DRAFT 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", and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Barnhardt Manufacturing Company

is authorized to discharge from the facility located at

Barnhardt Manufacturing Company
247 Main Road
Colrain, MA 01340

to receiving water named

North River (Deerfield River Watershed)

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 following sixty (60) days after signature. If no comments are received, this permit shall become effective upon the date of signature.

This permit expires at midnight, five years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on October 26, 2010 and expired on December 31, 2015.

This permit consists of this cover page, 13 pages in Part I including effluent limitations, monitoring requirements, reporting requirements and state permit conditions, 7 pages in Attachment A — Freshwater Chronic Toxicity Test Procedure and Protocol (March 2013), and 25 pages in Part II, the Standard Conditions.

Signed this day of , 2017

Ken Moraff, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency
Region 1
Boston, MA

Douglas E. Fine, Assistant Commissioner
Bureau of Water Resources
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

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 process water through **Outfall Serial Number 001** to the North River. Such discharge shall be limited and monitored by the Permittee as specified below:

Effluent Characteristic	Discharge Limitation		Monitoring Requirements[1,2]	
	Average Monthly	Maximum Daily	Measurement Frequency[3,4]	Sample Type
Flow Rate [5]	Report MGD	0.89 MGD	Continuous	Recorder
pH [6]	6.5 - 9.0 SU		1/day	Grab
Production Rate [7]	Report	Report	1/day	Estimate
BOD_5	292 lbs/day	510 lbs/day	1/month	Composite [8]
Total Suspended Solids (TSS)	350 lbs/day	510 lbs/day	1/month	Composite [8]
COD	3640 lbs/day	7280 lbs/day	1/quarter	Composite [8]
Sulfide, Total	1.0 lb/day	2.0 lbs/day	1/quarter	Grab
Chromium, Total	Report lbs/day	1.1 lbs/day	1/year	Composite [8]
Phenols, Total	Report lbs/day	1.0 lb/day	1/quarter	Grab
Ammonia-Nitrogen (as N)	Report mg/l and lbs/day	Report mg/l and lbs/day	1/quarter	Composite [8]
Total Kjeldahl Nitrogen (TKN)	Report mg/l and lbs/day	Report mg/l and lbs/day	2/month	Composite [8]
Nitrite-Nitrate (as N)	Report mg/l and lbs/day	Report mg/l and lbs/day	2/month	Composite [8]
Total Nitrogen	Report lbs/day	Report lbs/day	2/month	Composite [8]
Total Phosphorus (May - October)	1.26 mg/l	Report mg/l	1/month	Composite [8]
Total Phosphorus (November-April)	Report mg/l	Report mg/l	1/month	Composite [8]
E. Coli (April 1 – October 31)	126 cfu/100 ml	409 cfu/100 ml	1/week	Grab
Copper, Total	22 µg/l	22 µg/l	1/month	Composite [8]
Temperature	Report ^{o}F	Report ^{o}F	1/month	Grab

See pages 5 and 6 for footnotes

CONTINUED FROM PREVIOUS PAGE

Effluent Characteristic	Discharge Limitation	Monitoring Requirements[1,2]	
	Maximum Daily	Measurement Frequency[3,4]	Sample Type
Whole Effluent Toxicity [9,10,11]			
LC_{50}	$\geq$ 100 %	1/quarter	Composite [8]
Chronic C-NOEC	$\geq$ 7.2 %	1/quarter	Composite [8]
Hardness	Report mg/L	1/quarter	Composite [8]
Total Residual Chlorine	Report mg/L	1/quarter	Grab
Alkalinity	Report mg/L	1/quarter	Composite [8]
pH	Report SU	1/quarter	Grab
Specific Conductance	Report µmhos/cm	1/quarter	Composite [8]
Total Solids	Report mg/L	1/quarter	Composite [8]
Ammonia	Report mg/L	1/quarter	Composite [8]
Total Organic Carbon	Report mg/L	1/quarter	Composite [8]
Cadmium, Total Recoverable	Report mg/L	1/quarter	Composite [8]
Chromium, Total Recoverable	Report mg/L	1/quarter	Composite [8]
Lead, Total Recoverable	Report mg/L	1/quarter	Composite [8]
Copper, Total Recoverable	Report mg/L	1/quarter	Composite [8]
Zinc, Total Recoverable	Report mg/L	1/quarter	Composite [8]
Nickel, Total Recoverable	Report mg/L	1/quarter	Composite [8]
Aluminum, Total Recoverable	Report mg/L	1/quarter	Composite [8]
Total Dissolved Solids	Report mg/L	1/quarter	Composite [8]

See pages 5 and 6 for footnotes

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During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated process water through **Outfall Serial Number 001** to the North River. The three (3) samples taken from the North River, considered to be the receiving water control, shall be monitored by the Permittee as specified below as required by the Whole Effluent Toxicity testing requirement.

Ambient Characteristic	**Ambient Reporting Requirements**	**Monitoring Requirements[1,2]**	
	Maximum Daily	**Measurement Frequency[3,4]**	**Sample Type**
Hardness	Report mg/L	1/quarter	Grab
Total Residual Chlorine	Report mg/L	1/quarter	Grab
Alkalinity	Report mg/L	1/quarter	Grab
pH	Report SU	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
Cadmium, Total Recoverable	Report mg/L	1/quarter	Grab
Chromium, Total Recoverable	Report mg/L	1/quarter	Grab
Lead, Total Recoverable	Report mg/L	1/quarter	Grab
Copper, Total Recoverable	Report mg/L	1/quarter	Grab
Zinc, Total Recoverable	Report mg/L	1/quarter	Grab
Nickel, Total Recoverable	Report mg/L	1/quarter	Grab
Aluminum, Total Recoverable	Report mg/L	1/quarter	Grab

See pages 5 and 6 for footnotes

Footnotes:

[1] The samples for Outfall 001 shall be collected at the discharge point to the North River. Samples shall be taken at a consistent location(s) and consistent times which yield data representative of the process water effluent just prior to discharge to the North River and prior to comingling with any non-process waters, if such comingling occurs. Changes in sampling location must be approved in writing by the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP).

[2] In accordance with 40 C.F.R. § 122.44(i)(1)(iv), the Permittee shall use sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O, for the analysis of pollutants or pollutant parameters limited in this permit (except WET limits). A method is considered "sufficiently sensitive" when either (1) the method minimum level (ML) is at or below the level of the effluent limit established in this permit for the measured pollutant or pollutant parameter; or (2) the method has the lowest ML of the analytical methods approved under 40 C.F.R. Part 136 or required under 40 C.F.R. Chapter I, Subchapter N or O for the measured pollutant or pollutant parameter. The ML is not the minimum level of detection, but rather the lowest level at which the test equipment produces a recognizable signal and acceptable calibration point for a pollutant or pollutant parameter, representative of the lowest concentration at which a pollutant or pollutant parameter can be measured with a known level of confidence. For the purposes of this permit, the detection limit (DL) is the lowest concentration that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method during routine laboratory operating conditions (i.e., the level above which an actual value is reported for an analyte, and the level below which an analyte is reported as non-detect).

[3] Measurement frequency of 1/day is defined as the recording of one measurement for each 24 hour period. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day period. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Measurement frequency of 1/year is defined as the sampling of one discharge event which occurs during the month of May. Quarterly samples shall be collected during the second weeks in January, April, July, and October.

[4] The Permittee shall submit the results to EPA of any additional testing done above that which is required herein, if it is in accordance with EPA approved methods. If no sampling result can be reported during one or more of the measurement frequencies defined above, the Permittee must report the appropriate No Data Indicator Code (e.g., "C" for "No Discharge") found in Attachment E of *NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, available at https://www3.epa.gov/region1/npdes/dmr.html.

[5] Flow rate shall be reported in million gallons per day (MGD). The flow shall be continuously measured and recorded using a flow meter. The total flow for each operating date shall be recorded and attached to each monthly DMR form.

[6] The pH of the effluent shall be not less than 6.5 or greater than 9.0 standard units (s.u.) but not more than 0.5 standard units outside of the naturally occurring range. There shall be no change from natural background conditions that would impair any use assigned to the class of the receiving water.

[7] Total production rate of finished goods in pounds per day.

[8] A 24-hour composite shall consist of twenty-four (24) grab samples collected at hourly intervals during a twenty-four hour period (i.e., 0700 Monday to 0700 Tuesday), combined proportionally to flow.

[9] The Permittee shall conduct chronic whole effluent toxicity (WET) tests once per calendar quarter following the effective date of the permit. The tests must be performed in accordance with test procedures and protocols specified in Attachment A of this permit using the daphnid, *Ceriodaphnia dubia*. LC_{50} and C-NOEC are defined in Part II.E.3 of this permit. WET test samples shall be collected during the months of January, April, July, and October and the test results shall be submitted with the discharge monitoring reports (DMRs), no later than the 15th day of the month following the completed reporting period. For example, the WET test results for January shall be submitted with the February DMR, no later than March 15th.

WET Testing Months	Submit Results by:	Test Species	Chronic Limit	Acute Limit
January April July October	March 15th June 15th September 15th December 15th	*Ceriodaphnia dubia* (daphnid)	C-NOEC $\geq$ 7.2%	$LC_{50} \geq 100\%$

[10] The Permittee shall conduct the analyses specified in Attachment A, Part VI. CHEMICAL ANALYSIS, of this permit. **For 100% effluent**, the Permittee shall report results for the parameters listed on Page 3, Part I.A., Whole Effluent Toxicity, hardness through total dissolved solids, inclusive. The dilution water sample for the WET tests shall be **a receiving water control** (i.e., 0% effluent) consisting of three grab samples (defined in Part II.E.) collected from the North River at a point immediately outside of Outfall 001's zone of influence at a reasonably accessible location over a 1-hour period. For this receiving water control, the Permittee shall report results for the parameters listed on Page 4. Even where an alternate dilution water is permitted, the receiving water control (0% effluent) must still be analyzed. MLs and methods are specified in Attachment A., Part VI. CHEMICAL ANALYSIS. Sampling for any parameter required for WET may be used to satisfy any duplicative sampling required for that parameter in this permit, so long as the timing of sampling for WET coincides with the sample timing otherwise required for that parameter within this permit.

[11] If the toxicity test uses receiving water as diluent and the receiving water is found to be toxic or unreliable, the permittee shall follow procedures outlined in Section IV (Dilution Water) of Attachment A in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in Attachment A, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance document may be found at: https://www3.epa.gov/region1/npdes/permits/generic/Alternatedilutionwaterguidance.pdf. If this Guidance Document is revoked, the permittee shall revert to obtaining approval as outlined in Attachment A. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in Attachment A.

Part I.A. continued.

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

3. The discharge shall not contain floating, suspended and settleable solids, oil and grease, petrochemicals and other volatile or synthetic organic pollutants, or *radioactive substances*.

4. The discharge shall not produce objectionable odor, color, taste, or turbidity, or result in the dominance of nuisance species.

5. The discharge shall not contain pollutants in concentrations or combinations or cause alterations that impair the existing uses of the receiving water, or interfere with the attainment of designated uses in the receiving water or downstream and adjacent waterbody segments.

