monadnock

Paper Mills, there have been no upgrades accomplished on the mill's paper making machinery. Additionally, Monadnock Paper Mills has stated there are no plans to proceed with any upgrades to increase the mill's paper production capacity beyond 105 t/d. Personal communication between B. Maloy, MPM and S. DeMeo, EPA, 2/4/2015. There is thus no need to maintain tiered permit limits for TSS, and therefore, TSS limits for a production level above 105 t/d have been removed in the Draft Permit.

Although the existing permit limits (400 lb/day maximum daily and 300 lb/day average monthly) are approximately 2 to 4 times more stringent than what the effluent limitation (technology-based) guidelines would require (*see* Section 3.2.1 of this Fact Sheet), the current permit limits are carried forward to the Draft Permit based on 1) anti-backsliding requirements at 40 C.F.R. §§ 122.44(l)(1) and (2), and 2) effluent data clearly demonstrating that MPM can meet these limits.<sup>11</sup>

### 5.1.3 pH

The National ELGs for the pulp and paper industry require effluent pH limits of 5.0 to 9.0 standard units (SU). See 40 C.F.R. §§ 430.112 and 430.122. However, the New Hampshire Law requires more stringent effluent pH limits of 6.5 to 8.0 standard units. See N.H. RSA 485-A:8,II. Consequently, the Draft Permit requires pH limits of 6.5 to 8.0 SU. There were three excursions of the maximum pH limit in the last six years.

The pH limits of 6.5 to 8.0 standard units (SU) and the sampling frequency of 1/day for Outfall 001 in the Draft Permit remains unchanged from the existing permit. The limitations identified in the Draft Permit for pH are in accordance with the anti-backsliding requirement found in 40 C.F.R. §122.44(l) and the expected State of New Hampshire Section 401 Water Quality Certification.

The Draft Permit (Part I.B.2) contains language similar to the existing permit which allows EPA to consider a change to the pH limits if the Permittee can demonstrate to the satisfaction of NHDES that the in-stream pH standard will be protected when the Permittee's discharge is outside the permitted range of 6.5 to 8.0 SU. Under such conditions, the Permittee or NHDES may request in writing that the pH permit limit(s) be modified by EPA to incorporate the results of the demonstration.<sup>12</sup>

Anticipating the situation where the Permittee has completed such a demonstration, and subsequently the NHDES has granted formal approval to changing the pH limit(s), EPA has added a provision to the Draft Permit which allows EPA to modify the pH limit(s) via a certified letter sent to the Permittee. The change would be contingent upon the Permittee demonstrating that the revised pH limit range does not alter the naturally occurring receiving water pH and does

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<sup>11</sup> There were two excursions of the TSS limits in the last six years. On average, the TSS data shows values significantly lower than the permitted limits.

<sup>12</sup> The upstream or background sampling location identified by the facility shall be approved by NHDES prior to the initiation of sampling. For the purposes of the compliance demonstration, the upstream and downstream sampling is to occur as close in time as possible, but not greater than 1 hour apart.

not exceed the allowable pH range identified in the National ELGs (5.0 to 9.0 SU) for the pulp and paper industry.

Such a change in the permit pH limit(s) would not be in violation of anti-backsliding requirements because the modification would be based on new information not available at the time of the issuance of the existing permit [See 40 C.F.R. § 122.44(l)(2)(i)(B)]. EPA anticipates that the limit(s) determined from the demonstration study as approved by the NHDES will satisfy all effluent requirements for this source category and will comply with the New Hampshire Surface Water Quality Regulations.

#### **5.1.4 Metals**

The only metal limits in the existing permit is for aluminum. The aluminum limits are 0.83 mg/L average monthly and 5.5 mg/L maximum daily. These limits were calculated based on the assumption that the background (or ambient) aluminum concentration was zero. Data since January 2009 shows that there were no exceedances of these permit limits for aluminum. The highest reported value for average monthly during this time period is 0.397 mg/L (average 0.144 mg/L) and the highest reported value for maximum daily is 0.92 mg/L (average 0.186). As shown in the analysis below, the average monthly limit in the Draft Permit is amended to equal the water quality criteria (87 ug/L), since the Contoocook River possesses no assimilative capacity for aluminum, based on recent background data. In addition, the maximum daily limit has been removed from the Draft Permit because the analysis shows there is no reasonable potential to exceed the acute water quality criteria for aluminum, which is 750 ug/L. The removal of the maximum daily limit from the Draft Permit is not considered a violation of anti-backsliding provisions of the CWA because data acquired during the last permit term and this analysis constitute new information. *See* 40 C.F.R. §122.44(l)(i). Furthermore, in this case, backsliding is allowed because the Draft Permit is consistent with NHDES approved anti-degradation policy.

Dissolved fractions of certain metals in water can be toxic to aquatic life. Therefore, there is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation of the concentration of metals in the facility's effluent was used to determine reasonable potential for effluent discharges to cause exceedances of the water quality criteria for aluminum, cadmium, chromium, copper, lead, nickel and zinc. For this analysis, sampling data within the draft permit review period was taken from DMR, Whole Effluent Toxicity test reports, and additional ambient testing for copper, lead, and aluminum using clean sampling techniques.<sup>13</sup>

Metals may be present in both dissolved and particulate forms in the water column with extensive studies suggesting that it is the dissolved fraction that is biologically available and therefore presents the greatest risk of toxicity to aquatic life inhabiting the water column. This conclusion is widely accepted by the scientific community both within and outside of EPA, and as a result, water quality criteria are established in terms of dissolved metals. *See* Water Quality Standards Handbook: Second Edition, Chapter 3.6 and Appendix J, EPA 1994 (EPA 823-B-94-

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<sup>13</sup> Copy of report consisting of four sets of background (ambient) river metals testing conducted in 2014 was submitted via email from M. Maloy, MPM to S. DeMeo, EPA on 12/23/14.

05a), updated March 2012 (EPA 823-B-12-0020, at

<http://water.epa.gov/scitech/swguidance/standards/handbook/chapter03.cfm#section6>

However, many inorganic components of wastewater, including metals, are in the particulate form, and differences in the chemical composition between the effluent and the receiving water affects the partitioning of metals between the dissolved and particulate fractions. As the effluent mixes with the receiving water the partitioning often results in a transition from the particulate to dissolved form. *See* The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion, EPA 1996 (EPA-823-B96-007). Consequently, quantifying only the dissolved fraction of metals in the effluent prior to discharge may not accurately reflect the biologically available portion of metals once it mixes in the receiving water. Regulations at 40 CFR 122.45(c) require, with limited exceptions, that metals limits in NPDES permits be expressed as total recoverable metals.

#### Metals with Hardness-based Water Quality Criteria

Before the total recoverable criteria for metals can be determined, the acute and chronic downstream hardness as CaCO<sub>3</sub> values are calculated for metals with hardness-based water quality criteria. The hardness as CaCO<sub>3</sub> is calculated using a mass balance equation and WET test sampling data (*See* Attachment C):

$$H_d = \frac{Q_{up}H_{up} + Q_{eff}H_{eff}}{Q_d}$$

Where:

H<sub>d</sub> = downstream hardness concentration as mg/L CaCO<sub>3</sub>

H<sub>up</sub> = median upstream hardness concentration as CaCO<sub>3</sub> (11 mg/L)

H<sub>eff</sub> = median effluent hardness concentration as CaCO<sub>3</sub> (165 mg/L)

Q<sub>up</sub> = upstream flow at 7Q10

$$Q_{up} = Q_d - Q_{eff} = 16.47 - 2.01 = 14.46 \text{ cfs (acute)}$$

$$Q_{up} = Q_d - Q_{eff} = 16.47 - 1.547 = 14.92 \text{ cfs (chronic)}$$

Q<sub>eff</sub> = effluent design flow

Ave Monthly; 1.0 MGD (1.547 cfs) (acute)

Max Daily; 1.3 MGD (2.01 cfs) (chronic)

Q<sub>d</sub> = 7Q10 flow downstream of discharge location (16.47 cfs)

Solving for H<sub>d</sub>: H<sub>d</sub> = 25.88 mg/l as CaCO<sub>3</sub> (Acute), 29.70 mg/l as CaCO<sub>3</sub> (Chronic). Since this downstream hardness is above 25 mg/l, it was used to determine the total recoverable metals criteria. *See* Env-Wq 1703.22(f).

Next, the in-stream, total recoverable, water quality criteria for each metal is determined using the equations in NH Standards at Env-Wq 1703.24, as shown in the table below.

**Table 5.1 - Calculating Hardness-dependent Freshwater Metals Criteria**

Metal	Parameters				Total Recoverable Criteria	
	ma	ba	mc	bc	Acute Criteria <sup>1</sup> (CMC) (ug/L)	Chronic Criteria <sup>2</sup> (CCC) (ug/L)
<b>Aluminum</b>	—	—	—	—	750	87
<b>Cadmium</b>	1.1280	-3.6867	0.7852	-2.7150	0.98	0.95
<b>Copper</b>	0.9422	-1.7000	0.8545	-1.702	3.92	3.31
<b>Lead</b>	1.273	-1.46	1.273	-4.705	14.61	0.68
<b>Nickel</b>	0.846	2.255	0.846	0.0584	149.54	18.73
<b>Zinc</b>	0.8473	0.884	0.8473	0.884	38.12	42.95

<sup>1</sup> Acute Criteria (Criterion Maximum Concentration (CMC)) =  $\exp\{m_a \cdot \ln(\text{hardness}) + b_a\}$

<sup>2</sup> Chronic Criteria (Criterion Continuous Concentration (CCC)) =  $\exp\{m_c \cdot \ln(\text{hardness}) + b_c\}$

In order to determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for each metal, the following mass balance is used to project in-stream metal concentrations downstream from the discharge.

$$C_d = \frac{Q_{up}C_{up} + Q_{eff}C_{eff}}{Q_d}$$

Where:

$C_d$  = downstream metals concentration in ug/L

$C_{up}$  = median upstream metals concentration in ug/L

$C_{eff}$  = effluent metals concentration in ug/L (95<sup>th</sup> percentile (chronic), 99<sup>th</sup> percentile (acute))

$Q_{up}$  = upstream flow at 7Q10

$Q_{up} = Q_d - Q_{eff} = 16.47 - 2.01 = 14.46$  cfs (acute)

$Q_{up} = Q_d - Q_{eff} = 16.47 - 1.547 = 14.92$  cfs (chronic)

$Q_{eff}$  = effluent design flow

Max Daily; 1.3 MGD (2.01 cfs) (acute)

Ave Monthly; 1.0 MGD (1.547 cfs) (chronic)

$Q_d$  = 7Q10 flow downstream of discharge location (16.47 cfs)

Reasonable potential is then determined by comparing this resultant in-stream concentration (for both acute and chronic conditions) with the criteria for each metal multiplied by the factor 0.9 to reserve 10% assimilative capacity (*See* Env-Wq 1705.01). If both the downstream concentration ( $C_d$ ) and the effluent concentration ( $C_{eff}$ ) exceed the relevant criterion times 0.9, there is reasonable potential for the facility to cause or contribute to an exceedance of that water quality standard and a permit limit is required. If there is reasonable potential (for either acute or chronic conditions), the appropriate limit is then calculated by rearranging the above mass balance to solve for the effluent concentration ( $C_{eff}$ ) using the criterion times 0.9 as the resultant in-stream concentration ( $C_d$ ). Note that if a limit is calculated to be more stringent than the criterion, then

the limit is set at the criterion. See the tables below for the results of these analyses with respect to aluminum, cadmium, copper, lead, nickel and zinc.

**Table 5.2 - Chronic Reasonable Potential and Limits Determination**

Metal	Effluent Average Flow	Effluent Conc <sup>1</sup> (95th Percentile)	Upstream Flow at 7Q10	Upstream Conc <sup>2</sup> (Median)	Downstream 7Q10 Flow	Downstream Resultant Conc	Criteria * 0.9	Chronic Reasonable Potential	Limit
	cfs	ug/l	cfs	ug/l	cfs	ug/l	Chronic (ug/l)	C <sub>eff</sub> & C <sub>d</sub> > Criteria	Chronic (ug/l)
Aluminum	1.547	346.5	14.92	95	16.467	118.6	78.3	Y	87.0
Cadmium		0		0		0.00	0.86	N	N/A
Copper		10.9		3		3.74	2.98	Y	3.31
Lead		0.7		0.6		0.61	0.61	N	N/A
Nickel		5.8		0		0.54	16.85	N	N/A
Zinc		28.9		23		23.6	38.65	N	N/A

<sup>1</sup> Values represent the 95<sup>th</sup> percentile concentration from the DMR/WET testing within the review period (see Attachment E – Statistical Approach for Metals Effluent Data (N ≥ 10)).

<sup>2</sup> Median upstream data taken from the WET testing results for the receiving water just upstream of the facility's discharge (see Attachment C – Ambient and Effluent Data).

**Table 5.3 - Acute Reasonable Potential and Limits Determination**

Metal	Effluent Design Flow	Effluent Conc <sup>1</sup> (99th Percentile)	Upstream Flow at 7Q10	Upstream Conc <sup>2</sup> (Median)	Downstream 7Q10 Flow	Downstream Resultant Conc	Criteria * 0.9	Acute Reasonable Potential	Limit
	cfs	ug/l	cfs	ug/l	cfs	ug/l	Acute (ug/l)	C <sub>eff</sub> & C <sub>d</sub> > Criteria	Acute (ug/l)
Aluminum	2.01	487.1	14.46	95	16.47	142.9	675	N	N/A
Cadmium		0		0		0.00	0.9	N	N/A
Copper		15.4		3		4.51	3.5	Y	7.31
Lead		0.7		0.6		0.61	13.2	N	N/A
Nickel		7.9		0		0.96	134.6	N	N/A
Zinc		42.3		23		25.4	34.3	N	N/A

<sup>1</sup> Values represent the 99<sup>th</sup> percentile concentration from the DMR/WET testing within the review period (see Attachment E – Statistical Approach for Metals Effluent Data (N ≥ 10)).

<sup>2</sup> Median upstream data taken from the WET testing results for the receiving water just upstream of the facility's discharge (see Attachment C – Ambient and Effluent Data).

As indicated in the tables above, based on the maximum measured effluent concentrations and median upstream concentrations there is no reasonable potential that the discharge of cadmium, lead, nickel, or zinc will cause or contribute to an exceedance of applicable acute and chronic water quality criteria. However, there is reasonable potential for copper (acute and chronic) as well as aluminum (chronic) to cause or contribute to an exceedance. Based on the analysis above, the Draft Permit contains the following total recoverable metal limits:

- Aluminum - Monthly average limit of 87 ug/l



- Copper - Maximum daily limit of 7.31 ug/l,
- Copper - Monthly average limit of 3.31 ug/l

In addition, monitoring and reporting for the following metals continue to be required as part of the WET tests: cadmium, lead, copper, zinc, nickel, and aluminum. *See* WET test protocols, which are attachments to the Draft Permit.

### **5.1.5 Phosphorus**

Phosphorous promotes the growth of nuisance algae and rooted aquatic plants. Elevated levels of phosphorous can cause excessive algae and/or plant growth resulting in reduced water clarity and poor aesthetic quality. Through respiration, and the decomposition of plant matter, excessive algae and plant growth can reduce in-stream oxygen concentrations to levels that could adversely impact aquatic life and produce strong odors. There are areas of the reach of the Contoocook River into which Monadnock Paper Mills discharges that show indications of “sag” - a decrease in the River’s dissolved oxygen levels.

The NHDES has scheduled a TMDL study for the portion on the Contoocook River that flows through the towns of Bennington and Antrim, New Hampshire. According to the Watershed Management Bureau’s Water Quality Report Card, the TMDL is due to be completed in 2017. *See* email from J. Andrews, NHDES to S. DeMeo, EPA dated 1/30/2015. There is a possibility that when the TMDL is issued, phosphorous limits will be imposed on discharges to this section of the Contoocook River. NH Standards at Env-Wq 1703.14(b) and (c) indicate that

Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring [and] [e]xisting discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards.

The wastewater stream of a paper manufacture is typically nutrient deficient. This means the bacteria, which are used to biologically treat the wastewater in the treatment systems lagoons, might not have sufficient nutrients to sustain their population. To enhance biological treatment, MPM used to add phosphoric acid to the aeration lagoons. Currently, bacteria and its nutrient rich packing media are added to the lagoon treatment system, during the spring and summer months only. Furthermore, sodium hexametaphosphate is used to facilitate the annual groundwater well rehabilitation, which now discharges to the lagoon treatment system.

Semi-annual monitoring of phosphorus in MPM’s effluent shows that levels range from 0.21 mg/L to 0.74 mg/L.<sup>14</sup> However, there is insufficient ambient data to determine whether phosphorous contained in the Mills’ effluent causes or contributes to the Contoocook River’s dissolved oxygen impairment. With that said, EPA did a reasonable potential analysis using a

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<sup>14</sup> Semi-annual monitoring is conducted during the first and third monitoring periods, which end March 31<sup>st</sup> and September 30<sup>th</sup>, respectively. A total of twelve samples were analyzed for this review period.

background level of 23 ug/L,<sup>15</sup> the 95 percentile value for the effluent data range described above (841.6 ug/L), and the permitted average monthly discharge flow of 1.0 MGD (chronic). The calculated downstream concentration is approximately 100 ug/L.<sup>16</sup> Therefore, EPA determined that there is no clear reasonable potential that the amount of phosphorus discharged is having an impact on the receiving water quality.

Based on this information, EPA is requiring semi-annual monitoring and reporting of effluent and ambient phosphorus levels. One of these semi-annual monitoring events must include groundwater well rehabilitation effluent and the other event must occur at a time that includes the nutrient addition to the treatment lagoons.

#### **5.1.6 Biocides**

BAT-based limits for pentachlorophenol or trichlorophenol are included in Subpart K and L of the Pulp, Paper, and Paperboard Effluent Limitations Guidelines. *See* 40 C.F.R. §§ 430.114 and 430.124. These subparts also indicate that “[p]ermittees not using chlorophenolic-containing biocides must certify to the permit-issuing authority that they are not using these biocides.”

MPM has reported that it does not use any chlorophenolic containing biocides. Therefore, the Draft Permit prohibits the use of chlorophenolic containing biocides; requires annual certification that chlorophenolic-containing biocides are not used; and continues the requirement of prohibiting the discharge of pentachlorophenol or trichlorophenol, thus complying with anti-backsliding provisions in 40 C.F.R. § 122.44(l)(2).

The three Spectrum<sup>TM</sup> biocides that are used at the facility contain the following ingredients:  
Spectrum<sup>TM</sup> XD3899 – ammonium bromide;  
Spectrum<sup>TM</sup> RX9100 – 2-bromo-2-nitropropane-1,3-diol; magnesium nitrate; 5-chloro-2-methyl-4-isothiazolin-3-one; and magnesium chloride; and  
Spectrum<sup>TM</sup> RX3500 – DAZOMET, which decomposes into the following hazardous products: methyl isothiocyanate, nitrogen oxides, and sulfur oxides.

EPA intends to monitor potential effects of these biocides on aquatic species through whole effluent toxicity testing (see below).

#### **5.1.7 Whole Effluent Toxicity (WET)**

EPA's Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001 (March 1991) recommends using an “integrated strategy” containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic

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<sup>15</sup> Three ambient samples were taken from in 2010 from the Depot Street bridge located downstream of the Facility; 23 ug/L is the median value. *See* attachment to the 4/8/2015, 3:11 PM email and the 4/8/2015, 4:43 PM email from J. Andrews to S. DeMeo.

<sup>16</sup> EPA believes that 100 ug/L (0.1 mg/l) is sufficient to ensure compliance with applicable NH narrative water quality standards. This is a reasonable approach in the absence of numeric nutrient criteria since it is based EPA's 1986 Quality Criteria for Water (Gold Book) which recommends 100 ug/L phosphorus for “streams or other flowing water not discharging directly to lakes or impoundments.”

pollutants in effluent discharges from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, whole effluent toxicity (WET) approaches evaluate interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Since WET testing measures the "additive" and/or "antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, toxicity testing can be used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

Section 101(a)(3) of the CWA specifically states, "... it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited," and New Hampshire law states that, "all waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." *See* N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Wq 1703.21(a). Sections 402(a)(2) and 308(a) of the CWA, further, provide EPA and states with the authority to require permittees to provide toxicity testing data. Section 308 specifically describes biological monitoring methods as a testing technique that may be used to carry out objectives of the Act. Under certain State narrative water quality standards, and Sections 301, 303 and 402 of the CWA, EPA and the States may establish toxicity-based limits to implement the narrative "no toxics in toxic amounts."

The regulations at 40 C.F.R. Part 122.44(d)(ii) state, "When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and non-point sources of pollution...(including) the sensitivity of the species to toxicity testing..." The regulations at 40 C.F.R. (122.44(d)(1)(v) further require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife.

Where EPA-New England believes toxicity testing and limits are appropriate and necessary as described in the previous paragraph, the type of toxicity testing (acute and/or chronic) and the effluent limitation (LC50 and/or C-NOEC) are established based the method recommended in the *Technical Support Document for Water Quality-based Toxics Control* (TSD). This method combines a calculated estimate of effluent variability as measured by a coefficient of variation (CV) based on the number of data points (n). This analysis projects an estimated maximum concentration for the effluent by applying a reasonable potential multiplying factor. An evaluation of reasonable potential by this method requires that the projected toxicity be compared to an applicable criterion based on toxic units (TU). The TU approach uses an effect concentration (EC) in its analysis. One type of EC is the LC50, which is the concentration of toxicant, or the percentage of effluent, which causes mortality to 50% of the test organisms. Toxicity involves an inverse relationship to the effect concentration (EC); i.e., the lower the EC, the higher the toxicity of the effluent. Concentration-based toxicity measurements; e.g., ECs, are usually translated into toxic units (TUs) to eliminate the potential confusion related to using an inverse relationship. The number of toxic units in an effluent is defined as 100 divided by the EC

measured; i.e.,  $TU = 100/LC50$ . As an example, an effluent with an LC50 of 50% contains 2 TUs ( $100/50 = 2$ ).

The existing permit requires two WET tests per year using two species; Daphnid (*Ceriodaphnia dubia*) and Fathead Minnow (*Pimephales promelas*). Results of these tests for the past six years are shown in the table below.