6. The discharge shall not contain pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

7. The Permittee shall properly operate and maintain the pollution control equipment.

8. The Permittee shall implement preventative maintenance procedures for the pollution control equipment.

9. The Permittee shall implement procedures and maintenance schedule for removal and disposal of solids and/or sludge.

10. The permittee shall not use fungicides or slimicides containing trichlorophenol or pentachlorophenol.

11. Any intake water that is used solely for cooling purposes shall not be directly returned to the receiving water.

12. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe (40 C.F.R. §122.42):

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
    i. 100 micrograms per liter (µg/L);
    ii. 200 µg/L for acrolein and acrylonitrite; 500 µg/L for 2,4-dinitrophenol; and one milligram per liter (mg/L) for antimony;

iii. Five 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 the Director in accordance with 40 C.F.R. §122.44(f) and Massachusetts regulations.

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

i. 500 µg/L;

ii. One mg/L for antimony;

iii. 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 the Director in accordance with 40 C.F.R. §122.44(f) and Massachusetts regulations.

13. This permit may be modified in accordance with 40 C.F.R. Section 122.62(a)(3) if the standards or regulations on which the permit is based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit is issued in accordance with 40 C.F.R. Section 122.62(a)(3).

B. SPECIAL CONDITIONS

1. Best Management Practices (BMP) Plan

The permittee shall continue to implement and maintain a Best Management Practices (BMP) Plan designed to reduce or prevent the discharge of pollutants in process water to waters of the United States. The BMP Plan shall be a written document that is consistent with the terms of the permit and identifies and describes the BMPs employed by the facility in operating process water controls.

Within six months following the effective date of the permit, the Permittee shall update and certify that the BMP Plan meets the requirements of this permit, and that it reduces the pollutants discharged in process water to the extent practicable. The BMP Plan and certification shall be signed in accordance with the requirements identified in 40 C.F.R. §122.22. A copy of the BMP Plan and certification shall be maintained at the Permittee's facility and made available to EPA and MassDEP upon request.

The permittee shall amend and update the BMP Plan **within thirty (30) days** for any changes at the facility affecting the BMP Plan. Such changes may include, but are not limited to, changes in the design, construction, operation, or maintenance of the facility, which have a significant effect on the potential for the discharge of pollutants to the waters of the United States. The amended BMP Plan shall be certified as described above.

The permittee shall certify at least annually that the facility is in compliance with the requirements of the BMP Plan. If the facility is not in compliance with any aspect of the BMP Plan, the annual certification shall state the noncompliance (e.g., a selected BMP is not achieving the control necessary to meet a numeric or non-numeric effluent limitation) and the actions which were undertaken to remedy such noncompliance (e.g., the selection, design and implementation of an alternate BMP). Such annual certifications shall be signed, maintained at the facility, and made available to EPA and MassDEP as described above.

The BMP Plan shall include, at a minimum, the following items:

a. Selection, design, installation, implementation and maintenance of control measures necessary to meet the effluent limitations in this permit, including the non-numeric limitations and conditions in Part I.A. Any control measures shall be used in accordance with good engineering practices and manufacturer's specifications.

b. A description of the pollution control equipment and procedures used to minimize the discharge of suspended solids, floating solids, foam/scum/debris, visible oil sheen, and settleable solids to surface waters.

c. Preventative maintenance procedures for the pollution control equipment.

d. Procedures for handling facility wastes, including schedules for removal, handling and disposal of materials, a description of where solids removed from the pollution control equipment or appurtenances, including sludge, are stored and/or disposed of, and the control measures used to prevent the removed solids from reentering the receiving water. If facility wastes are removed from the site, describe the destination and the method of disposal and/or reuse.

e. A record of the following information for all chemicals additives used at the facility, including all chemicals used in the treatment processes at the facility (flocculation, clarification, filtration, and disinfection), and for control of biological growth, and corrosion and scale in water pipes:

i. Product name, chemical formula, and manufacturer of the additive;
ii. Purpose or use of the additive;
iii. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each additive;
iv. The frequency (e.g., hourly, daily), duration (e.g., hours, days), quantity (e.g., maximum and average), and method of application for the additive; and
v. The vendor's reported aquatic toxicity, when available (NOAEL and/or LC50 in percent for aquatic organism(s)).

f. A description of the training to be provided for employees to assure they understand the goals, objectives, and procedures of the BMP Plan, the requirements of the NPDES Permit, and their individual responsibilities for complying with the goals and objectives of the BMP Plan and the NPDES permit.

g. Minimum documentation requirements are as follows:

i. Records of operational and preventive maintenance activities, equipment inspections, procedure audits, and personnel training;

ii. Records of the collection and analysis of samples, including, but not limited to, sample location, any calculations done at the time of sampling, any sampling or analytical methods used for samples analyzed on site, and sample results; and

iii. All documentation of BMP Plan activities shall be kept at the facility and provided to EPA or MassDEP upon request.

2. Treatment Plant Optimization for Nitrogen

The permittee shall complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen, and submit a report to EPA and MassDEP documenting this evaluation and presenting a description of recommended operational changes within one (1) year of the effective date of the permit. The permittee shall implement the recommended operational changes in order to maintain the existing mass discharge loading of total nitrogen. The annual average total nitrogen load from this facility (for the period of March 2011 – March 2016) is estimated to be 67.3 lbs/day. The permittee shall also submit an annual report due by January 15th of each year and submitted with the December DMR to EPA and MassDEP that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous year.

3. Whole Effluent Toxicity (WET) Testing Reduction

The Permittee may request a reduction in Whole Effluent Toxicity testing requirements by submitting results for a minimum of four (4) consecutive tests, all of which must be valid tests that demonstrate compliance with the WET testing requirements in this permit. Until written notice is received from EPA indicating that the WET testing requirements have been changed, the Permittee is required to continue testing as specified in this permit.

C. REPORTING REQUIREMENTS

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 C.F.R. 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 MassDEP within the time frames 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 Using NetDMR

   The permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and MassDEP no later than the 15th day of the month electronically using NetDMR. When the permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or MassDEP.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this permit, the permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. Permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP. (See Part I.C.5 for more information on state reporting.) Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), 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

   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).

   A. Transfer of permit notice
   B. Request for changes in sampling location
   C. Request for reduction in testing frequency
   D. Request for reduction in WET testing requirement
   E. Report on unacceptable dilution water / request for alternative dilution water for WET testing
   F. Notification of proposal to add or replace chemicals additives and bio-remedial agents including microbes

   These reports, information, and requests shall be submitted to EPA/OEP electronically at 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

   The following notifications and reports shall be submitted as hard copy with a cover letter describing the submission. These reports shall be signed and dated originals submitted to EPA.

   A. Written notifications required under Part II
   B. Notice of unauthorized discharges

   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

   Transfer or termination of permit notices shall be submitted to:

   MassDEP
   Bureau of Water Resources
   Wastewater Management Program
   1 Winter Street, 5th Floor
   Boston, MA 02108

   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.3 and I.C.4 shall also be submitted to the State at the following addresses:

   MassDEP – Western Region
   Bureau of Waste Prevention (Industrial)
   436 Dwight Street, Suite 402
   Springfield, MA 01103

   Copies of toxicity tests and nitrogen optimization reports only shall be submitted to:

   Massachusetts Department of Environmental Protection
   Watershed Planning Program
   8 New Bond Street
   Worcester, Massachusetts 01606

6. 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 MassDEP. 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

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) a federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§1251 et seq.; and (ii) an identical state surface water discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§26-53, and 314 C.M.R. 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 C.M.R. 3.19, are hereby incorporated by reference into this state surface water discharge permit.

2. This authorization also incorporates the state water quality certification issued by MassDEP under §401(a) of the Federal Clean Water Act, 40 CFR 124.53, M.G.L. c. 21, §27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this state surface water discharge permit as special conditions pursuant to 314 CMR 3.11.

3. 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 this permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL
USEPA Region 1

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

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

III. SAMPLE COLLECTION AND USE

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

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

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

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

IV. DILUTION WATER

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

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

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

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

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

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

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

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

and

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

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

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

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

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

V.1. Use of Reference Toxicity Testing

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

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

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

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

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

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

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

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

VI. CHEMICAL ANALYSIS

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

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

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

Notes:

1. Hardness may be determined by:

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

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

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

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

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

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

2. Test Variability (Test Sensitivity)

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

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

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

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

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

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

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

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

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

2. *Pimephales promelas*

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

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

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

3. *Ceriodaphnia dubia*

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

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

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

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

In addition to the summary sheets the report must include:

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

NPDES PART II STANDARD CONDITIONS
(January, 2007)

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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.

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.

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.

(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

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

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

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.

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.

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.

(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

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

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).

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.

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.

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.

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.

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,

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.

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 1×10^{-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.

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 or 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 on 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.

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.

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_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
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_{50}	LC_{50} is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.
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: MA0003697

PUBLIC NOTICE START AND END DATES: February 17, 2017 – March 18, 2017

NAME AND MAILING ADDRESS OF APPLICANT:

Barnhardt Manufacturing Company
P.O. Box 3
Colrain, MA 01340

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Barnhardt Manufacturing Company
247 Main Road
Colrain, MA 01340

RECEIVING WATER: North River (Deerfield River Watershed)

RECEIVING WATER CLASSIFICATION: B (Cold Water Fishery)

LATITUDE: 42° 39' 16" N **LONGITUDE**: -72° 42' 57" W

SIC CODE: 2261 (Raw Cotton Bleachery)

Table of Contents

I. Proposed Action, Type of Facility, and Discharge Location

A. Proposed Action

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) for the reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge treated process water into the designated receiving water. The existing permit was issued on October 26, 2010 (the current permit), became effective on January 1, 2011, and expired on December 31, 2015. EPA received a permit renewal application from Barnhardt Manufacturing Co. on July 29, 2015. Since the permit renewal application was deemed timely and complete by EPA, the permit has been administratively continued.

B. Type of Facility and Discharge Location

Barnhardt Manufacturing Company (Barnhardt) is a textile goods processing facility that processes raw cotton by cleaning and bleaching the cotton and includes finishing the cotton, dry processing and final packaging of the cotton products for distribution. The end products are large bales of cotton that are transferred by road and rail to other manufacturers who formulate the final product, mainly consumer items. The facility is located in Colrain, MA and discharges its treated effluent, which includes wastewater from about 21 homes in the Village of Griswoldville, to the North River just upstream of the Route 112 bridge (see **Attachment 1**).

II. Receiving Water Description

The Barnhardt Manufacturing wastewater treatment facility discharges into the North River at River Mile 2.7 from the confluence with the Deerfield River. The segment into which it discharges is denoted by MassDEP as Segment MA33-06 (from the confluence of the East and West branches of the North River in Colrain, MA to the confluence with the Deerfield River in Shelburne/Charlemont, MA). The Deerfield River flows southerly then easterly, before its confluence with the Connecticut River. The segment is classified as a Class B-cold water fishery river segment by the Massachusetts Surface Water Quality Standards (314 CMR 4.05(3)(b) and 4.06 Table 5). These waters are designated as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value (314 CMR 4.05(3)(b)).