**Table 5.4 – Monadnock Paper Mill’s WET Testing Results**

Date	LC50 Static 48 Hour Acute		C-NOEC Static 7-Day Chronic	
	<i>Ceriodaphnia dubia</i>	<i>Pimephales promelas</i>	<i>Ceriodaphnia dubia</i>	<i>Pimephales promelas</i>
03/31/2009	100 %	100 %	50 %	100 %
09/30/2009	100 %	100 %	100 %	100 %
03/31/2010	100 %	100 %	25 %	100 %
09/30/2010	100 %	100 %	100 %	100 %
03/31/2011	100 %	100 %	100 %	100 %
09/30/2011	100 %	100 %	25 %	100 %
03/31/2012	100 %	100 %	12.5 %	100 %
09/30/2012	100 %	100%	100 %	100%
03/31/2013	100 %	100%	6.25 %	50 %
09/30/2013	100 %	100%	100 %	100 %
03/31/2014	100 %	100 %	25%	100 %
09/30/2014	100 %	100 %	25%	100 %

Based on the C-NOEC toxicity testing results for Daphnid (*Ceriodaphnia dubia*) EPA believes there is an indication of chronic toxicity. Accordingly, a reasonable potential analysis, as previously explained, was conducted using the C-NOEC toxicity testing results for both the *Ceriodaphnia dubia* and *Pimephales promelas*.

As with the previous metals reasonable potential analysis in Section 5.1.4, EPA finds that a permittee has “reasonable potential” to exceed a receiving water quality standard if it cannot be demonstrated with a high confidence level that the upper bound of the lognormal distribution, defined as the 95<sup>th</sup> percentile, of effluent concentrations is below the receiving water criteria at specific low flow conditions. The reasonable potential analysis, using the *Ceriodaphnia dubia* C-NOEC WET test results, determined there is a reasonable potential for Monadnock Paper Mill’s effluent to cause or contribute pollutants in concentrations or combinations that are toxic to aquatic life. Specifically, the analysis calculated, after applying the chronic dilution factor (9.6),

that the 95<sup>th</sup> percentile was 1.25 TU<sub>c</sub> (Toxic Unit – Chronic). *Technical Support Document for Water Quality-based Toxics Control* (TSD) combines knowledge of effluent variability as estimated by a coefficient of variation (CV) with uncertainty due to the number of data (n) to project an estimated maximum concentration for the effluent using a reasonable potential multiplying factor. An evaluation of reasonable potential by the TSD method requires that the projected toxicity be compared to an applicable criterion. The TSD recommends an acute criterion of 0.3 toxic units (TUs) and a chronic criterion of 1.0 TUs. Based on a calculated 95<sup>th</sup> percentile 1.25 TU<sub>c</sub>, EPA has determined the Draft Permit requires a C-NOEC limit.

The approach followed by EPA and NHDES for identifying a Chronic- No Observed Effect Concentration (C-NOEC) limit for a discharge is to set a limit based on the receiving water concentration after accounting for the dilution factor. The policy for New Hampshire NPDES permits (mainly for publicly owned treatment works (POTW's)) is to set the C-NOEC limit for dilution factors at or below 10 at the receiving water concentration (RWC). (The chronic dilution factor for Monadnock Paper Mills effluent is 9.6) For this Draft Permit's C-NOEC limit, EPA has applied this policy. The 10.4 percent limit represents reciprocal of the chronic dilution factor; alternately defined as the receiving water concentration. Specifically, the limit is determined by multiplying (1/9.6) by 100 to express the limit as a WET test percentage limit.

Outfall 001 of the Draft Permit contains a new C-NOEC limit of 10.4 percent (i.e., C-NOEC > 10.4 %). The testing and reporting of these parameters have been increased to quarterly. The increase in WET testing is based on the NPDES permitting policy for New Hampshire for effluent discharged to a receiving water with a dilution less than or equal to 10 that quarterly WET testing is required. The quarterly sampling for the WET test requirement shall be collected and tests completed during the calendar quarters ending March 31<sup>st</sup>, June 30<sup>th</sup>, September 30<sup>th</sup> and December 31<sup>st</sup> of each year. Results are to be submitted to EPA and the NHDES by the 15<sup>th</sup> day of the month following the end of the quarter sampled; that is April 15<sup>th</sup>, July 15<sup>th</sup>, October 15<sup>th</sup> and January 15<sup>th</sup>, respectively.

A lethal concentration (LC) is the statistical analysis used in acute whole effluent toxicity (WET) tests to estimate the lethality of the effluent sample. The effluent concentration at which 50% of organisms die during the test (the LC<sub>50</sub>) is used as the compliance endpoint for acute WET tests. In order to calculate an LC<sub>50</sub>, at least one of the test concentrations must cause >50% mortality. The lower the LC<sub>50</sub>, the more toxic the effluent. An LC<sub>50</sub> = 50% means that half strength effluent killed 50% of the organisms. Therefore, the existing permits ≥100% limit means that a sample of 100% effluent shall cause no greater than a 50% mortality rate in that effluent sample. The existing acute toxicity limit of ≥100 % is continued in the Draft Permit according to the anti-backsliding requirements. See 40 C.F.R. §§ 122.44(l)(1) and (2). However, since there is no reasonable potential for acute toxicity the monitoring frequency has been changed to once per year during the calendar quarter ending September 30<sup>th</sup>. The reduction in monitoring frequency in the Draft Permit is not considered a violation of anti-backsliding provisions of the CWA because data acquired during the last permit term and this analysis constitute new information. See 40 C.F.R. §122.44(l)(i).

The existing permit's WET test procedure of using a chronic (and modified acute) toxicity test is no longer valid. Separate acute and chronic toxicity test protocols are provided as attachments to the Draft Permit.

If observed toxicity continues, monitoring frequency and testing requirements may be increased. The permit may also be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements or chemical specific limits. These actions will occur if the Regional Administrator determines the NH Standards are not adequately enforced and users of the waterways are not adequately protected during the remaining life of the permit. Results of these toxicity tests are considered "new information not available at permit development"; therefore, the permitting authority is allowed to use said information to modify an issued permit under authority in 40 C.F.R. § 122.62(a)(2).

The Draft Permit (Part I.B.1) also contains a condition that after four consecutive WET tests all of which must be valid tests and must demonstrate compliance with the permit limits for whole effluent toxicity, Monadnock Paper Mill may submit a written request to the EPA seeking a review of the toxicity test results. The EPA and NHDES will evaluate whether Monadnock Paper Mill has justified a reduction in effluent toxicity testing. Monadnock Paper Mill is required to continue testing as specified in the permit until the permit is either formally modified or until MPM receives a certified letter from the EPA indicating a change in the permit condition(s). This special condition does not negate the Monadnock Paper Mill's right to request a permit modification at any time prior to the permit expiration.

As in the existing permit, this Draft Permit requires the analysis and reporting of selected parameters determined from the chemical analysis of the WET tests 100% effluent samples. The results of these analyses are to be reported on the appropriate Discharge Monitoring Reports for entry into the EPA's Integrated Compliance Information System (ICIS) Data Base.

EPA is also requiring the reporting of ambient data on the appropriate Discharge Monitoring Reports for entry into the EPA's Integrated Compliance Information System (ICIS) data base. *See* Part I.A.1 of the Draft Permit.

## **5.2 Site-Specific Low Flow Condition**

The Federal Energy Regulatory Commission (FERC) operating license for the three dams (Powder Mill, Monadnock, and Pierce) operated by Monadnock Paper Mills requires their combined discharge be maintained at... "a continuous minimum flow of 13 cfs or inflow to the developments, whichever is less." The existing permit requires Monadnock Paper Mills to inform the regulatory agencies if any Contoocook River water withdrawal caused the river to drop below the 7Q10 flow of 16.5 cfs.

Monadnock Paper Mills now exclusively uses only the Mills' well water for its process water because the well water's quality can be more readily controlled by the mill for manufacturing its specialty paper. However, the facility maintains the ability to use river water during emergencies. Further, water is drawn for use in the facility's fire suppression system. Therefore, the Draft

Permit includes the requirement to notify the regulatory agencies if any water withdrawal causes the river to drop below the 7Q10 flow of 16.5 cfs.

### **5.3 Reopener Clause (removed)**

There is a reopener clause that is included in the existing permit. This clause indicates that the permit may be “modified, or alternatively, revoked and reissued to reflect new information developed by the NHDES or EPA during a Total Maximum Daily Load (TMDL) Study of the Contoocook River evaluating the impact of the oxygen demanding pollutants and nutrients on the dissolved oxygen levels in this River.” This provision is not included in the Draft Permit because there already exists a broader reopener clause in Part II -Standard Conditions of the facility’s NPDES permit, specifically Part II.B.4 of the Draft Permit. Standard Conditions are pre-established conditions that apply to all NPDES permits and delineate the legal, administrative, and procedural requirements of the permit. The reopener clause in Part II “reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.... Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.”

### **6.0 ESSENTIAL FISH HABITAT DETERMINATION (EFH)**

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Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 *et seq.*(1998)), EPA is required to consult with National Marine Fisheries Service (NMFS) 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). Adversely impact means any impact which reduces the quality and/or quantity of essential fish habitat (EFH). *See* 50 C.F.R. § 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. *Id.*

Essential fish habitat 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 Merrimack River and its tributaries, including the Contoocook River in the vicinity of Bennington, New Hampshire are designated essential fish habitat (EFH) for Atlantic salmon (*Salmo salar*). According to the NHFG, stocking of salmon fry in the Contoocook is limited to the reach between the towns of Hillsborough and Henniker. Bennington is approximately eight miles upstream from Hillsborough, and NHFGD currently has no plans to stock this stretch of the Contoocook.



In this case, EPA has adopted a conservative approach and conducted an EFH review of this permit action under the premise that juvenile and adult life stages of Atlantic salmon may be present in the vicinity of the facility's discharge. Under this scenario, EPA has determined that the Draft Permit has been conditioned in such a way to be protective of EFH for the following reasons:

- This permit action is a reissuance of an existing NPDES permit (i.e., no new source of pollutants);
- The facility withdraws water from the Contoocook River 1) for the facility's fire suppression system; and 2) in an emergency situation which precludes use of the well water. The Draft Permit prohibits the use of river water for non-contact cooling purposes. This limited amount of water withdrawal minimizes the opportunity for the entrainment of any life stages of EFH species;
- The Draft Permit is designed so that all discharges meet state water quality standards;
- The Draft Permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts;
- Draft Permit prohibits the use of chlorophenolic containing biocides; requires yearly certification that chlorophenolic-containing biocides are not used; and continues the requirement of prohibiting the discharge of pentachlorophenol or trichlorophenol;
- The Draft Permit contains the same limits for BOD<sub>5</sub>, TSS and pH as the present permit; with revised limits for total recoverable aluminum, and the addition of limits for total recoverable copper and chronic WET testing;
- The Draft Permit increases the frequency of chronic toxicity testing from twice per year to four times per year to confirm that the discharge does not present toxicity problems;
- The Draft Permit requires semi-annual monitoring and reporting of effluent and ambient phosphorus levels. One of these semi-annual monitoring events must include groundwater well rehabilitation effluent;
- The Draft Permit requires that the vinyl screen set up in the fourth (final) lagoon to prevent "short-circuiting" is maintained; and
- The Draft Permit requires that the Permittee inform the regulatory agencies if any Contoocook River water withdrawal is used for process water and if any water withdrawal causes the river to drop below the 7Q10 flow.

EPA believes that the conditions and limitations contained within the proposed permit adequately protect all aquatic life, including those with designated EFH in the receiving water, and that further mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for these conclusions, EPA will contact NMFS Habitat Division.

## **7.0 ENDANGERED SPECIES ACT**

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Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended (the "Act"), grants authority to and imposes requirements upon federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and the habitats of such species that have been designated as critical ("critical habitat"). The NMFS administers Section 7 consultations for

marine species and anadromous fish. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species.

In consultation with and with the assistance of the Secretary of the Interior, Section 7(a)(2) of the Act requires every federal agency ensure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, will not jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat.

EPA has reviewed the available information pertaining to federal endangered or threatened species of fish and wildlife to see if any such listed species might potentially be impacted by the re-issuance of this NPDES permit. Previous consultations with the USFWS have indicated there are no endangered freshwater species presently known to reside in the area of the Contoocook River where the Monadnock Paper Mills discharges. No federally protected sturgeon species are expected to be found in this upstream tributary of the Merrimack River. Based on the normal distribution of these species, it is highly unlikely that they would be present near this discharge; therefore, no consultation under the Endangered Species Act is required.

If new information becomes available that changes the basis for this conclusion, EPA will notify the federal agency responsible for protection of the species and initiate consultation.

## **8.0 MONITORING AND REPORTING**

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The permit's monitoring requirements have been established to yield data representative of the facility's pollutant discharges under the authority of Sections 308(a) and 402(a)(2) of the CWA and consistent with 40 C.F.R. §§ 122.41 (j), 122.43(a), 122.44(i) and 122.48. The monitoring program in the permit specifies routine sampling and analysis which will provide ongoing, representative information on the levels of regulated constituents in the wastewater discharge streams. The approved analytical procedures are found in 40 C.F.R. §136 unless other procedures are explicitly required in the permit.

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed reporting period. The Permittee is obligated to monitor and report sampling results to EPA within the time specified within the permit. Timely reporting is essential for the regulatory agencies to expeditiously assess compliance with permit conditions.

The Draft Permit includes new provisions related to DMR submittals to EPA and the State. The Draft Permit requires that, no later than six months after the effective date of the permit, the Permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt-out request"). In the interim (until six months from the effective date of the permit), the Permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit DMRs electronically via a secure Internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 C.F.R. § 122.41 and § 403.12. NetDMR is accessed from the following url: <http://www.epa.gov/netdmr>. Further information about NetDMR can be found on the EPA Region 1 NetDMR website located at <http://www.epa.gov/region1/npdes/netdmr/index.html>. EPA currently conducts free training on the use of NetDMR, and anticipates that the availability of this training will continue to assist permittees with the transition to use of NetDMR. To learn more about upcoming trainings, please visit the EPA Region 1 NetDMR website <http://www.epa.gov/region1/npdes/netdmr/index.html>.

The Draft Permit also includes an “opt-out” request process. Permittees who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing to EPA, at least sixty (60) days prior to the date the facility would have otherwise been required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months from the date of EPA approval. The opt-outs expire at the end of this twelve (12) month period. Upon expiration, the Permittee must submit DMRs and reports to EPA using NetDMR, unless the Permittee submits a renewed opt-out request sixty (60) days prior to expiration of its opt-out, and such a request is approved by EPA.

In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR, subject to the same six month time frame and opt-out provisions as identified for NetDMR. Certain exceptions are provided in the permit such as for providing written notifications required under the Part II Standard Permit Conditions. Once a permittee begins submitting reports to EPA using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and the NHDES. Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the Draft Permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format. Hard copies of DMRs must be postmarked no later than the 15<sup>th</sup> day of the month following the completed reporting period.

## **9.0 STATE CERTIFICATION REQUIREMENTS**

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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 and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate State Standards or waives its right to certify as set forth in 40 C.F.R. § 124.53.

Upon public noticing of the Draft Permit, EPA is formally requesting that the State’s certifying authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

In this case, the NHDES is the certifying authority. EPA has discussed this Draft Permit with the Staff of the Wastewater Engineering Bureau and expects that the Draft Permit will be certified. Regulations governing state certification are set forth in 40 C.F.R. §§ 124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should 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. Since the State's certification is provided prior to 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. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public noticing. If the State believes that any conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The only exception to this is the sludge conditions/requirements implementing Section 405(d) of the CWA are not subject to the Section 401 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 the applicable procedures of 40 C.F.R. Part 124.

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 C.F.R. § 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 limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4 (d) and 40 C.F.R. § 122.44(d).

#### **10.0 PUBLIC COMMENT PERIOD, PUBLIC HEARING REQUESTS, AND PROCEDURES FOR FINAL DECISION**

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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:

Ms. Sharon DeMeo  
U.S. Environmental Protection Agency  
5 Post Office Square, Suite 1100  
Boston, Massachusetts 02109-3912  
Email: [demeo.sharon@epa.gov](mailto:demeo.sharon@epa.gov)  
Telephone: (617) 918-1995 Fax: (617) 918-0995

Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA-New England and the State Agency. 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 (30) days public notice whenever the Director finds that response to this notice indicates significant public interest. In reaching a final decision on the Draft Permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA New England's Boston office. Following the close of the comment period, and after a public hearing, if such hearing is held, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

May 2015  
Date

Ken Moraaff, Director  
Office of Ecosystem Protection,  
US Environmental Protection Agency

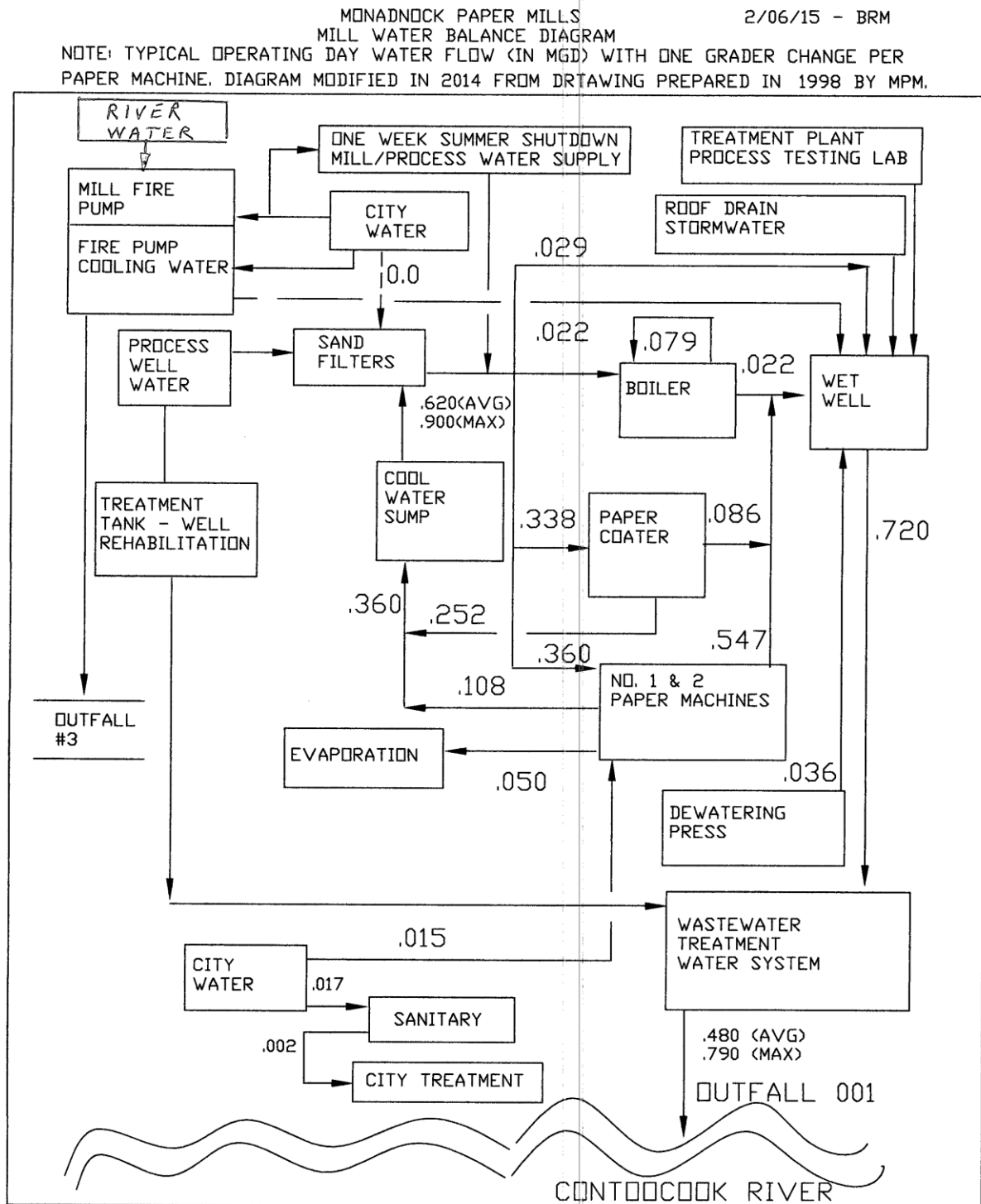


**Attachment A: Monadnock Paper Mills Facility Location  
(Bennington, NH)  
NH0000230**



Source: <https://maps.google.com/>

NH0000230



**Attachment C: Ambient and Effluent Data for Outfall 001  
NH0000230**

<u>Outfall 001</u>	Aluminum	Aluminum	BOD <sub>5</sub> sum	BOD <sub>5</sub> sum	BOD <sub>5</sub> win	BOD <sub>5</sub> win	Flow	Flow	pH	pH	TSS	TSS
Existing Limits →	0.83 mg/L	5.5 mg/L	300 lb/d	400 lb/d	400 lb/d	500 lb/d	1 MGD	1.3 MGD	6.5 SU	8 SU	300 lb/d	400 lb/d
Monitoring Period End Date ↓	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MIN	MAX	MO AVG	DAILY MX
01/31/2009	0.12	0.17	--	--	104.	128.	0.39	0.65	6.66	7.58	78.	113.
02/28/2009	0.145	0.16	--	--	75.	89.	0.33	0.57	6.83	7.11	54.	70.
03/31/2009	0.16	0.26	--	--	50.	60.	0.27	0.39	7.02	7.56	32.	40.
04/30/2009	0.16	0.17	59.	80.	--	--	0.31	0.4	7.18	7.95	68.	105.
05/31/2009	0.16	0.17	49.	69.	--	--	0.25	0.4	7.38	7.95	63.	91.
06/30/2009	0.14	0.252	29.	47.	--	--	0.36	0.56	7.15	7.79	46.	61.
07/31/2009	0.11	0.13	16.	30.	--	--	0.26	0.64	7.44	7.5	31.	64.
08/31/2009	0.105	0.11	38.	53.	--	--	0.42	0.8	7.09	7.5	78.	107.
09/30/2009	0.09	0.1	29.	37.	--	--	0.34	0.57	7.23	7.66	87.	219.
10/31/2009	0.064	0.1	24.	35.	--	--	0.29	0.54	7.17	7.49	34.	40.
11/30/2009	0.093	0.19	54.	65.	--	--	0.4	0.65	7.2	7.44	99.	150.
12/31/2009	0.115	0.14	--	--	50.	83.	0.34	0.63	7.11	7.45	52.	69.
01/31/2010	0.15	0.17	--	--	86.	113.	0.34	0.63	7.06	7.58	93.	176.
02/28/2010	0.113	0.17	--	--	97.	134.	0.33	0.62	7.13	7.45	119.	181.
03/31/2010	0.15	0.17	--	--	85.	122.	0.34	0.56	7.22	7.47	36.	49.
04/30/2010	0.1	0.12	68.	93.	--	--	0.42	0.61	7.11	7.51	58.	103.
05/31/2010	0.105	0.12	44.	62.	--	--	0.34	0.7	7.11	7.64	53.	106.
06/30/2010	0.125	0.13	46.	65.	--	--	0.4	0.63	6.91	7.52	47.	60.
07/31/2010	0.102	0.12	36.	58.	--	--	0.32	0.63	6.95	7.33	46.	79.
08/31/2010	0.135	0.15	56.	100.	--	--	0.42	0.69	7.07	7.4	66.	75.
09/30/2010	0.11	0.12	45.	57.	--	--	0.38	0.64	7.	7.44	75.	140.
10/31/2010	0.285	0.32	96.	172.	--	--	0.41	0.71	6.88	7.36	227.	322.
11/30/2010	0.165	0.18	154.	220.	--	--	0.35	0.68	6.76	7.16	114.	149.
12/31/2010	0.17	0.18	--	--	258.	488.	0.34	0.68	6.83	7.12	142.	218.
01/31/2011	0.16	0.2	--	--	191.	257.	0.34	0.58	6.85	7.2	135.	149.
02/28/2011	0.24	0.31	--	--	132.	234.	0.38	0.61	6.69	7.22	97.	154.
03/31/2011	0.168	0.19	--	--	113.	170.	0.43	0.6	6.98	7.21	91.	185.
04/30/2011	0.16	0.19	70.	85.	--	--	0.37	0.64	6.91	7.42	87.	100.
05/31/2011	0.105	0.11	37.	68.	--	--	0.31	0.6	6.96	7.63	47.	72.
06/30/2011	0.155	0.18	44.	63.	--	--	0.36	0.69	7.	7.57	67.	110.
07/31/2011	0.14	0.16	55.	63.	--	--	0.39	0.69	7.19	7.57	73.	86.
08/31/2011	0.14	0.16	55.	72.	--	--	0.42	0.79	7.14	9.46	109.	163.