The MassDEP evaluated the water quality and biological health in the segment as part of its assessment work and presented the findings in the report, *Deerfield River Watershed 2000 Water Quality Assessment Report* (Oct 2004; Report # 33-AC-1; CN087.0). The report rated the segment as ”support” with an alert status for aquatic life and primary contact; “non-assessed” for fish consumption and ”support” for secondary contact and aesthetics. The alert status for aquatic

life was related to the effluent toxicity from this discharge and the potential impact on flow in the 0.6 mile reach of river that is bypassed via a canal. The alert status for primary contact was related to slightly elevated bacteria counts in surveys conducted during wet weather.

The North River is listed on the *Final Massachusetts Year 2014 Integrated List of Waters*[1] as a Category 2 waterbody, which are those classified as "waters attaining some uses; other uses not assessed.

III. Permit Basis: Statutory and Regulatory Authority

A. General Requirements

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-based effluent limitations (TBELs), water quality-based effluent limitations (WQBELs) and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136. In this permit EPA considered: (1) technology-based requirements; (2) water quality-based requirements; and (3) all limitations and requirements in the current/existing permit when developing the permit limits.

B. Technology-Based Requirements

Subpart A of 40 CFR §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 Limitation Guidelines (ELGs) and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA.

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 CFR §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. 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 CFR §125.3(a)(2)]. Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit.

1 http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf

EPA established minimum technology requirements in the "Textile Mills Point Source Category" (40 CFR 410) which apply to the Barnhardt facility. The facility's operations and production are most closely categorized by the Stock and Yarn Finishing Subcategory (Subpart G), which details effluent guidelines promulgated under 40 CFR 410.70-410.77. The guidelines specify the maximum and average concentration for biochemical oxygen demand (BOD_5), chemical oxygen demand (COD), total suspended solids (TSS), sulfide, phenol and total chromium which may be discharged based upon pollutant load per 1,000 pounds of product. Derivation of technology-based permit limits is discussed below in Section IV.

C. 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 such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when TBELs would interfere with the attainment or maintenance of water quality in the receiving water.

Under Section 301(b)(1)(C) of the CWA and EPA regulations, NPDES permits must contain effluent limits more stringent than TBELs where more stringent limits are necessary to maintain or achieve state or federal water quality standards. Water quality standards consist of three parts: (1) beneficial designated uses for a water-body or a segment of a water-body; (2) numeric and/or narrative water quality criteria (WQC) 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 Massachusetts SWQSs, found at 314 CMR 4.00, include these elements. The State will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained 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, shall be used unless site specific criteria are established.

1. Reasonable Potential

The draft permit must limit any pollutant or pollutant parameter (conventional, non-conventional, and toxic) that is or may be discharged at a level that "causes, or has the reasonable potential to cause, or contribute" to an excursion above any water quality standard [40 CFR §122.44(d)]. An excursion occurs if the projected or actual in-stream concentration exceeds an applicable water quality criterion. In determining reasonable potential, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) pollutant concentration and variability in the effluent and receiving water based on available information including, but not limited to, a Permittee's NPDES application, monthly discharge monitoring reports (DMRs), and State and Federal Water Quality Reports; 3) sensitivity of the indicator species used in toxicity testing; 4) known water quality impacts of processes on waste waters; and 5) where appropriate, dilution of the effluent in the receiving water. EPA typically follows a quantitative approach based on the guidance in *Technical Support Document for Water Quality-based Toxics Control* (*TSD*) to determine if any pollutant or pollutant parameter (conventional, non-conventional, and toxic) is or may be discharged causes or has the reasonable potential to

cause or contribute to an excursion above any water quality standard [40 CFR §122.44(d)].[2] EPA's quantitative approach statistically projects concentrations based on available effluent data, which are then compared to the applicable WQC. The reasonable potential analyses completed for pollutants discharged from the Facility are found in Section V of this Fact Sheet.

2. Dilution Factor and Ambient Conditions

EPA considers the available dilution when determining water quality based limitations in NPDES permits. Massachusetts' SWQSs at 314 CMR 4.03(3)(a), which apply to rivers and streams, state that "*the lowest flow condition at and above which aquatic life criteria must be applied is the lowest mean flow for seven consecutive days to be expected once in ten years. When records are not sufficient to determine this condition, the flow may be estimated using methods approved by the Department*".

The United States Geological Survey (USGS) maintains a stream flow gage in the North River in the village of Shattuckville, Massachusetts. The gage is located at river mile 1.3, approximately 1.4 miles downstream of the Barnhardt Manufacturing discharge. This close vicinity of the gage to the discharge location provides good flow dynamic evaluations at the discharge site. The table below shows the vital data from the gage station.

Table 1. USGS Data for North River at Shattuckville, MA*

USGS Gage Number	Drainage Area (mi^2)	Period of Record	Annual Mean Flow (cfs)	7Q10 (cfs)	1Q10 (cfs)	Harmonic Mean (cfs)
01169000	89.0	1939-2015**	189	8.72	6.79	54.6

* 1Q10 and 7Q10 are from USGS calculations based on period of mean discharges during climatic years 1941 – 2015 (75 years); harmonic mean is from USGS calculations based on period of daily mean discharges during water years 1941 through 2015 (about 75 years). **Gage still active; records available for this period.

The 7Q10, or the 7-day mean stream low flow with 10-year recurrence interval, is the base flow used to calculate the chronic effluent limits in NPDES permits (314 CMR 4.03(3)(a)). The 7Q10 flow in the North River at the point of the Barnhardt Manufacturing wastewater treatment plant (WWTP) discharge is determined by using the 7Q10 value at the North River USGS gage (01169000). No adjustment will be made for the very small additional drainage area between the discharge and the gage. The long-term operation of the facility's discharge and the location of the gage immediately downstream from the discharge location produce an accurate long-term evaluation of stream flow dynamics.

[2] EPA's *Technical Support Document for Water Quality-based Toxics Control:* EPA/505/2-90-001, 1991

The 1Q10, or the 1-day mean stream low flow with 10-year recurrence interval, is the base flow used to calculate the acute effluent limits in NPDES permits.[3] The 1Q10 flow in the North River at the point of the Barnhardt Manufacturing WWTP discharge is determined by using the 1Q10 value at the North River USGS gage (01169000).

For industrial dischargers, the permit writer has discretion on which effluent flow to use to calculate the dilution factor. Review of recently issued permits, such as NPDES Permit No. NH0000230 for Monadnock Paper Mills, Inc., and MA0000469 for Seaman Paper Company, reveals that the average monthly effluent flow was used to calculate the chronic dilution factor and the maximum daily effluent flow was used to calculate the acute dilution factor.

The effluent flow is normally added to the base stream flow to determine total in-stream flow at the point of discharge. However, the daily maximum flow limit of 0.89 MGD is equal to the flow allowed under the facility's Water Management Act registration [0.89 MGD (1.38 cfs)], since the water used in the process and treated at the WWTP for discharge is diverted from the river. Therefore, the effluent is not added to the river base flow to determine base 7Q10 and 1Q10 flow. The domestic flow added to the treatment system from private homes is minimal (approximately 8,000 gallons per day) and therefore is also not included in the calculation.

Therefore, the chronic dilution factor used in some of the permit limitation calculations is based upon the 7Q10 at the gage and the monthly average effluent flow [0.41 MGD (0.63 cfs)].[4] The chronic dilution factor for Barnhardt Manufacturing WWTP is as follows:

7Q10 {river}/monthly average effluent flow = dilution factor
8.72 *cfs* / 0.63 *cfs* = **13.8**

The acute dilution factor used in some of the permit limitation calculations is based upon the 1Q10 at the gage and the maximum effluent flow [0.89 MGD (1.38 cfs)]. The acute dilution factor for Barnhardt Manufacturing WWTP is as follows:

1Q10 {river}/daily maximum effluent flow = dilution factor
6.79 *cfs*/ 1.38 *cfs* = **4.9**

3. Anti-Degradation

Federal regulations found at 40 CFR §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 waterbody. The Commonwealth of Massachusetts' anti-degradation provisions found in 314 CMR 4.04 apply to any new or increased discharge that

3 Technical Support Document for Water Quality-based Toxics Control, p. 130.
4 Monthly average effluent flow calculated based on data collect from March 2011 through March 2016, see Attachment 4.

would lower water quality or affect existing or designated uses, including increased loadings to a water body from an existing activity. The anti-degradation provisions 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 North River shall be maintained and protected. As previously described, a Class B waterbody in Massachusetts is a habitat for fish, other aquatic life and wildlife, and used for primary and secondary contact recreation. This permit is being reissued with effluent limits sufficiently stringent to protect the existing uses of the North River. There are no new or increased discharges being proposed with this permit reissuance. Therefore, EPA believes that the MassDEP is not required to conduct an antidegradation review for this permit reissuance.

D. Anti-Backsliding

A permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in a previous permit unless in compliance with the anti-backsliding requirements of the CWA. *See* §402(o) and §303(d)(4) of the CWA and 40 CFR §122.44(l)(1 and 2). Effluent limits based on BPJ, water quality, and state certification requirements must also meet the anti-backsliding provisions found at §402(o) and §303(d)(4) of the CWA.

All proposed limitations in the draft permit are at least as stringent as limitations included in the Facility's 2010 permit, with the exception of the following. The mass based monthly average limit for TSS has been adjusted upward (less stringent) in this permit, from 250 to 350 pounds/day. This WQBEL increase is due to information regarding an upwards adjustment to a waste load allocation conducted by the MassDEP in 1978 which increased the previous allocation figure. This change should have been incorporated into the current permit but was not. This change is consistent with the technical mistake provision of the anti-backsliding provisions [122.44(l)(2)(B)(2)].

The mass based limit for ammonia as nitrogen has been replaced by a monitor only requirement, due to the determination that there is not a reasonable potential to violate the WQS for ammonia as described below in section V.M. The current permit did not appropriately consider the dilution available to the effluent when setting the ammonia limit. This change is consistent with the technical mistake provision of the anti-backsliding provisions [122.44(l)(2)(B)(2)].

E. Test Methods and Minimum Levels

The draft permit requires that the approved analytical procedures found in 40 CFR §136 be used for sampling and analysis unless other procedures are explicitly required. The draft permit also includes requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting* rule[5], which requires that where EPA-approved methods exist, NPDES permittees

5 Federal Register, Vol. 79, No. 160, Tuesday, August 19, 2014; FR Doc. 2014–19557.

must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge and that the Director must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR §122.21(e)(3) (completeness), 40 CFR §122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR §136.1 indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level (ML) is at or below the level of the applicable water quality criterion or permit limitation for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a site's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the EPA-approved analytical methods.

IV. Description of Discharge

Wastewater at Barnhardt is generated by the cleaning process and hydrogen peroxide bleaching of cotton fibers. In addition, sanitary wastewater from 21 homes in the village of Griswoldville is treated at the facility. The process water used at the facility is withdrawn from the North River and is run through sand filters and micro-cartridge filters prior to use. The facility is authorized to withdraw water from the North River under a MassDEP Water Management Act permit, #10306601. This authorized withdrawal is 0.89 million gallons per day (MGD). This water withdrawal permit will expire December 31, 2017. A report dated December 22, 2009 submitted by Cushing, Jammallo, and Wheeler, Inc., on behalf of Barnhardt, states that all cooling water used at the facility is recycled back into the process water stream. As this is still believed to be the case, Barnhardt is prohibited from using any intake water from the North River solely for cooling purposes and discharging it directly back into the river. Any such use of intake water would subject the permittee to the requirements of the CWA 316(b) Rule associated with the operation of cooling water intake structures. See **Attachment 2** for a water flow balance of the wastewater process.