<u>Outfall 001 Cont.</u>	Aluminum	Aluminum	BOD <sub>5</sub> sum	BOD <sub>5</sub> sum	BOD <sub>5</sub> win	BOD <sub>5</sub> win	Flow	Flow	pH	pH	TSS	TSS
Existing Limits →	0.83 mg/L	5.5 mg/L	300 lb/d	400 lb/d	400 lb/d	500 lb/d	1 MGD	1.3 MGD	6.5 SU	8 SU	300 lb/d	400 lb/d
Monitoring Period End Date ↓	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MIN	MAX	MO AVG	DAILY MX
09/30/2011	0.147	0.17	45.	70.	--	--	0.4	0.68	7.29	7.92	101.	130.
10/31/2011	0.145	0.15	38.	75.	--	--	0.39	0.63	7.25	7.65	56.	70.
11/30/2011	0.2	0.24	120.	159.	--	--	0.38	0.61	7.22	7.65	100.	128.
12/31/2011	0.275	0.36	--	--	192.	252.	0.43	0.61	7.	7.7	299.	466.
01/31/2012	0.203	0.35	--	--	241.	408.	0.37	0.62	7.09	7.63	329.	394.
02/29/2012	0.335	0.42	--	--	359.	420.	0.37	0.6	7.04	7.56	291.	362.
03/31/2012	0.188	0.3	--	--	339.	532.	0.39	0.6	6.99	7.35	189.	323.
04/30/2012	0.105	0.14	52.	74.	--	--	0.36	0.57	7.16	7.71	83.	123.
05/31/2012	0.127	0.15	48.	61.	--	--	0.41	0.61	7.35	7.78	78.	153.
06/30/2012	0.125	0.19	32.	43.	--	--	0.45	0.6	7.24	7.82	46.	62.
07/31/2012	0.101	0.14	34.	53.	--	--	0.36	0.65	7.06	7.59	44.	78.
08/31/2012	0.12	0.16	34.	46.	--	--	0.47	0.66	7.12	7.64	108.	158.
09/30/2012	0.145	0.16	36.	41.	--	--	0.41	0.68	6.98	7.79	103.	135.
10/31/2012	0.095	0.11	34.	44.	--	--	0.37	0.68	7.	7.4	71.	92.
11/30/2012	0.095	0.12	33.	43.	--	--	0.37	0.63	6.78	7.34	56.	63.
12/31/2012	0.095	0.1	--	--	38.	53.	0.31	0.67	7.01	7.54	77.	131.
01/31/2013	0.095	0.11	--	--	43.	88.	0.34	0.66	7.02	7.6	57.	101.
02/28/2013	0.13	0.2	--	--	63.	88.	0.39	0.61	6.9	7.54	99.	141.
03/31/2013	0.125	0.14	--	--	66.	112.	0.42	0.6	6.72	7.54	72.	140.
04/30/2013	0.11	0.12	38.	45.	--	--	0.42	0.67	6.85	7.52	45.	58.
05/31/2013	0.19	0.29	39.	44.	--	--	0.41	0.61	7.1	8.35	77.	111.
06/30/2013	0.08	0.11	40.	74.	--	--	0.39	0.68	6.99	7.56	70.	93.
07/31/2013	0.055	0.06	19.	40.	--	--	0.27	0.61	6.97	7.71	28.	59.
08/31/2013	0.1	0.12	34.	44.	--	--	0.42	0.68	6.99	7.64	69.	101.
09/30/2013	0.08	0.16	40.	53.	--	--	0.37	0.79	6.81	7.85	69.	120.
10/31/2013	0.195	0.2	40.	53.	--	--	0.4	0.62	7.	7.56	64.	85.
11/30/2013	0.135	0.14	52.	69.	--	--	0.4	0.67	6.96	7.83	80.	107.
12/31/2013	0.067	0.1	--	--	46.	69.	0.27	0.64	6.93	7.67	75.	108.
01/31/2014	0.13	0.18	--	--	53.	66.	0.39	0.66	6.97	7.52	90.	197.
02/28/2014	0.065	0.07	--	--	134.	225.	0.46	0.65	7.26	7.69	57.	116.
03/31/2014	0.075	0.08	--	--	145.	252.	0.43	0.65	7.14	7.74	55.	87.
04/30/2014	0.057	0.07	43.	57.	--	--	0.47	0.66	7.09	7.56	41.	52.
05/31/2014	0.07	0.09	45.	73.	--	--	0.45	0.67	6.94	8.26	132.	162.
06/30/2014	0.397	0.92	40.	58.	--	--	0.44	0.69	6.7	7.94	164.	219.

<b>Outfall 001 Cont.</b>	Aluminum	Aluminum	BOD <sub>5</sub> sum	BOD <sub>5</sub> sum	BOD <sub>5</sub> win	BOD <sub>5</sub> win	Flow	Flow	pH	pH	TSS	TSS
Existing Limits →	0.83 mg/L	5.5 mg/L	300 lb/d	400 lb/d	400 lb/d	500 lb/d	1 MGD	1.3 MGD	6.5 SU	8 SU	300 lb/d	400 lb/d
Monitoring Period End Date ↓	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MO AVG	DAILY MX	MIN	MAX	MO AVG	DAILY MX
07/31/2014	0.285	0.35	38.	61.	--	--	0.34	0.68	6.91	7.66	142.	209.
08/31/2014	0.25	0.29	39.	50.	--	--	0.35	0.68	7.36	7.82	154.	263.
09/30/2014	0.32	0.38	33.	57.	--	--	0.32	0.62	7.18	7.85	56.	88.
<b>Average</b>	0.144	0.186	46.739	66.978	128.696	193.17	0.373	0.633	7.037	7.619	90.30	134.65
<b>Maximum</b>	0.397	0.92	154.	220.	359.	532.	0.47	0.8		9.46	329.	466.
<b>Minimum</b>									6.66			

<b>Contoocook Ambient Data From WET Test Reports</b>	Al	Cd	Cr	Cu	Pb	Ni	Zn	Hardness
Monitoring Period End Date ↓	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
03/31/2009	0.13	0.	--	0.004	0.001	0.	0.13	11.
09/30/2009	0.16	0.	0.	0.	0.	0.	0.022	7.6
03/31/2010	0.	0.	0.	0.01	0.001	0.	0.021	11.
09/30/2010	0.077	0.	0.	0.006	0.0009	0.	0.024	14.
03/31/2011	0.18	0.	0.	0.004	0.001	0.	0.018	11.
09/30/2011	0.094	0.	0.	0.006	0.0009	0.	0.007	12.
03/31/2012	0.098	0.	0.	0.007	0.0006	0.	0.042	11.
09/30/2012	0.095	0.	0.	0.004	0.001	0.	0.015	13.
03/31/2013	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
09/30/2013	0.089	0.	0.	0.005	0.0009	0.	0.04	12.
03/31/2014	0.078	0.	0.	0.002	0.	0.	0.007	11.
09/30/2014	0.15	0.	0.	0.002	0.0006	0.	0.023	8.3
*06/23/2014	0.0608			0.0008	0.0004			
*06/24/2014	0.0808			0.0006	0.0003			
*06/25/2014	0.0621			0.0005	0.0004			
*06/26/2014	0.264			0.0007	0.0004			
<b>Median</b>	0.095	0.	0.	0.003	0.0006	0.	0.023	11.

\* Represents additional ambient sampling using USEPA Method 1669 *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels* (i.e., "clean sampling" methodology).

<b>Outfall 001 WET Test Data</b>	<b>Al</b>	<b>Cd</b>	<b>Cr</b>	<b>Cu</b>	<b>Pb</b>	<b>Ni</b>	<b>Zn</b>	<b>Hardness</b>	<b>LC50 Acute Daphnid</b>	<b>LC50 Acute Pimephales</b>	<b>Ammonia</b>	<b>NOEL Chronic Daphnid</b>	<b>NOEL Chronic Pimephales</b>	<b>Total Phosphorus</b>
<b>Existing Limits →</b>	<b>Report</b>	<b>Report</b>	<b>Report</b>	<b>Report</b>	<b>Report</b>	<b>Report</b>	<b>Report</b>	<b>Report</b>	<b>100 %</b>	<b>100 %</b>	<b>Report</b>	<b>Report %</b>	<b>Report %</b>	<b>Report</b>
<b>Monitoring Period End Date ↓</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>DAILY MIN</b>	<b>DAILY MIN</b>	<b>mg/L</b>	<b>DAILY MIN</b>	<b>DAILY MIN</b>	<b>mg/L</b>
<b>03/31/2009</b>	0.19	0.0005	--	0.004	0.0006	0.002	0.013	170.	100.	100.	0.9	50.	100.	0.7
<b>09/30/2009</b>	0.07	0.	0.	0.	0.	0.	0.027	180.	100.	100.	1.3	100.	100.	0.44
<b>03/31/2010</b>	0.	0.	0.	0.012	0.0007	0.	0.019	170.	100.	100.	3.4	25.	100.	0.51
<b>09/30/2010</b>	0.086	0.	0.	0.004	0.	0.002	0.01	150.	100.	100.	1.1	100.	100.	0.44
<b>03/31/2011</b>	0.15	0.	0.	0.007	0.0006	0.	0.012	160.	100.	100.	0.75	100.	100.	0.31
<b>09/30/2011</b>	0.13	0.	0.	0.005	0.	0.004	0.007	150.	100.	100.	7.2	25.	100.	0.74
<b>03/31/2012</b>	0.16	0.	0.	0.006	0.	0.003	0.01	250.	100.	100.	5.	12.5	100.	0.45
<b>09/30/2012</b>	0.073	0.	0.	0.004	0.	0.004	0.006	190.	100.	100.	0.17	100.	100.	0.22
<b>03/31/2013</b>	0.051	0.	0.	0.008	0.	0.003	0.007	160.	100.	100.	2.8	6.25	50.	0.54
<b>09/30/2013</b>	0.06	0.	0.	0.005	0.	0.007	0.026	180.	100.	100.	2.6	100.	100.	0.56
<b>03/31/2014</b>	0.07	0.	0.	0.002	0.	0.	0.005	160.	100.	100.	1.	25.	100.	0.21
<b>09/30/2014</b>	0.15	0.	0.	0.	0.	0.003	0.017	120.	100.	100.	0.83	25.	100.	0.24
<b>Median</b>	0.0795	0.	0.	0.0045	0.	0.0025	0.011	165.	100.	100.	1.2	37.5	100.	0.445
<b>Maximum</b>	0.19	0.0005	0.	0.012	0.0007	0.007	0.027	250.	100.	100.	7.2	100.	100.	0.74
<b>95th %</b>	0.3465*	0.	0.	0.0109	0.0007	0.0058	0.0289	--	--	--	--	--	--	--

\*Al includes monthly data

## ATTACHMENT D: 7Q10 and Dilution Factor

**NH0000230**

	Spatial Reference	WS Area (sq.mi.)(A)	Cotton Drift Area (sq.mi.)(D)	Mean Basin Elevation (feet)(Y)	Dingman "X"	Sub-area Dingman 7Q10(10 <sup>x</sup> )
1.	MPM to Peterborough and Nubanusit Gages	76.33	8.120	957.9	0.675014	4.7317
2.	Henniker Gage to Peterborough and Nubanusit Gages	252.04	17.971	1099.1	1.327712	21.2673

$$7Q10 = 10^x$$

$$X = 2.22 + 1.25 \log_{10} A + .0004Y + 1.49D$$

A - Drainage Area in Square Miles

Y - Mean Basin Elevation in Feet above Sea Level

D - Fraction of Basin Covered with Coarse-grained (Cotton) Stratified Drift in Contact with Streams

$$\text{Ratio: Dingman 7Q10 for \#1/Dingman 7Q10 for \#2} = 0.2225$$

$$\text{Actual 7Q10 for area from Henniker Gage to upstream gages: } 23.11 \text{ cfs}$$

$$23.11 \times 0.2225 = 5.14 \text{ cfs}$$

$$\text{Actual 7Q10 at Peterborough Gage (1966-77)} \quad 8.11 \text{ cfs}$$

$$\text{Actual 7Q10 at Nubanusit Brook Gage (1951-89)} \quad \underline{3.22 \text{ cfs}}$$

$$\text{Estimated 7Q10 just downstream of MPM: } 16.47 \text{ cfs}$$

$$\text{Dilution Factor (DF)} = \frac{Q_{001}}{(Q_{PWF} \times 1.547)} \times 0.9$$

Where:

Q <sub>001</sub>	Equivalent 7Q10 flow at Outfall 001, in cfs. Q <sub>001</sub> = 16.47 cfs
Q <sub>PWF</sub>	Monadnock Paper Mill's permitted process wastewater flow, in MGD Q <sub>PWF</sub> = 1.3 MGD; Acute Limit; based on daily maximum flow Q <sub>PWF</sub> = 1.0 MGD; Chronic Limit, based on monthly average flow
1.547	Conversion Factor; MGD to cfs
0.9	10% Reserve of river's assimilative capacity (NH Env-Wq 1705.01)
DF	<ul style="list-style-type: none"> <li>Acute DF: 7.4</li> <li>Chronic DF: 9.6</li> </ul>

## ATTACHMENT E: Statistical Approach for Metals Effluent Data (95<sup>th</sup> percentile)

NH0000230

EPA bases its determination of “reasonable potential” on a characterization of the upper bound of expected effluent concentrations based on a statistical analysis of the available monitoring data. As noted in the *Technical Support Document for Water Quality Based Toxics Control* (EPA 1991) (“TSD”), “[a]ll monitoring data, including results for concentrations of individual chemicals, have some degree of uncertainty associated with them. The more limited the amount of test data available, the larger the uncertainty.” Thus with a limited data set, the maximum concentration that has been found in the samples may not reflect the full range of effluent concentration.

To account for this, EPA has developed a statistical approach to characterizing effluent variability when the monitoring dataset includes 10 or more samples.<sup>1</sup> As “experience has shown that daily pollutant discharges are generally lognormally distributed,” *TSD* at App. E, EPA uses a lognormal distribution to model the shape of the observed data, unless analysis indicates a different distributional model provides a better fit to the data. The model parameters (mean and variance) are derived from the monitoring data. The model parameter  $\mu$  is the mean of the natural logs of the monitoring data values, while  $\sigma$  is the standard deviation of the natural logs of the monitoring data values.

The lognormal distribution generally provides a good fit to environmental data because it is bounded on the lower end (i.e. you cannot have pollutant concentrations less than zero) and is positively skewed. It also has the practical benefit that if an original lognormal data set  $X$  is logarithmically transformed (i.e.  $Y = \ln[X]$ ) the resulting variable  $Y$  will be normally distributed. Then the upper percentile expected values of  $X$  can be calculated using the z-score of the standardized normal distribution (i.e. the normal distribution with mean = 0 and variance = 1), a common and relatively simple statistical calculation. The  $p^{\text{th}}$  percentile of  $X$  is estimated by

$$X_p = \exp(\mu_y + z_p \times \sigma_y),$$

where  $\mu_y$  = mean of  $Y$   
 $\sigma_y$  = standard deviation of  $Y$   
 $Y = \ln[X]$   
 $z_p$  = the z-score for percentile “p”

For the 95<sup>th</sup> percentile,  $z_{95} = 1.645$ , so that

$$X_{95} = \exp(\mu_y + 1.645 \times \sigma_y)$$

The 95th percentile value is used to determine whether a discharge has a reasonable potential to cause or contribute to an exceedance of a water quality standard. The combination of the upper bound effluent concentration with dilution in the receiving water is calculated to determine whether the water quality criteria will be exceeded.

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<sup>1</sup> A different statistical approach is applied where the monitoring data set includes less than 10 samples.

### Datasets including non-detect values

The *TSD* also includes a procedure for determine such percentiles when the dataset includes non-detect results, based on a delta-lognormal distribution. In the delta-lognormal procedures, nondetect values are weighted in proportion to their occurrence in the data. The values above the detection limit are assumed to be lognormally distributed values.

The statistical derivation of the delta-lognormal upper bounds is quite complex and is set forth in the TSD at Appendix E. Calculation of the 95<sup>th</sup> percentile of the distribution, however, involves a relatively straightforward adjustment of the equations given above for the lognormal distribution, as follows.

For the deltalognormal, the pth percentile of X, referred to here as  $X_p^*$ , is given by

$$X_p^* = \exp(\mu_y^* + z_p^* \times \sigma_y^*),$$

where  $\mu_y^*$  = mean of Y values for data points above the detection limit;

$\sigma_y^*$  = standard deviation of Y for data points above the detection limit;

$Y = \ln[X^*]$ ;

$X^*$  = monitoring data above detection limit; and

$z_p^*$  = an adjusted z score that is given by the equation:

$$z_p^* = \text{z-score}[(p - \delta)/(1 - \delta)]$$

where  $\delta$  is the proportion of nondetects in the monitoring dataset.

$k$  = total number of dataset

$r$  = number of nondetect values in the dataset

$\delta = r/k$

For the 95<sup>th</sup> percentile, this takes the form of  $z_p^* = \text{z-score}[(.95 - \delta)/(1 - \delta)]$ . The resulting values of  $z_p^*$  for various values of  $\delta$  is set forth in the table below; the calculation is easily performed in excel or other spreadsheet programs.

**Example calculations of  $z_p^*$  for 95th percentile**

$\delta$	$(0.95 - \delta)/(1 - \delta)$	$z_p^*$
0	0.95	1.645
0.1	0.94	1.593
0.3	0.93	1.465
0.5	0.90	1.282
0.7	0.83	0.967

**RESPONSE TO COMMENTS  
REISSUANCE OF NPDES PERMIT NO. NH0000230**

**MONADNOCK PAPER MILLS  
117 ANTRIM ROAD  
BENNINGTON, NEW HAMPSHIRE**

In accordance with the provisions of 40 C.F.R. §124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit, No. NH0000230. The response to comments explains and supports the EPA determinations that form the basis of the Final Permit. From May 7, 2015 through June 26, 2015, Region 1 of the U.S. Environmental Protection Agency (EPA or Region 1) solicited public comments on the Draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the Monadnock Paper Mills facility in New Hampshire (MPM or the Permittee). Region 1 received comments from the Permittee, which were submitted June 19, 2015. Below are the comments received verbatim and EPA's responses to those comments.

Although EPA's decision-making process has benefitted from the comments and additional information submitted, the information and arguments presented did not raise any substantial new questions concerning the permit. However, as a result of comments on the Draft Permit, EPA improved certain analyses, revised certain permit conditions and made certain minor changes and clarifications. The analyses underlying these changes is explained in the responses to individual comments that follow and is reflected in the Final Permit. A summary of the changes made in the Final Permit is presented below. Copies of the Final Permit may be obtained by writing or calling Sharon DeMeo, United States Environmental Protection Agency, 5 Post Office Square, Suite 100 (Mail Code: OEP06-1), Boston, Massachusetts 02109-3912; Telephone (617) 918-1995; Email [demeo.sharon@epa.gov](mailto:demeo.sharon@epa.gov). Copies may also be obtained from the EPA Region 1 web site at <http://www.epa.gov/region1/npdes/index.html>.

**Summary of Changes in the Final Permit**

1. Corrections

Correction: Several typographical corrections were made to the Final Permit that include adjustment in line spacing, adjustment in sentence spacing, adjustment in numbering, adjustment in format, and correction of grammar, punctuation, capitalization or spelling errors. No further rationale is warranted.

Correction: Several permit conditions included in the Final Permit may appear in footnotes and/or parts that differ from the footnote and/or part in which the permit condition was proposed in the Draft Permit. No further rationale is warranted.

Correction: Several adjustments to grammar or word phrasing were made to the Final Permit which do not add any new permit condition. Any permit condition included in the final permit to which adjustments were made for this reason remains substantially similar to the permit condition as proposed in the Draft Permit. No further rationale is warranted.

2. Cover Page

Deletion: The permit effective date sentence fragments which stated, “[i]f comments are received ...” and “[i]f no comments are received, this permit shall become effective upon signature,” have been removed since public comments were received.

Change: The permit page number count was changed as a result of changes between the Draft and Final Permits.

Deletion: The “Draft” watermark and header were removed.

3. Part I.A.

Change: The average monthly copper limit has been removed and the maximum daily limit has been changed to 14.5 ug/L. See response to comment 1.

Deletion: Aluminum average monthly limit and reporting requirements for Outfall 001 have been removed. The corresponding footnote has been updated to reflect this change. See response to comment 2.

Deletion: Footnote #2 defining “average monthly” and “maximum daily” in the Draft Permit was removed since it was redundant to definitions provided in Part II – Standard Conditions.

Addition: The definition of what constitutes semiannual sampling periods (2/year) was added to Draft Permit footnote #3 (Final Permit footnote #2) for clarification. No further rationale is warranted.

Change: The Draft Permit requirement (Part I.A.3.a) has been changed as follows: “[t]he Permittee shall not use Contoocook River water for non-contact cooling purposes *except when the cooling water is used in a manufacturing process as process water either before or after it is used for cooling.*” See response to comment 3.

Addition: The Final Permit includes the requirement that the Permittee notify the regulatory agencies if any Contoocook River water withdrawal is used for process water. See response to comment 3.



Addition: Inclusion of all of the chemical analyses required by the WET Test protocols (Attachments A and B) to the monitoring requirements table, Part I.A.1. The corresponding footnote (#10) has been updated to reflect this change. See response to comment 4.