Raw cotton is first cleaned mechanically to remove seeds, leaves, and other impurities and then treated with sodium hydroxide, followed by a rinse with a surfactant and hot water. The cotton fiber is then bleached with hydrogen peroxide and "soured" to lower the pH. No form of chlorine is used for the bleaching process. Excess or "residual" water is removed from the cotton using a centrifuge. This residual water is sent to the WWTP. See **Attachment 3** for a process flow diagram specific to the processes from which raw cotton becomes the final cotton product.

The WWTP treats process wastewater and a small volume of sanitary wastewater utilizing an extended aeration, activated sludge system. The treatment plant employs the following processes: mixing of process and domestic wastewaters; screening; addition of sulfuric acid to reduce the incoming wastewater pH of 8.0 – 8.5 SU to a neutral level of 7.0; aeration in a 3,000,000 gallon aerated lagoon; clarification in parallel, 250,000 gallon capacity clarifiers;

processing of sludge to remove water with a belt filter press; and sludge disposal at a local farm for use in land application.

The current permit requires estimation of the production rate (total production rate of finished goods in lbs/day) on a weekly basis, and reporting of the monthly average. Review of DMR data shows that the average production rate was approximately 65,891 lbs/day during the monitoring period. The maximum production rate during the period was 143,815 and the average of the daily maximum values over the period was 85,927 lbs/day as shown in **Attachment 4**. The current permit does not contain a limit for production rate, however, calculation of effluent limits based on ELGs require the use of a production rate. The ELG limits in the current permit are calculated based on a production rate of 90,000 lbs/day.

To determine whether a different production rate is appropriate for this draft permit, EPA considered the guidance from in EPA's NPDES Permit Writer's Manual[6], which states,

"*.. the objective in determining the production for a facility is to develop a single estimate of the long-term average daily production that can reasonably be expected to prevail during the next term of the permit (i.e. not the design production rate). Permit writers may establish such a production rate using the past 3 to 5 years of facility data. For example, the permit writer might wish to use the average daily production rate calculated using the highest annual production from the previous 3 to 5 years."*

Therefore, this draft permit will use the production figure of 86,000 pounds per day on which to calculate the appropriate technology-based limits, which is EPA's approximation of the highest annual production over the period of March 2011 through March 2016, which captures the fluctuating production values over the long term and which is consistent with the EPA guidance noted above. Additionally, the draft permit shall continue to require the reporting of the monthly average and daily maximum production rates.

As noted above, EPA established minimum technology requirements in the "Textile Mills Point Source Category" (40 CFR 410) for this facility. The guidelines specify the maximum and average concentration for BOD_5, COD, TSS, sulfide, phenol and total chromium which may be discharged based upon pollutant load per 1,000 pounds of product. 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. See Table 2, below, for the applicable ELGs from Sections 410.72 (BPT) and 410.73 (BAT). Additionally, the ELGs require a pH limitation of 6.0-9.0 standard units.

6 USEPA, NPDES Permit Writer's Manual, Page 5-30 (EPA-833-K-10-001, September 2010)

Table 2. Applicable Effluent Limitation Guidelines (ELG) for Barnhardt Manufacturing

Textile Mills Point Source Category (40 CFR 410) Stock and Yarn Finishing Subcategory (Subpart G)		
Pollutant or pollutant property	**BPT limitations**	
	Maximum for any 1 day	**Average of daily values for 30 consecutive days**
	Kg/kkg (or pounds per 1,000 lb) of product	
BOD*5*	6.8	3.4
COD	84.6	42.3
TSS	17.4	8.7
Sulfide	0.24	0.12
Phenol	0.12	0.06
Total chromium	0.12	0.06
pH	([1])	([1])

[1]Within the range 6.0 to 9.0 at all times.

The BAT limits for these ELGs are the same, with the exception of the omission of limits for BOD, TSS, and pH.

Quantitative descriptions of the discharge in terms of production, effluent flow, and effluent data during the time period from March 2011 to March 2016 may be found in **Attachment 4** of this fact sheet. This time period is referred to as "the monitoring period" in this fact sheet.

V. Proposed Permit Effluent Limitations and Conditions

The bases for the effluent limitations and monitoring requirements, special conditions and standard conditions derived under the Federal Clean Water Act and Massachusetts' Surface Water Quality Standards are as follows:

A. Effluent Flow

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 CFR §§ 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 CWA Sections 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.

Effluent flow is often used to calculate a permit's effluent limits. EPA's practice includes the use of design flow or other appropriate flow in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under §301(b)(1)(C) of the CWA and 40 CFR §122.44(d). Should the effluent 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 WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs 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 EPA's reasonable potential analyses and derivation of permit effluent limitations remain sound for the duration of the permit, EPA may ensure its maximum effluent flow assumption through imposition of permit conditions for effluent flow. In this regard, the flow limit included in this permit is a component of WQBELs because the WQBELs are premised on a maximum effluent 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 WQSs.

In addition, as provided in Part II.B.1 of this permit and 40 CFR §122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. 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 CFR §122.41.

From March of 2011 through March of 2016, the monitoring period, effluent flow has ranged from 0.107 MGD to 1.13 MGD, with an average of 0.41 MGD (See Attachment 4). The Facility's current permit limited the discharge to a maximum flow rate of 0.89 MGD. Although flows through the wastewater treatment facility can vary seasonally and with changing production schedules, this flow rate of 0.89 MGD is still an appropriate maximum daily value and it has remained as the permit limit, with a report only requirement maintained for the monthly average flow.

B. Derivation of Technology-based Effluent Limits based on Production Rate

The production values cited for each of the ELG subpart categories were utilized to calculate the allowable mass-based limits in the draft permit for conventional pollutants which include BOD_5, TSS, COD, Sulfide, Phenol and Total Chromium. An example calculation is shown below. The calculated limits are summarized in Table 3, below.

ELG	*	Production Rate	=	Calculated ELG limit
(lbs/1,000 lbs product)	*	(86,000 lbs product/day)	=	(lbs/day)

For monthly average TSS: (8.7 lbs/1000 lbs of product) (86,000 lbs) = **750 lbs/day**

Table 3. Summary of Calculated Maximum Daily and Monthly Average ELG Limits for Barnhardt Manufacturing based on production rate of 86,000 lbs/day

BOD_5 (lbs/day)		COD (lbs/day)		TSS (lbs/day)		Sulfide (lbs/day)		Phenol (lbs/day)		Total Chromium (lbs/day)	
MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG	MAX DAILY	MON AVG
585	292	7280	3640	1500	750	20.6	10.3	10.3	5.2	10.3	5.2

C. Biochemical Oxygen Demand – 5 Day (BOD_5)

The current permit established BOD_5 limits of 300 lbs/day as a monthly average and 510 lbs/day as a daily maximum. The average value during the monitoring period was 60.8 lbs/day and the daily maximum was 1525 lbs/day as shown in Attachment 4. During the monitoring period, there were two (2) violations of the monthly average limit and one (1) violation of the daily maximum limit. The reading of 1525 mg/l that was recorded for March of 2015 was addressed in the permittee's cover letter and involved some breaks in the (old) aeration system which caused high levels for a short period.

A 1975 waste load allocation (WLA) conducted by MassDEP established a BOD limit of 300 lbs/day as a monthly average. In a letter dated February 1, 1978, the company was notified by MassDEP that the WLA was being increased for BOD to a monthly average of 350 lbs/day and that it was also establishing a daily maximum allocation of 510 lbs/day. The current (2010) permit calculated the TBELs based on the 90,000 lbs/day production figure and derived limits of 306 lbs/day and 612 lbs/day, respectively. The monthly average BOD limit in the 2010 permit was set at 300 lbs/day citing the WLA conducted by the MassDEP. The fact sheet for the 2010 permit did not acknowledge that the allocation for BOD was raised to 350 pounds/day in 1978. The daily maximum limit in the 2010 permit was maintained at 510 lbs/day, reflecting the WLA and also because it was more stringent than the TBEL of 612 pounds/day calculated in the 2010 permit. This draft permit has established BOD limits of 292 lbs/day as a monthly average and 510 lbs/day as a daily maximum, based on technology and water quality, respectively. BOD_5 shall continue to be monitored monthly.

D. Total Suspended Solids (TSS)

Suspended solids may settle to form bottom deposits in the receiving water, potentially causing benthic smothering. Suspended solids also increase turbidity in receiving waters and reduce light penetration through the water column, thereby limiting the growth of rooted aquatic vegetation that serves as a critical habitat for fish and other aquatic organisms and can clog fish gills, resulting in an increase in susceptibility to infection or asphyxiation. Suspended solids also provide a medium for the transport of other sorbed pollutants, including nutrients, pathogens, and

metals, which may accumulate in settled deposits that may have a long-term impact on the water column through cycles of re-suspension.

The current permit has TSS limits of 250 lbs/day as an average monthly and 510 lbs/day as a maximum daily, both monitored monthly. The average value during the monitoring period was 73.3 lbs/day and the daily maximum was 502.8 lbs/day as shown in Attachment 4. During the monitoring period, there were two (2) violations of the monthly average limit.

The current permit's average monthly limit of 250 lbs/day was based on a 1975 waste load allocation (WLA) conducted by MassDEP. As noted in the BOD discussion above, the MassDEP adjusted the WLA for TSS for this discharge to a monthly average of 350 lbs/day and a daily maximum of 510 lbs/day in 1978. The 2010 permit established TSS limits of 250 and 510 lbs/day, based on water quality. Since the WLA for TSS was changed by the MassDEP in 1978 to 350 lbs/day as a monthly average, this is the appropriate figure to compare against the TBEL to determine the effluent limit. The ELG-based limits based on current production were calculated to be 750 lbs/day and 1500 lbs/day, respectively. Therefore, the more stringent, WQ-based TSS limits of 350 as a monthly average and 510 lbs/day as a daily maximum, will be established as the permit limits.

E. Temperature

The Massachusetts SWQS stipulate that the temperature for Class B cold water fisheries shall not exceed 68°F (20°C) based on the mean of the daily maximum temperature over a seven day period in cold water fisheries, unless naturally occurring and that the rise in temperature due to a discharge shall not exceed 3 ^{o}F. The *2000 Deerfield River Watershed Assessment Report* indicated that the maximum temperature measured in the North River was 66.2 ^{o}F. The DMR data for the monitoring period indicates a temperature range of 47.4 to 97 ^{o}F. In order to determine the potential temperature increase in the North River due to the facility discharge, a mass balance calculation is shown below. The value "T downstream" as calculated below is the resulting river temperature in the river after mixing with the effluent assuming an upstream temperature of 66.2 ^{o}F and an effluent temperature reading of 97 ^{o}F, which was the highest recorded value.

[(Q plant * effluent T + {(7Q10 flow – Q plant) * upstream T}] / 7Q10 flow = T downstream

Where: Q plant = 0.63 cfs (0.41 MGD) – average plant flow
Effluent temperature (maximum) = 97 ^{o}F
7Q10 = 8.72 cfs
Upstream T = 66. 2 ^{o}F

[(0.63 cfs * 97 ^{o}F) + {(8.72 cfs – 0.63 cfs) * 66.2^{o}F }]) / 8.72 cfs = T downstream

(61 + 536) / 8.72 = 68.5 ^{o}F

Because the calculated rise in temperature is 2.3 ^{o}F at the highest recorded temperature during the period, the discharge is not expected to violate the temperature rise criterion of 3 ^{o}F.

Regarding the 68 ^{o}F instream standard, although it may occasionally be exceeded for short time periods when the instream temperature itself approaches the standard, it would not be expected to be sustained at this level to the degree that it would violate the standard which is expressed as "the mean of the daily maximum temperature over a seven day period". Therefore, the temperature monitoring requirement will be maintained in the draft permit with no numeric limit.

F. pH

The hydrogen-ion (H^-) concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (SU). Solutions with pH 7.0 SU are neutral, while those with pH less than 7.0 SU are acidic and those with pH greater than 7.0 SU are basic. Of note, although basic solutions are alkaline, basicity and alkalinity are not exactly the same. Basicity refers to the ratio of hydrogen and hydroxyl (OH^-) ions in solution, and is directly related to pH. Alkalinity is related to the acid-neutralizing capacity of a solution. In aquatic ecosystems, biological processes (e.g., decomposition) that increase the amount of dissolved carbon dioxide or dissolved organic carbon decrease pH but have no effect on acid-neutralizing capacity.[7] The facility adjusts pH to optimize treatment of the raw cotton and also to disinfect the incoming sanitary wastewater. Effluent with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Sudden pH changes can kill aquatic life.

The Massachusetts SWQSs for Class B, Inland Waters at 314 CMR 4.05(3)(b)3 require that the pH of the receiving water be in the range of 6.5 to 8.3 standard units but not more than 0.5 units outside the background range and that there be no change from background conditions that would impair any use assigned to this Class. However, the current permit allowed for a higher pH range limit of 9.0, to allow for the decreased use of chemical addition for further pH adjustment. As aforementioned, the permittee adjusts pH and alkalinity using sodium hydroxide and sodium bicarbonate. It was determined in the current permit that the higher pH limit of 9.0 SU would not be expected to adversely affect the instream biota as there is sufficient buffering capacity in the North River, as well as sufficient dilution such that there would be no measurable difference in the North River.

During the monitoring period, effluent pH has ranged from 6.7 to 8.9 SU, with no violations of the permitted range of 6.5 to 9.0 SU. The draft permit requires a pH limitation range of 6.5 to 9.0 SU, monitored daily by grab sample. The draft permit also requires that pH not be more than 0.5 units outside the background range.

G. Chemical Oxygen Demand

The current permit limits the discharge of COD to 3807 lbs/day as an average monthly and 7614 lbs/day as a maximum daily, based on the ELGs and a production rate of 90,000 lbs/day. Review of DMR data reveals that these limits have not been exceeded on any occasion, with the monthly average values ranging from 62 to 1484 lbs/day and the highest value of 2343 lbs/day. There are no WQC established for COD.

[7] Summarized from U.S. Environmental Protection Agency, Entry: Causal Analysis/Diagnosis Decision Information System, Volume 2: Sources, Stressors & Responses, pH. Available at http://www.epa.gov/caddis/index.html.

COD includes the total oxygen required to oxidize BOD and inert organic matter. Therefore, COD is always higher than BOD. COD measurements can be made over a few hours by adding re-agents to the wastewater to force oxidation. Since COD values are derived quickly in comparison to those of the 5-day BOD test, COD results can be used by operators for treatment plant control and operation. COD is not used to determine any potential oxygen "sag" in waters that receive continuous discharge wastewater, and therefore does not correlate to the in-stream dissolved oxygen value.

However, the WLA-based BOD limits are established to insure that the oxygen demand of the effluent will be controlled so as to not violate the instream standard for dissolved oxygen. As previously explained, this permit contains appropriate BOD effluent limits.

Since the production rate at which the draft permit will be based has changed to 86,000 lbs/day, the production based limits for COD have accordingly been revised. Therefore, the limits for COD have been revised to an average monthly limit of 3640 lbs/day and a daily maximum limit of 7280 lbs/day for COD. The monitoring frequency has been retained at once per calendar quarter.

H. *Escherichia coli (E.Coli)*

As noted earlier, the permittee accepts and treats sanitary (domestic) wastewater from 21 homes in the village of Griswoldville. The permittee raises the influent pH of this sanitary wastewater to between 10-12 SU with sodium hydroxide for disinfection. The draft permit retains *E.Coli* limits of a monthly average of 126 colonies (cfu) per 100 ml and a daily maximum of 409 cfu/100 ml, consistent with the MA SWQS for Class B waters. The value of 409 cfu/100 ml represents the 90% percentile of a log distribution with a geometric mean equal to 126 cfu/100 ml. The Massachusetts Water Quality Standards (WQS) Implementation Policy allows for seasonal disinfection. Therefore, the seasonal disinfection requirement will remain for this permit.

These limits are in effect seasonally from April 1 to October 31 of each year. During the monitoring period, *E. Coli* values have ranged from non-detect to 1950 cfu/100 ml with four (4) violations of the monthly average limit and six (6) violations of the daily maximum limit. On EPA's site visit conducted at the facility on January 7, 2016, facility personnel informed the permit writer that turtles that were found to be congregating in a section of the lagoon system were likely contributors to some high bacteria counts in March and April of 2013, when the highest exceedances occurred.

Therefore, these *E. Coli* limits will be retained in this draft permit since the facility continues to treat sanitary wastewater, reflecting the MA SWQS. This parameter will continue to be monitored weekly during the seasonal period noted above.

I. Sulfide

The current permit requires sulfide limits of 1.0 lbs/day as an average monthly and 2.0 lbs/day as a maximum daily. The current permit requires quarterly sampling. During the monitoring period, effluent sulfide levels have ranged from 0.09 to 18 lbs/day, with an average of 0.87 lbs/day and one (1) violation of each limit. These limits were originally established in the 1983 permit, citing a permit application result of 0.23 lbs/day at that time.

The ELGs applicable to the facility require sulfide limits of 10.3 lbs/day as a monthly average and 20.6 lbs/day as a daily maximum, based on a production rate of 86,000 lbs/day, as shown in Table 2. These limits are less stringent than the limits in the current permit.

Sulfide is not listed specifically in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Therefore, according to the Massachusetts Surface Water Quality Standards [314 CMR 4.05(5)(e)]:

> For pollutants not otherwise listed in 314 CMR 4.00, the *National Recommended Water Quality Criteria: 2002, EPA 822R-02-047, November 2002* published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher.

EPA reviewed the National Recommended Water Quality Criteria, which do not establish a sulfide criterion, but do contain a 'sulfide-hydrogen sulfide' chronic (CCC) criterion of 2.0 ug/L. Review of EPA's Water Quality Criteria for Water (The Red Book, 1976), shows that the 'sulfide-hydrogen sulfide' limit refers to undissociated hydrogen sulfide. When hydrogen sulfide dissolves in water, it dissociates into hydrosulfide (HS^-) and sulfide ion (S^{-2}), with the ratio of the concentrations of these various ions depending on the pH of the solution. At lower pH values, the majority of sulfide is expected to be in the form of undissociated hydrogen sulfide.[8] Therefore, since the pH of the discharge from this facility averages about 8 SU, more of the sulfide ion would be expected to be present, with a lower concentration of hydrogen sulfide expected, which is the parameter of concern regarding the water quality criteria.

The current permit limits of 1.0 lb/day as a monthly average and 2.0 lbs/day as a daily maximum shall be retained in the draft permit, based on anti-backsliding requirements. These are more stringent than the TBEL derived limits of 10.3 and 20.6 lbs/day, respectively. The monitoring frequency shall continue to be required quarterly.

8 Red Book (EPA 440/9-76-023, July, 1976)

J. Phenols

The current permit established a maximum daily phenol limit of 1.0 lb/day with a monthly average monitor only requirement. Review of DMR data shows that this limit has not been exceeded with a range of 0.015 to 0.24 lbs/day and an average value of 0.052 lbs/day.

Phenol is not listed specifically in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Therefore, according to the Massachusetts Surface Water Quality Standards [314 CMR 4.05(5)(e)]:

> For pollutants not otherwise listed in 314 CMR 4.00, the *National Recommended Water Quality Criteria: 2002, EPA 822R-02-047, November 2002* published by EPA pursuant to Section 304(a) of the Federal Water Pollution Control Act, are the allowable receiving water concentrations for the affected waters, unless the Department either establishes a site specific criterion or determines that naturally occurring background concentrations are higher.

The National Recommended Water Quality Criteria include human health criteria of 4 mg/L (water and organism) and of 300 mg/L (organism only) for phenol. (See EPA 820-R-15-061; June 2015). The Technical Support Document for Water Quality-based Toxics Control (TSD) specifies that the minimum dilution at which water quality criteria for human health consumption apply would be the harmonic mean flow.[9] Therefore, the human health consumption dilution factor, which is used to calculate human health criteria-based effluent limits, is calculated as follows:

Harmonic Mean Flow {river}/ effluent flow = human health criteria dilution factor
54.6 *cfs*[10] / 1.38 *cfs* = 39.6

Based on this dilution factor of 39.6 and a permitted flow of 0.89 MGD, the human health criteria (HHC) would dictate effluent phenol limits of 1,170 lbs/day (water and organism) and 8,830 lbs/day (organism only), as calculated below, using a conversion factor (CF) to derive the mass-based limits:

HHC (Water+Org) limit (ug/L) = (HHC (Water+Org))*(human health dilution factor)
= 4 mg/L * 39.6 = 158 mg/L

HHC (Water+Org) limit (lbs/day) = Flow (MGD) * Limit (mg/L) * CF [(lb*L)/(MG*mg)]
= 0.89 MGD * 158 mg/L * 8.34 (lb*L)/(MG*mg)
= **1,170 lbs/day**

HHC (Organism only) limit (ug/L) = (HHC (Organism))*(human health dilution factor)
= 30 mg/L * 39.6 = 1190 mg/L

9 Technical Support Document for Water Quality-based Toxics Control, p. 130.
10 Based on USGS calculation using the period of daily mean discharges during water years 1941 through 2015, the harmonic mean discharge is 54.6 cfs.

HHC (Organism only) limit (lbs/day) = Flow (MGD) * Limit (mg/L) * CF [(lb*L)/(MG*mg)]
= 0.89 MGD * 1190 mg/L * 8.34 (lb*L)/(MG*mg)
= **8,830 lbs/day**

The calculated TBELs for phenol of 5.2 lbs/day as a monthly average and 10.3 lbs/day as a daily maximum, which are based on a daily production rate of 86,000 lbs, are more stringent than the WQBELs.