**Comment 1:**

Part I.A.I. Effluent Characteristics - Copper (Permit Page 2 of 11)

The draft NPDES permit for Monadnock Paper Mills (MPM) contains discharge limitations for copper based upon whole effluent toxicity testing (WET) as well as four samples collected using clean sampling techniques and reduced method detection limits described in *Method 1669 Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels*. It is our understanding that calculations conducted by the U.S. Environmental Protection Agency (USEPA) to evaluate whether there is a reasonable potential to cause or contribute to an exceedance of water quality criteria were conducted using a combination of these two data sets. The median value for copper used as an upstream calculation was 3 ug/L and using this value resulted in downstream concentrations that exceeded chronic and acute criteria. These calculations are summarized in Table 5.2 and 5.3 in the draft permit Fact Sheet.

Analytical data clearly show that the upstream copper concentrations derived through Method 1669 sampling methods were much lower than concentrations derived through the WET samples and it is not appropriate to combine WET and Method 1669 sampling results. The median copper value using the Method 1669 samples was 0.65 ug/L and substituting this value into Table 5.2 from the draft permit Fact Sheet yields a downstream resultant copper concentration of 1.61 ug/L which is below the chronic copper criteria multiplied by 90% for assimilative capacity (2.98 ug/L). Similarly, substituting the 0.65 ug/L median copper value into Table 5.3 for acute criteria yields a downstream resultant copper concentration of 2.45 ug/L which is below the acute copper criteria multiplied by 90% for assimilative capacity (3.5 ug/L).

The Method 1669 data clearly, and far more accurately demonstrate that the background levels of copper in the Contoocook River upstream of the 001 outfall are very low in concentration. MPM collected background samples using Method 1669 sampling techniques for the specific purposes of quantifying background metals concentrations at very low levels. The plan for sample collection strategy was developed in coordination with the New Hampshire Department of Environmental Services (NHDES) and sampling was conducted in accordance with a quality assurance and field sampling plan dated June 2, 2014 which was reviewed by NHDES. Using data collected using clean techniques and analytical methods capable of very low detection limits shows that there is very little potential for the MPM discharge to create an exceedance of chronic and acute copper criteria. Revised Tables 5.2 and 5.3 using clean techniques data are attached.

Accordingly, Monadnock respectfully requests that total copper be removed from the NPDES permit as a discharge limitation.

**Response to Comment 1:**

EPA appreciates the effort and initiative taken by Monadnock Paper Mills to collect supplemental ambient data for copper, as well as for aluminum and lead. The data submitted is valuable in determining whether the facility has the reasonable potential to cause or contribute to water quality violations in the Contoocook River. The Permittee is asking that instead of supplementing the semiannual WET test copper data, that the clean sampling copper data replace the WET test data for the reasonable potential calculation. However, EPA's practice is to only allow data to be replaced if there is a legitimate reason why the data is not valid (e.g., samples had been contaminated due to improper collection procedures) and not simply, as the Permittee claims, that the clean sampling data should be considered as more representative. Further, the more limited the amount of test data available, the larger the uncertainty. It is quite likely that small selected subsets of data can be found that appear to support any number of theories. A defensible statistical approach, on the other hand, includes all data unless a clear basis exists for its exclusion.

Therefore, EPA maintains that both the semiannual WET test data and the clean sampling data shall be used for the reasonable potential calculation. However, EPA has considered the newest WET data submitted in February 2015 and re-evaluated the reasonable potential calculations for copper to include this new data point ( $<0.002$  mg/L) for copper in the receiving water. The results are that there is no longer reasonable potential to violate the chronic copper criteria and the recalculated acute limit is 14.5 ug/L (maximum daily). These changes are reflected in the Final Permit.

Going forward, if there are any deficiencies in the Permittee's WET testing procedures, the Permittee should ensure that future ambient data are collected in accordance with WET protocol (Attachments A and B of Final Permit) at a representative location and that they may be used in future permitting decisions.

**Comment 2:**

**Part 1.A.3. Effluent Characteristics - Aluminum (Permit Page 2 of 11)**

It was our understanding in consulting with NHDES that acid soluble aluminum concentrations would be considered in evaluating future permit limits. This understanding was based on discussions NHDES was engaged in at the time involving NPDES permitting of the wastewater treatment plant in Manchester, New Hampshire. It is our further understanding that acid soluble aluminum was considered for Manchester's permit by the USEPA and the NHDES as more representative of the bioavailable/toxic aluminum fraction relative to the total recoverable

concentrations of aluminum.<sup>1,2</sup> MPM's initial draft permit included a stringent effluent limitation for aluminum (compared to the existing permit) and therefore the clean techniques background sampling strategy that was developed in coordination with NHDES, and included an evaluation of acid soluble aluminum consistent with the technical evaluation of data used in Manchester's permit.

Acid-soluble aluminum concentrations were reported along with other sampling results collected utilizing Method 1669 sampling techniques in the GeoInsight, Inc. letter to MPM dated December 17, 2014. The median of acid-soluble aluminum concentrations was 42.4 ug/L relative to a total recoverable concentration of 71.4 ug/L. The reasonable potential to exceed chronic standards calculation from Table 5.2 in the Draft Permit Fact Sheet was rerun for aluminum using the median acid soluble concentration to derive a resultant downstream aluminum concentration of 71.01 ug/L. Consistent with calculations provided in Manchester's permit and fact sheet, this concentration was compared to a revised chronic standard derived by dividing the chronic total recoverable aluminum criteria (87 ug/L) by the fraction of the median acid soluble to total recoverable concentrations ( $42.4 \text{ ug/L} / 71.4 \text{ ug/L} = 0.59$ ) which is 147.4 ug/L. As with other metals, 90% of this standard was used (131.2 ug/L) to allow additional assimilative capacity. The resultant acid soluble downstream concentration (71.01 ug/L) is below the corrected standard (131.2 ug/L) demonstrating that aluminum discharges do not have the reasonable potential to exceed chronic toxicity standards. Acute aluminum calculations were not rerun because the Fact Sheet concluded there was no reasonable potential to exceed acute standards.

This general principle had been established with the Manchester Aluminum Study Report, submitted in 2011. Monadnock designed the 2014 study as "proof of concept" for both this principle as well as the clean sampling/low level detection testing discussed in the previous comments on Copper. NHDES accepted our study plan. Monadnock proceeded with the study, at a cost of over fifteen thousand dollars, with the strong assumption that this highly qualified data would be solely used for the reasonable potential determinations.

This analysis was sufficient for Manchester to demonstrate that their discharge did not have the potential to exceed applicable aluminum criteria. Accordingly, MPM respectfully requests that USEPA consistently determine that an aluminum discharge limitation is similarly not required for MPM's discharge. Refer to the revised Table 5.2 (included) for a summary of pertinent calculations.

A copy of the MPM River Quality Assurance Sampling Plan, dated 6/2/2014, as well as the MPM Background River Quality Assessment Report, dated 12/17/2014 supporting both of the

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<sup>1</sup> State of New Hampshire Department of Environmental Services, Aluminum, Hardness, pH and Turbidity Monitoring in the Merrimack River in Manchester as part of the upper Merrimack River Project: 2009 Sampling and Analysis Plan Prepared by Peg Foss, June, 2009.

<sup>2</sup> NPDES Permit NH0100447, supporting Fact Sheet and Materials, dated February 11, 2015.

copper limits comment and the aluminum limits comment have been sent to Sharon DeMeo, EPA permit writer, via email.

**Response to Comment 2:**

EPA agrees that in certain cases where there is sufficient, valid acid-soluble aluminum data, it can be considered in the determination of permit limits. Although the water quality criteria for most metals is presented as either dissolved or total recoverable, in a letter from NHDES to EPA dated July 1, 2014, NHDES stated that the aluminum criteria presented in the New Hampshire water quality regulations (Env-Wq-1700) should be applied in terms of acid-soluble aluminum. The letter goes on to say:

*New Hampshire's aluminum criteria are based on EPA's 1988 ambient water quality criteria document for aluminum<sup>1</sup>. According to this document, acid-soluble aluminum is operationally defined as “[a]luminum that passes through a 0.45 um membrane filter after the sample has been acidified to a pH at between 1.5 and 2.0 with nitric acid”<sup>2</sup>. For the many reasons listed in the "Implementation" section of the EPA document, acid-soluble aluminum is considered a better measurement of the forms that are toxic to aquatic life or that can be readily converted to toxic forms under natural conditions.*

Unlike the 2009-2010 Manchester Aluminum Study that produced 48 acid-soluble aluminum and total recoverable aluminum data sets, Monadnock Paper Mills submitted four data sets that were thought to represent the receiving water upstream of the discharge. This information is tabulated below.

Date	06/23/14	08/28/14	09/10/14	10/27/14
River flow	low	low	low	medium
Al (total)	60.8	80.8	62.1	264
Al (acid soluble)	36.9	46.0	38.9	172
Fraction of acid-soluble to total recoverable Al	0.607	0.569	0.626	0.652

EPA evaluated the Monadnock data and found that although there is a limited amount of data, it does appear to adequately represent the existing site-specific conditions of the Contoocook River just upstream of the MPM discharge. This determination is based on the combination of the following factors: 1) the acid-soluble to total recoverable aluminum fractions are all comparable even though they are taken in different months and at different flow regimes, as shown in the above table, 2) samples collected using clean sampling techniques and reduced method detection limits, and 3)

sufficient time intervals between sample collections. Therefore, EPA has reevaluated the aluminum limit using the acid-soluble data consistent with the interpretation of the criteria by NHDES.

Based on the median of the fractions of acid-soluble to total recoverable aluminum data in the table above (0.62), the acid-soluble aluminum criteria of 87 ug/l (chronic) can be converted to total recoverable criteria by dividing the 87 ug/L by 0.62 and then multiplying by 0.9, to allow for assimilative capacity. The resulting chronic total recoverable criteria is equal to 127 ug/l.<sup>3</sup>

The potential downstream total recoverable concentration of 118.6 ug/L, which is shown on Table 5.2 - Chronic Reasonable Potential and Limits Determination, page 26 of the Fact Sheet, is then compared to the new recoverable criteria of 127 ug/l.<sup>4</sup> The result (118.6 ug/L is below 127 ug/L) demonstrates that aluminum in the MPM discharge does not have a reasonable potential to exceed chronic toxicity standards. Therefore, it is not necessary to include a limit for aluminum in the permit and the average monthly aluminum limit of 87 ug/L is removed from the Final Permit. This is also a change from the previous 2007 permit where the average monthly limit was 0.83 mg/L. The removal of the average monthly limit from the 2007 permit is not considered a violation of anti-backsliding provisions of the CWA because data acquired during the last permit term and this analysis constitute new information. *See* 40 C.F.R. §122.44(l)(i) and CWA Section 402(o)(2).

Semiannual sampling and reporting of aluminum for both the effluent and the receiving water is still a requirement in the Final Permit (via WET Testing). In addition, the Permittee should be aware that more updated acid soluble data may be needed for future reasonable potential analyses.<sup>5</sup>

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<sup>3</sup> This result is slightly different than what is presented in the Permittee's comment (131.2 ug/L). Based on one of EPA's previous analyses for Manchester, the Permittee uses the median value of the acid-soluble concentrations and the median value of the total recoverable concentrations to calculate the fraction of acid-soluble to total recoverable aluminum. However, EPA has determined that it is more appropriate to first calculate the fraction for each sampling event separately and then use the median of those fractions in the calculation to convert to total recoverable criteria.