However, the maximum daily limit of 1.0 lb/day will be retained in the draft permit due to anti-backsliding provisions and since this value is more stringent than the WQBELs and TBELs calculated above. Looking back in the permit record, the 1980 permit was issued with "non-detectable" levels for phenol to the Kendall Company, the owner of the facility at the time. As a result of a letter from Weston and Sampson to EPA of August 24, 1984, the permittee's consultant at the time argued that analytical methods had improved and that phenol had been detected at 0.0006 mg/l. It was requested that EPA reconsider this non-detectable limit (as well as the one for total chromium) and the 1985 permit modification of the 1983 final permit, included daily maximum limits of 0.01 mg/l for phenol and 0.10 for total chromium, The permit accompanying the 1985 permit stated that the limits for phenol and chromium "incorporate the level of detection and sensitivity of the typical equipment required for the EPA Standard Methods for each of these parameters." Monitoring frequency has been maintained at once per quarter. The phenol and chromium limits were subsequently converted to the mass based daily maximum limits of 1.0 lb/day and 1.1 lbs/day, respectively, in the 2001 permit.

K. Total Chromium

As noted above in the phenol limit discussion, the total chromium limit was originally "non-detectable" in the 1980 permit but subsequently changed to a limit of 0.10 mg/l based on a judgement of sensitivity of test methods at that time. It was then converted to a mass based limit of 1.1 lbs/day as a daily maximum in the 2001 permit.

Review of DMR data shows that this limit has not been exceeded on any occasion, with a maximum chromium level of 0.12 lbs/day. The 2010 permit included a provision that allowed the permittee to request for a reduction in testing frequency for this parameter after eight (8) consecutive results that were in compliance with the permit limit. On January 9, 2014, the permittee requested a monitoring frequency reduction and the EPA granted this request by letter of March 13, 2014. Since that time, the permittee has been monitoring once per year for total chromium, resulting in a range of values from 0.009 to 0.12 lbs/day. This permit maintains this once per year monitoring frequency.

EPA's National Recommended Water Quality Criteria contain criteria for chromium (III) and chromium (VI) based on dissolved metal concentrations. The criteria for chromium (III) are hardness dependent and will be used in this calculation as it is typically the predominant form of chromium. For the calculations below, a hardness of 30 mg/L was used based on the average hardness of receiving water samples reported in WET test results.

Calculation of Water Quality-Based Total Chromium limits

$$e\ (X\ [\ln(\ h\ )] + Y)$$

Where X is the coefficient for dissolved fractions of a particular metal;
Y is the coefficient for dissolved fractions of a particular metal; and
h is the hardness of the receiving water; ln is the natural logarithm

Chronic: X = 0.819 Y = 0.6848 Acute X = 0.819 Y = 3.7256

Estimated hardness = 30 mg/l as $CaCO_3$
(**average value from Whole Effluent Toxicity (WET) testing reports from 2009 - 2013)**

Thus; Monthly Average WQBEL: Daily Maximum WQBEL:

$e\ (0.819\ [(\ln 30)] + 0.6848) =$ $e\ (0.819\ [(\ln 30)] + 3.7256) =$

32.1 µg/l 672 µg/l

To achieve the applicable WQBELs, the following dilution factors were used:

average flow dilution: **13.8;** maximum flow dilution: **4.9**

Monthly Average (chronic) Daily Maximum (acute)
13.8 (32.1) = **443 ug/l = 0.44 mg/l** 4.9 (672) = **3290 ug/l = 3.29 mg/l**

Converting to mass based limits:

0.44 mg/l (0.41 MGD)(8.34) = **1.5 lbs/day** 3.29 (0.89 MGD)(8.34) = **24.4 lbs/day**

The current daily maximum limit is more stringent than the ELG-based limit of 10.3 lbs/day, as well as the 24.4 lbs/day limit based on WQC. Therefore, the maximum daily limit of 1.1 lbs/day has been retained based on anti-backsliding provisions.

The WQBEL monthly average limit of 1.5 lbs/day has not been included in the draft permit, since compliance with the more stringent maximum daily limit of 1.1 lbs/day will also ensure compliance with this monthly average limit.

L. Total Copper

Copper may be toxic to aquatic life at low concentrations, so the current permit contained a monitoring requirement for total copper to assess whether or not the levels in the effluent represented a reasonable potential to cause or contribute to WQS violations. The current permit included a monthly monitor only requirement for total copper and the values ranged from non-detect to 173 ug/l, with an average of 33 ug/l.

As noted above, MA SWQS require that the available effluent dilution be calculated based upon the 7Q10 flow of the receiving water (314 CMR 4.03(3)(a)). 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.

Calculation of Water Quality-Based Total Copper limits

$$e\,(X\,[\ln(h)] + Y)$$

Chronic: X = 0.8545 Y = -1.702 Acute X = 0.9422 Y = - 1.70

Estimated hardness = 30 mg/l as CaCO3
(**average value from Whole Effluent Toxicity (WET) testing reports from 2009 - 2013)**

Thus; Monthly Average WQBEL: Daily Maximum WQBEL:

$e\,(0.8545\,[(\ln 30)] - 1.702) =$ $e\,(0.9422\,[(\ln 30)] - 1.70) =$

3.3 µg/l 4.5 µg/l

To achieve the applicable WQBELs, the following dilution factors were used:

average flow dilution: **13.8;** maximum flow dilution: **4.9**

Monthly Average (chronic)	Daily Maximum (acute)
13.8 (3.3) = **46 ug/l**	4.9 (4.5) = **22 ug/l**

Since the calculated maximum daily WQBEL for total copper is lower than the average concentration of 33 ug/l during the monitoring period, there is a reasonable potential (RP) to violate this WQBEL. Regarding the monthly average value of 46 ug/l, this level was also exceeded several times during the monitoring period and thus there is also a RP that this level would also be exceeded. Therefore, the draft permit establishes 22 ug/l as the monthly average and daily maximum limit for total copper, since the monthly average limit cannot be higher than the daily maximum limit. Total copper will continue to be monitored at a frequency of once per month.

M. Nutrients

Nutrients, such as phosphorus and nitrogen, are necessary for the growth of aquatic plants and animals to support a healthy ecosystem. In excess, however, nutrients can contribute to fish disease, brown tide, algae blooms and low dissolved oxygen (DO). Excessive nutrients, generally phosphorus in freshwater and nitrogen in salt water, stimulate the growth of algae and aquatic plants, which could start a chain of events detrimental to the health of an aquatic ecosystem. When these plants and algae decay, this generates strong odors, often resulting in lower dissolved oxygen levels in the river. This could in turn impair the benthic habitat as fish and shellfish are deprived of oxygen and excessive algae and foul smells could decrease aesthetic value, by affecting swimming and recreational uses.

Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it stimulates rapid plant growth in freshwater ecosystems when it is present in high quantities. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by (1) increasing the oxygen demand within the water body (to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter); (2) causing an unpleasant appearance and odor; (3) interfering with navigation and recreation; (4) reducing water clarity; and (5) reducing the quality and availability of suitable habitat for aquatic life. Cultural (or accelerated) eutrophication is the term used to describe excessive plant growth in a water body that results from nutrients entering the system as a result of human activities. The relationship between high levels of phosphorus and eutrophication, as measured by chlorophyll *a*, periphyton, macrophyte, and dissolved oxygen levels is well documented in scientific literature, including in guidance developed by EPA to address nutrient over-enrichment. *See Nutrient Criteria Technical Guidance Manual – Rivers and Streams,* July 2000 (EPA-822-B-00-002). Discharges from municipal and industrial wastewater treatment plants, agricultural runoff, and stormwater are examples of human-derived (i.e., anthropogenic) sources of nutrients in surface waters.

The Massachusetts SWQSs at 314 CMR 4.05(5)(c) state "*Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00*".

In the absence of a numeric water quality criterion for phosphorus, EPA looks to nationally recommended criteria and other technical guidance documents. *See* 40 CFR 122.44(d)(1)(vi)(B). EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The *1986 Quality Criteria for Water* ("Gold Book") recommends that, in order to control eutrophication, instream phosphorus concentrations of no greater than 50 ug/l in any stream entering a lake or reservoir, 100 ug/l for any stream not discharging directly to lakes or impoundments, and 25 ug/l within a lake or reservoir. For this discharge, the 100 ug/l criterion is appropriate as there are no impoundments directly downstream of this facility.

In 2001, EPA released Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published ecoregion-specific criteria represent conditions in waters minimally impacted by human activities, and are thus representative of water without cultural eutrophication. This facility is within Ecoregion VIII, classified as "Nutrient Poor, Largely Glaciated Upper Midwest and Northeast". Recommended criteria for this ecoregion is found in *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Nutrient Ecoregion VIII,* (December, 2001, EPA 822-B-01-015). The recommended aggregate total phosphorus criterion for this ecoregion is 10 ug/l.

The MA SWQS at 314 CMR § 4.00 do not contain numerical criteria for total phosphorus. They include a narrative criterion for nutrients at 314 CMR 4.05(5)(c), which provides that "[a]ny existing point source discharges containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practicable treatment for POTWs and BAT for non-POTWs, to remove such nutrients to ensure protection of existing and designated uses."

In order to determine whether this permittee's discharge of total phosphorus is contributing to the water quality impairment, EPA is applying the Gold Book criterion (0.1 mg/l) because it was developed from an effects-based approach rather than the reference conditions-based approach used in the derivation of the ecoregional criteria. The effects-based approach is preferred in this case because it is more directly associated with an impairment of a designated use (i.e., recreation). The effects-based approach provides a threshold value above which water quality impairments are likely to occur. It applies empirical observations of a causal variable (i.e., phosphorus) and a response variable (i.e., algal growth) associated with impairment of designated uses. Reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregional class. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions.

The next step is to determine whether there is a reasonable potential (RP) to violate water quality standards, which can be accomplished with a mass balance equation using an instream value downstream of the discharge of 100 ug/l and solving for the effluent limit that would be adequate to maintain this instream level. From the 2000 WQA report noted earlier, of the three (3) upstream phosphorus samples, 2 were not detected (< 10 ug/l) and one was detected at 17 ug/l. There were also three (3) downstream samples recorded at 19, 20 and 38 ug/l, a short distance from the discharge.

Average Monthly Phosphorus Limit

$$QsCs = QdCd + QrCr$$

Where
Cs = Concentration below outfall = 100 µg/l
Qs = Streamflow below outfall = 8.72 cfs (7Q10 flow)
Qd = Monthly Average Discharge flow = 0.41 MGD = 0.63 cfs
Cd = Discharge concentration at which instream P is estimated to be 100 ug/l = ?
Qr = Upstream flow = 8.72 cfs (7Q10 flow)
Cr = Average Upstream concentration = 9 ug/l*
* (assume the 2 non-detect values were at one-half the no-detect level of 10 ug/l)
To solve for the discharge concentration necessary to meet the instream level of 100 ug/l:

$$Cd = \frac{QsCs - QrCr}{Qd}$$

Therefore, $Cd = \frac{(8.72 \text{ cfs} \times 100 \text{ µg/l}) - (8.72 \text{ cfs} \times 9 \text{ µg/l})}{0.63 \text{ cfs}} = 1260 \text{ ug/l} =$ **1.26 mg/l**

During the monitoring period, the effluent phosphorus has ranged from 0.1 to 21 mg/l while averaging 3.1 mg/l. The current permit required quarterly monitoring of phosphorus with no effluent limit. There are limited upstream phosphorus data with which to do a mass balance calculation to calculate the effluent limit that would meet the instream water quality criterion of 100 ug/l. Although there were three (3) downstream data points from the year 2000 at 19, 20, and 38 ug/l, these data are limited and taken some distance downstream of the Barnhardt discharge. Since the calculation above indicates a RP for this effluent to violate the instream criterion of 100 ug/l for phosphorus, a monthly average effluent limit of 1.26 mg/l has been established and the monitoring frequency has been changed from quarterly to monthly. This limit will be in effect during the seasonal period of May through October, when elevated nutrients could impact the receiving water, while there is a monitor only requirement for the period of November through April.