<sup>4</sup> Within the comments submitted, the Permittee incorrectly compares an acid soluble downstream concentration (71.01 ug/L) with the site-specific total recoverable criteria. Once the criteria is converted to total recoverable aluminum, the subsequent potential analysis should be done using only total recoverable data.

<sup>5</sup> While the acid-soluble aluminum data presented by the Permittee was sufficient to develop the aluminum criteria for this permit reissuance, EPA notes that for future reissuances EPA may require updated acid-soluble data to confirm that the acid-soluble fraction in the receiving water has not changed substantially. Although acid-soluble aluminum monitoring is not a permit requirement, it may be in the Permittee's best interest to perform such sampling and provide a sufficient data set at the time of the next permit reissuance.

**Comment 3:****Part I.A.3. Additional Discharge Requirements** (Permit Page 6 of 11) and **Fact Sheet, Section 4.4: Cooling Water Intake Structure**

The Fact Sheet states “The Permittee has decided to use town water to cool the fire pump and has made arrangements to change the piping. Therefore, the Draft Permit prohibits the use of river water for non-contact cooling purposes.”

In pursuing our decision to use town water to cool the fire pump we have learned from our property and risk management insurance provider, that they have reservations with recommending this modification. We are currently in the process of working with our insurance provider to identify and qualify alternatives for approved fire pump cooling. Some of these alternatives could include reusing the cooling water as process water. Should we elect this option after evaluating other options, we do not believe it would represent a “once-through non-contact cooling water application”.

Therefore we request that EPA remove the additional discharge requirement I.A.3.a. on page 6 of the draft permit prohibiting the use of river water for non-contact cooling purposes.

**Response to Comment 3:**

The Permittee does not explain the basis of the reservations that the property and risk management insurance provider has for using town water instead of river water to cool the fire suppression system pump. Therefore, EPA is unable to respond to what those concerns might be. However, the Permittee is correct in assuming that if all of the cooling water is subsequently used as process water, MPM would not be subject to CWA § 316(b) requirements. This conclusion is informed by the definition of *cooling water* in the Existing Facilities Rule (New Rule) that became effective October 14, 2014, which states in part that

...cooling water that is used in a manufacturing process either before or after it is used for cooling as process water, is not considered cooling water for the purposes of calculating the percentage of a facility’s intake flow that is used for cooling purposes in § 125.91(a)(3).

79 Fed Reg 48431 – 40 C.F.R. §125.92(e). Thus, if cooling water is used as process water then it is no longer considered cooling water relative to CWA § 316(b). The Permittee states it is assessing alternatives that involve the reuse of cooling water as process water. To allow for the possible selection and implementation of such an alternative, EPA has changed the permit requirement at Part I.A.3.a as follows: “[t]he Permittee shall not use Contoocook River water for non-contact cooling purposes *except when the cooling water is used in a manufacturing process as process water either before or after it is used for cooling*” (new language in italics).

As stated in its comment, the Permittee is currently working to identify and qualify other alternatives for fire pump cooling that is approved by their insurance provider. If the Permittee

decides to continue with its current practice or the accepted alternative involves the use of river water for cooling without the additional use as process water, CWA § 316(b) would apply to the cooling water intake structure. In this case a permit modification would be necessary to include best technology available (BTA) requirements based on best professional judgment (BPJ). Furthermore, such a BTA determination would be informed by the CWA § 316(b) provisions of the current General Permit for Non-Contact Cooling Water Discharges (NHG250000).

In addition, EPA neglected to include the requirement in the Draft Permit, as described on page 16 of the Fact Sheet that the Permittee notify the regulatory agencies if any Contoocook River water withdrawal is used for process water. This oversight has been corrected for the Final Permit (see Part I.A.3.h).

**Comment 4:**

**Section I.A.I Footnotes #9 (Permit Page 5 of 11)**

The requirements for dilution water/receiving water (in the event the receiving stream continues to prove toxic or unreliable) under this section are redundant and burdensome.

The permit requires that [sic] the permittee use receiving water immediately upstream of the Outfall 001, and if toxicity tests shows the receiving water to be toxic or unreliable, follow procedures that would include numerous additional tests run and approval requests written to “re-qualify” for approval to use an alternate dilution water for “immediate decision” as well as “use in future WET tests”, for toxicity testing.

Our records show on June 9, 1995, EPA granted Monadnock “authorization to use the standard dilution water” after initial toxicity testing showed the upstream Contoocook River water to be toxic.

During the past two permit periods our contract lab has used synthetic reconstituted water prepared according to protocol (EPA 2002) as the test diluent. This water has been used by the lab to successfully culture freshwater organisms since 1992.

As Monadnock has received previous permission to use laboratory prepared water in accordance with EPA guidance, we expect to continue this practice without performing additional tests on “site water” or “receiving water”, or requesting additional approvals, as the Contoocook River water has already been shown to be toxic.

**Response to Comment 4:**

EPA’s NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs), Attachment G, “NPDES Whole Effluent Toxicity Testing, Monitoring and Reporting” indicates that “[a]t a minimum, EPA will review alternate dilution water authorizations during Permit reissuance.” MPM was granted authorization to use alternate dilution water 20 years ago “after initial toxicity testing showed the upstream Contoocook River water to be toxic.”

However, EPA is hopeful that water quality has improved since that time. Therefore, EPA evaluated eight of the most recent WET test reports and compared the receiving water test control data with the minimum test acceptability criteria (TAC). Generally, for acute testing the TAC is 90% survival for each species (*Ceriodaphnia dubia* and Fathead Minnow). For chronic testing, survival and growth is evaluated for the Fathead Minnow (TAC is 80% survival and growth must amount to an average minimum of 0.25mg) and survival and reproduction is evaluated for *Ceriodaphnia dubia* (TAC is 80% survival and for reproduction - 60% of the surviving females must have 3 broods with an average neonate production minimum of 15 young). This information can be found at the following locations:

**Acute WET methods:** [http://water.epa.gov/scitech/methods/cwa/wet/disk2\\_index.cfm](http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm)

See Section 9.17

Fathead Minnow, *Pimephales promelas*, Survival - Table 14, #23

*Ceriodaphnia dubia*, Survival - Table 12, #23

**Chronic WET methods:** [http://water.epa.gov/scitech/methods/cwa/wet/disk3\\_index.cfm](http://water.epa.gov/scitech/methods/cwa/wet/disk3_index.cfm)

Section 11 Fathead Minnow, *Pimephales promelas*, Larval Survival & Growth

Subsection 11.11, Table 1, #22

Section 13 *Ceriodaphnia dubia*, Survival and Reproduction

Subsection 13.12, Table 3, #21

If the receiving water control data meets TAC then the receiving water should be used as the test diluent. This is important because the receiving water “more closely simulates effluent/receiving water interactions.” EPA’s Technical Support Document for Water Quality-based Toxics Control, March 1991, EPA/505/2-90-001, p. 4. However, if the receiving water control data does not meet TAC then alternate dilution water should be used as the test diluent. More specifically, EPA’s policy is that alternate dilution water (i.e., lab water) can be used “in future WET tests where there are two recent documented incidents of site water toxicity associated with a particular test species.” EPA, Region 1, NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) Report Year 2010, Attachment G, p. G-3.

The following tables provides a summary of the chronic and modified acute exposure assay data for both species, comparing results using laboratory water (Lab) with results using receiving water (RW):



<b>daphnid - C. dubia</b>							
		<b>Mean % Survival Day 8</b>	<b>Day 7</b>	<b>Day 6</b>	<b>Mean Reproduction (Juv/Female)</b>		<b>% Females Producing 3 Broods</b>
Feb 2015	Lab	90			24.6		90
	RW	100			28		100
Aug 2104	Lab	100			26.4		90
	RW	100			26.4		80
Feb 2104	Lab	100			34.7		100
	RW	100			17		30
Aug 2103	Lab		100		34.4		100
	RW		90		21.7		70
Feb 2013	Lab		100		24.5		80
	RW		100		22.4		100
July 2012	Lab		100		31		100
	RW		100		30.8		100
March 2102	Lab			100	22.2		90
	RW			100	23.3		90
July 2011	Lab			100	37.9		100
	RW			100	30.6		80

<b>fathead minnow - P. promelas</b>			
		<b>Mean % Survival Day 7</b>	<b>Mean Biomass (mg/fish)</b>
Feb 2015	Lab	95	0.618
	RW	95	0.648
Aug 2104	Lab	97.5	0.287
	RW	60	0.195
Feb 2104	Lab	100	0.526
	RW	100	0.485
Aug 2103	Lab	97.5	0.45
	RW	92.5	0.408
Feb 2013	Lab	100	0.585
	RW	97.5	0.494
July 2012	Lab	100	0.495
	RW	100	0.481
March 2012	Lab	95	0.37
	RW	97.5	0.35
July 2011	Lab	95	0.339
	RW	97.5	0.363

Evaluation of these data shows there is only one recent documented incident of site water toxicity associated with each test species (see highlighted numbers). Therefore, the permit requirement to use receiving water immediately upstream of the Outfall 001 for WET testing is unchanged in the Final Permit.

Furthermore, the table located at Part I.A.1 of the Draft Permit includes reporting of some but not all of the chemical analyses required by the WET Test protocols (Attachments A and B). This clerical error has been corrected in the Final Permit with the table including all the reporting requirements of the WET Tests.

**Comment 5:**

**Part I.B.2. pH Limit Adjustment** (Permit Page 8 of 11 and 11 of 11)

It is our intention to pursue a pH limit adjustment. As stipulated in the permit, we will work with NHDES to obtain approval of a plan to demonstrate that the naturally occurring receiving water pH is not significantly altered by the MPM discharge. We intend to complete this demonstration in 2016.

**Response to Comment 5:**

The provision contained in the Draft Permit which would allow for a relaxation of the pH limit to outside the range of 6.5 - 8.0 standard units (SU), which is the designated pH range for Class B waters in the New Hampshire Water Quality Standards (Env-Wq 1703.18(b)), is standard language found in most New Hampshire permits. Although the aquatic life designated use for the segment of the Contoocook River in the vicinity of the discharge is listed as impaired due to pH in the *State of New Hampshire 2010 List of Threatened or Impaired Waters that Require a TMDL* ("303(d) list") (NHDES 2010)) (See Fact Sheet page 8), NHDES is amenable to allowing modifications to the pH limit outside of the range if the impairment is based on low pH and the discharge is often at higher pH. If EPA eventually approves a change in the permitted pH range, the pH limits would not be less restrictive than 6.0–9.0 s.u.

For development of the Draft Permit, EPA evaluated the monthly DMR data from January 2009 through September 2014 (69 results), which showed that the pH at Outfall 001 went above 8.0 s.u. on only three occasions and never went below 6.5 s.u.

**Comment 6:**

**Section 4. 1 Outfall 001** (Fact Sheet Page 15 of 38)

In the description of outfalls and intake structures there are two corrections necessary in the 2<sup>nd</sup> paragraph;

- 1) The fact sheet states, "if necessary, the wastewater is neutralized with sodium hydroxide". This has not been necessary in the recent past and is no longer an active practice.

- 2) In regards to sludge being continuously dredged from the lagoons during the day using a system called a “sludge sled”, this operation is run typically for up to 8 months of the year, and shut down during the winter months because of freezing issues.

**Response to Comment 6:**

These comments are noted, but do not necessitate any change in the permit. Since the Fact Sheet is a final document and cannot be modified, this response to comments document provides a means of correcting and/or clarifying any inconsistencies between the Fact Sheet and the Final Permit and will be used for the development of the next permit reissuance.