A separate, statistically-based reasonable potential analysis was conducted using the DMR data for phosphorus. Based on this effluent data and the dilution factor of 13.8, the 95^{th} and 99^{th} percentile values, respectively, were 0.92 mg/l and 1.90 mg/l, as shown in Attachment 5. Since the 99^{th} percentile value is above the calculated limit of 1.26 mg/l, this confirms that there is a reasonable potential for effluent phosphorus levels to violate WQS.

Nitrogen

The 2010 Permit required reporting of the daily maximum concentrations of Total Kjeldahl Nitrogen, and Nitrate and Nitrite-Nitrogen. The Draft Permit proposes reporting of the monthly average and maximum daily effluent concentrations as well as the mass (in pounds per day) of Total Nitrogen, Total Kjeldahl Nitrogen, and Nitrate and Nitrite-Nitrogen. This permit also requires the permittee to maintain an annual average total nitrogen loading of not more than 67.3 lbs/day. The rationale for these requirements is explained below.

Total Nitrogen

In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The Barnhardt discharge to the North River is tributary to the Deerfield River, which flows to the Connecticut River, which eventually empties into Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see Table 4 below). The estimated point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively were 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day, based on data from 2004 and 2005 from all POTWs in the watershed. The following

table summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

Table 4: Long Island Sound TMDL
Nitrogen Baseline Loadings, Targets, and Current Loadings

Basin	Baseline Loading[1] (lbs/day)	TMDL Target[2] (lbs/day)	Current Loading[3] (lbs/day)
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading
3. Estimated current loading from 2004 – 2005 DMR data

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met. In the 2010 permit, the total nitrogen loading from this facility was estimated at 66 pounds/day. The estimated current loading for the facility using the nitrogen data during the monitoring period shown in Table 5 below, is roughly the same, at 67.3 pounds/day, based upon a Total Nitrogen concentration of 19.7 mg/l and the average flow of 0.41 MGD (19.7 mg/L * 0.41 MGD * 8.34).

Table 5: Summary of Nitrogen Results (mg/L) from March 2011 to March 2016

	Nitrogen, Total Kjeldahl, mg/l	Nitrogen, nitrate and nitrite (as N), mg/l	Nitrogen, Total, mg/l
Lowest Monthly Value	6.45	0.02	6.47
Highest Monthly Value	42.2	38	80.2
Average	14.4	5.2	19.7

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over baseline loadings, EPA has included a condition in Part I.B.2 of the Draft Permit requiring the permittee optimize the operation of its treatment system for the removal of nitrogen, to evaluate alternative methods of operating its treatment plant to optimize the removal of nitrogen and to describe previous and ongoing optimization efforts. This alternative methods evaluation is required to be completed and submitted to EPA and MassDEP within one (1) year of the effective date of the permit, along

with a description of past and ongoing optimization efforts. The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years. In addition, the permittee is required to report the total monthly nitrogen loading of the discharge and maintain the current loading of 67.3 pounds/day as an annual average.

EPA is currently developing a total nitrogen threshold loading limit to ensure that the Connecticut River watershed does not cause or contribute to eutrophication related impairments in Long Island Sound. This load limit is likely to result in the establishment of water quality based total nitrogen limits for individual point source discharges in the Connecticut River watershed.

In the interim, Part B.2 of the draft permit requires the permittee to optimize the operation of its treatment plant for nitrogen removal. The permittee is strongly advised to consider alternatives for further enhancing nitrogen reduction in conjunction with any treatment system upgrades or modifications that are envisioned for this facility. Given the high variability of effluent total nitrogen levels and in order to better track trends in total nitrogen discharges form this facility, the monitoring frequency in the permit has been increased to from once per month to twice per month.

N. Ammonia Nitrogen, as N

Ammonia is highly toxic and can impact a receiving water's dissolved oxygen level. Ammonia can also be responsible for the development of eutrophic conditions in the receiving water. The chemical form of ammonia in water consists of two species, the more abundant of which is the ammonium ion (NH_4^+) and the less abundant of which is the non-dissociated or unionized ammonia (NH_3) molecule. The concentration of total ammonia, often expressed on the basis of nitrogen as total ammonia nitrogen, is the sum of NH_4^+ and NH_3 concentrations. The ratio of these species in a given aqueous solution is dependent upon both pH and temperature. Generally, as values of pH and temperature increase, the concentration of NH_3 increases and the concentration of NH_4^+ decreases and the toxicity of total ammonia increases as pH increases.[11]

The current permit was issued with an ammonia as nitrogen daily maximum limit of 42 lbs/day. That ammonia limit was appealed by the permittee and that limit was stayed (did not go into effect) until November 3, 2011, when the permittee withdrew its permit appeal. In the interim period, the ammonia limit had reverted back to the prior permit's limit of 63 lbs/day.

EPA's recommended criteria for ammonia are based on temperature, pH and the presence of early life stages of fish in the receiving water. These criteria were revised in 2013. The instream temperature data for the North River, cited in Section IV.E. above, indicated a high value of 66°F. The instream temperature was approximated at 68°F (20 °C) to allow for a roughly 2°F increase in instream temperature due to the Barnhardt's discharge as noted in the temperature discussion in Section IV.E. Although the effluent pH data during the monitoring period averaged 7.8 SU, the instream pH would be more appropriate to use in calculating the applicable ammonia

[11] Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater. EPA 822-R-13-001, April 2013.

limit. Therefore, reviewing the whole effluent toxicity (WET) test data from 2010 through 2013, the average instream pH value was calculated to be 7.2 SU, which will be used for calculating this limit. Using these pH and temperature values and citing Tables 5a and 6 of the ammonia criteria document above, this would yield an acute limit of 14 mg/l and a chronic limit of 1.7 mg/l. Conversion to corresponding mass based limits would be as follows:

Flow (MGD) * Acute limit (mg/L) * CF [(lb*L)/(MG*mg)]
= 0.89 MGD * 14 mg/L * 8.34 (lb*L)/(MG*mg)
= 104 lbs/day

Chronic limit (lbs/day) = Flow (MGD) * Chronic limit (mg/L) * CF [(lb*L)/(MG*mg)]
= 0.41 MGD * 1.7 mg/L * 8.34 (lb*L)/(MG*mg)
= 5.8 lbs/day

Table 6. Ammonia Data from WET tests

WET Test Date	Upstream NH3, as N, mg/l	Effluent NH3, as N, mg/l
December 2010	0.11	2.0
April 2011	0.2	0.69
May 2011	0.06	0.55
July 2011	0.06	0.55
August 2011	< 0.02	1.4
September 2011	0.12	1.2
October 2011	0.02	1.1
January 2012	0.17	0.95
April 2012	0.11	7.6
July 2012	0.04	1.03
October 2012	0.03	0.96
July 2013	0.21	1.57
October 2013	0.12	1.4
Average	0.096	1.5
Median	0.11	1.1
High	0.21	7.6
Low	< 0.02	0.55

To determine whether or not a reasonable potential exists to violate the instream ammonia limits calculated above, the following mass balance equation is used:

(Qup)(Cup) + (QEff)(CEff) = (QDown)(CDown)

Where:
Qup = Upstream 7Q10 flow of 8.72 cfs, upstream 1Q10 flow of 6.79 cfs
Cup = Median and high upstream ammonia concentrations : 0.11 mg/l, 0.21 mg/l
QEff = Monthly Average flow 0.41 MGD: 0.63 cfs
CEff = Maximum effluent ammonia concentration: 7.6 mg/l
QDown = Downstream flow (7Q10, 1Q10): 8.72 cfs, 6.79 cfs
CDown = Downstream ammonia concentration

$$\frac{(Qup)(Cup) + (QEff)(CEff)}{(QDown)} = (CDown)$$

Chronic:

$$\frac{(8.72)(0.11) + (0.63)(7.6)}{8.46} = \mathbf{0.68\ mg/l}$$

Acute:

$$\frac{(6.79)(0.21) + (0.63)(7.6)}{6.79} = \mathbf{0.92\ mg/l}$$

The resulting instream ammonia concentrations under chronic and acute flow conditions are estimated to be 0.68 and 0.92 mg/l, respectively. These are both well below the limits of 14 and 1.7 mg/l calculated above. Therefore, EPA has determined that there is no reasonable potential for the discharge of ammonia to cause or contribute to an exceedance of applicable water quality criteria and no limit has been included in the draft permit. However, the quarterly monitoring of ammonia will continue to be required with the reporting of concentration and mass discharged. The values from the quarterly WET tests may be used to fulfill this requirement.

O. Whole Effluent Toxicity Testing

EPA's Technical Support Document for Water Quality-Based Toxics Control, March 1991, EPA/505/2-90-001, recommends using an "integrated strategy" containing both pollutant-specific (chemical) approaches and whole effluent (biological) toxicity approaches to better control toxics in effluent discharges. Pollutant-specific approaches, such as those in EPA's Gold Book (ambient water quality criteria) and state regulations, address individual pollutants, whereas whole effluent toxicity (WET) approaches evaluate, in effect, interactions between pollutants, i.e., the "additive," "antagonistic" and/or "synergistic" effects of combinations of pollutants. In addition, WET analyses can reveal the presence of unknown toxic pollutants. Region I adopted this "integrated strategy" on July 1, 1991, for use in permit development.

Section 101(a)(3) of the CWA states a national goal of prohibiting the discharge of toxic pollutants in toxic amounts. The Massachusetts SWQS, in effect, prohibit such discharges, by stating that "all surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife." 314 CMR 4.05(5)(e). The NPDES regulations at 40 C.F.R. § 122.44(d)(1)(v) require whole effluent toxicity (WET) limits in a permit when the permitting authority determines that a discharge causes, has the "reasonable potential" to cause, or contributes to an instream excursion above the State's narrative criterion for toxicity.

Sections 402(a)(2) and 308(a) of the CWA authorize EPA to establish toxicity testing requirements and toxicity-based permit limits in NPDES permits. Section 308 specifically states that biological monitoring methods may be required when needed to carry out the objectives of the Act. Under certain narrative State 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" criterion.

The regulations at 40 C.F.R. § 122.44(d)(ii) state that:

> [w]hen 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 nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.

These discharges are variable in quality and contain metals and other pollutants that individually could be toxic to aquatic life. However, it is not possible based on current information to determine whether or not the combination of these pollutants would result in toxic effects upon discharge. WET testing is conducted to assess whether an effluent contains a combination of pollutants which produces toxic effects. WET testing and WET limits are used in conjunction with pollutant specific effluent limits to control the discharge of toxic pollutants.

The 2010 permit required the permittee to conduct four freshwater chronic (and modified acute) WET tests for the Outfall 001 effluent, during each year of the permit (1/quarter) and meet effluent limitations of a chronic no observed effect concentration (C-NOEC) of greater or equal to 5% based on the dilution factor of 20.2 and an acute LC_{50} of greater than or equal to 100%. The LC_{50} is the concentration of the effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than 50% mortality rate. C-NOEC is the chronic no observed effect concentration.

During the monitoring period, the LC_{50} has ranged from 8.8% to 100%, with an average of 79%, and eight (8) violations of the permit limit. The C-NOEC values have ranged from 5% to 100%, with an average of 19%, and no violations of the limit. See Attachment 4 for a summary of the WET testing results. Based on these test results, there is a reasonable potential that the facility's discharge may cause or contribute to an exceedance of the MA WQS for toxicity.

As explained in the fact sheet accompanying the 2010 permit, Barnhardt (then BBA Nonwovens) undertook an evaluation of the probable causes of effluent toxicity and presented the results in the report *Status Report on Toxicity Investigations February 2006 BBA Fiberweb* (RMT Consulting Engineers, P.C.). As stated in Appendix C of this report, a report from MassDEP Office of Technical Assistance for Toxics Use Reduction, dated January 10, 2006, the sources of

toxicity in the discharge were believed to be the high total dissolved solids (TDS) levels and the alkalinity.

The major contributors to TDS are the sodium hydroxide in the wastewater and the sulfuric acid used to neutralize the discharge. The latter will generate sulfate ions which are known to be toxic. The high alkalinity in the discharge is likely due to the use of flue gas for pH adjustment since carbon dioxide in the flue gas can lead to the formation of bicarbonate and carbonate ions in the effluent. At a pH of 8.6 SU, the total alkalinity of the combined industrial and domestic discharge is due to a combination of carbonate, bicarbonate, and hydroxide ions.

The MassDEP report cited above concluded that elimination or reduction of the use of sodium hydroxide would significantly lower the probability of having high TDS and toxic ions in the discharge. The facility uses sodium hydroxide to scour goods and for bleaching. The residual sodium hydroxide in the spent scour solution could be as high as 3% and less than 1% in the bleaching solution.

The report suggested the facility investigate the possibility of replacing chemical scouring using sodium hydroxide with enzymatic scouring. It is expected that enzymatic scouring would eliminate the need for harsh alkaline chemicals (by replacement with biological organisms), provide up to 12% cleaner cotton than traditional harsh alkaline processes, reduce energy use by up to 20%, and save process time. Alternatively, the report suggested the facility explore the use of micro/ultrafiltration using membranes to recover sodium hydroxide from the spent solutions. The recovered alkaline solution could then be refortified for its primary process use, or reused in the first cleaning operation at the cake preparation stage. Therefore, the 2010 permit required the development and implementation of BMPs, including, the investigation of whether alternate treatments such as enzymatic scouring and micro/ultrafiltration could reduce effluent toxicity.

Regarding the use of enzymatic scouring in place of chemical scouring with sodium hydroxide, the permittee investigated this option and concluded the following in correspondence of October 28, 2011:

> Initial trails found that enzymes were not effective for its line of products. Barnhardt supplies purified cotton which is incorporated into Class 2 (feminine hygiene) and Class 1 (dental application) medical devices and pharmaceutical packaging. These products have very high purity and absorbency standards as dictated by the United States and European Pharmacopeia along with individual customer standards. Investigation and trialing using various enzymatic systems specific to the removal of impurities in cellulose did not yield the desired results specifically for fatty matter removal and absorbency for the Class 2 medical devices and fatty matter removal for Class 1 medical devices and pharmaceuticals. Absorbency was within standards for Class 1 medical devices and pharmaceuticals however far underperformed the standard alkaline scour process.

Other steps which the permittee has taken to reduce sodium hydroxide and TDS in general to mitigate effluent toxicity are described below:

1. Investigation into the technologies available including ultrafiltration and evaporation for the reclamation of sodium hydroxide at concentrations less than 0.5% to 1.0% were investigated and found to not be cost effective.

2. Improved Mechanical Cleaning - In January 2011, the permittee invested in new equipment and procedures to improve the mechanical cleaning of the cotton before the purification process. The purpose is to remove additional foreign matter which will results in more efficient processing and the use of fewer compounds that result in TDS in the wastewater.

3. Membrane Grade Caustic — In January 2011, the permittee stopped ordering the diaphragm grade caustic it has traditionally used in the purifying and scouring procedures and started ordering the higher purity membrane grade caustic. The typical percent of NaCl in the diaphragm grade caustic that was approximately 12000 ppm whereas the typical level of NaC1 in the membrane grade caustic is approximately 0.45 ppm.

4. Incoming Process Water Improvement - The cleanliness of the process water from the North River is very important in the ultimate quality of the purified cotton fiber. The permittee has stepped up its filter maintenance and cleaning schedules to assure process water quality for chemical reduction in its purification process.

5. Reduced Use of Reclaim Water — The complete use of recycle water in the initial fills for both the high temperature scour and hot wash portion of the bleach cycle runs counter to the goal of TDS reduction. The continual addition of dissolved solids to the reclaim bath builds the concentration of salts and TDS in the kier liquor at a rapid rate, creating a more concentrated bath flowing to the wastewater treatment plant. The re-introduction of these impurities to the bleach process also hinders the purification and color removal process and creates a situation where additional chemicals are needed to ensure that impurities are removed to meet customer specifications.

6. Caustic Elimination in the Wet Out Process — Processing trials have showed that total elimination of alkali from the fiber wet out process cake making process was not possible. However, the permittee has reduced the levels for most fiber types.

7. Caustic Reduction in the Scour Phase — With the improved incoming process water and reduced use of reclaimed water, and improved mechanical cleaning prior to purification, the permittee has been able to reduce alkali usage in the scour phases of most item codes.

Prior to the above changes the effluent TDS was averaging 2929 mg/l and an acute toxicity pass rate of 13%. As these changes have been phased in, the facility has averaged an effluent TDS of 1509 and an acute toxicity pass rate of over 50%. Based on recent toxicity test results, the permittee believes that TDS may not be the only factor influencing effluent toxicity and is continued to investigate other potential causes.

Pursuant to EPA Region 1 policy and MassDEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990), discharges having a dilution ratio of less than 20:1 require chronic toxicity testing four times per year with an LC_{50} limit equal to 100%. In addition, a chronic no observed effect concentration (C-NOEC) limit must also be established using the instream waste concentration (IWC) of the effluent. The IWC is the inverse of the dilution factor (DF) and is calculated as follows:

$$IWC = 1/13.8 = 0.072, \text{ or a C-NOEC limit of } \geq \mathbf{7.2\%}$$

This C-NOEC limit replaces the current limit of ≥ 5 %, which was less stringent, due to a different dilution factor. Therefore, since toxicity issues persist, this permit will require quarterly chronic WET tests with an LC50 limit of 100% and a C-NOEC limit of 7.2%.

The permittee shall test the daphnid, *Ceriodaphnia dubia*. The WET tests must be performed in accordance with test procedures and protocols specified in Attachment A of the permit. The chronic WET tests shall be performed during the months of January, April, July, and October and test reports are to be submitted with the February, May, August, and November DMRs, respectively.

P. Special Conditions

Best Management Practices (BMPs) Plan

The 2010 permit required the development and implementation of Best Management Practices (BMPs) to be followed in operating the facility, cleaning tanks and other equipment and disposing of any liquid and solid waste. The purpose of the plan was to identify and to describe the practices which minimize the amounts of biological and chemical pollutants discharged to surface waters and to reduce and/or eliminate the toxicity of the effluent. These BMPs were to include, at a minimum, investigation of alternative treatments such as enzymatic scouring and use of micro/ultrafiltration using membranes to recover sodium hydroxide for reuse.

Pursuant to Section 304(a) of the Act and 40 CFR §125.103(b), BMPs may be expressly incorporated into a permit on a case-by-case basis where it is determined they are necessary to carry out the provision of the CWA under Section 402(a)(1). These conditions apply to the Facility because it utilizes materials containing pollutants listed as toxic under Section 307(a)(1) of the CWA or pollutants listed as hazardous under Section 311 of the CWA and have routine operations that could result in significant amounts of these pollutants reaching waters of the United States. In concert with the EPA requirements, the Commonwealth of Massachusetts has also addressed BMPs in their regulations at 314 CMR 3.00.

The purpose of the non-numeric technology-based limitations and associated control measures (including BMPs) is to prevent or minimize the concentration of pollutants (biological, chemical and physical) in the process water discharged to the receiving water. These requirements will ensure that the process water discharged by the Facility meets Massachusetts' SWQSs.

The non-numeric technology-based effluent limitations are as follows:

- Proper operation and maintenance of the pollution control equipment;
- Preventative maintenance procedures for the pollution control equipment;
- Procedures and maintenance schedule for removal and disposal of solids/sludge;
- Control measures which minimize the discharge to surface waters of suspended solids, floating solids, foam, visible sheen, and settleable solids;
- Control measures which prevent discharges from causing objectionable discoloration;

These non-numeric effluent limitations support, and are equally enforceable as, the numeric effluent limitations included in the draft permit.

The draft permit requires that the Permittee continue to implement the BMP Plan describing the selection, design, implementation and maintenance of BMPs to satisfy the non-numeric technology-based effluent limitations included in the draft permit. The draft permit requires that all documentation of BMP Plan activities shall be kept at the Facility for at least three (3) years and provided to EPA or MassDEP upon request.

Except for site-specific BMPs included in the draft permit, the Permittee may select, design, implement and maintain BMPs as the Permittee deems appropriate to meet the requirements of the draft permit. The draft permit directs the Permittee to incorporate any control measures (including BMPs) selected directly into the BMP Plan. The Permittee is not required to submit the BMP Plan to EPA or MassDEP for approval. However, the BMP Plan must be maintained on site at the Facility and provided to EPA and/or MassDEP upon request. Annual certification of the BMP Plan is also required.

Q. Reporting Requirements

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 CFR §§122.41 (j), 122.44 (l), and 122.48.

The Draft Permit requires the permittee to continue to electronically report monitoring results obtained during each calendar month as Discharge Monitoring Report (DMRs) to EPA and the state using NetDMR no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool for regulated CWA 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 CFR § 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.

In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for

providing written notifications required under the Part II Standard Permit Conditions. With the use of NetDMR to report DMRs and reports, the permittee is no longer be required to submit hard copies of DMRs or other reports to EPA and is no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP. State reporting requirements are further explained in the draft permit.

VI. Other Legal Requirements

A. Essential Fish Habitat

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 the 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" (EFH). The Amendments define EFH as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity," (16 U.S.C. §1802(10)). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH (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 species for which federal fisheries management plans exist (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.

A review of available EFH information indicates that North River is not designated EFH for any federally managed species. Therefore, consultation with NMFS is not required. If any adverse effects are detected as a result of this permit action, NMFS will be notified and an EFH consultation will promptly be initiated. During the public comment period, EPA has provided a copy of the Draft Permit and Fact Sheet to NMFS.

B. Endangered Species Act

Under Section 7(a) of the Endangered Species Act, every federal agency is required to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize federally listed endangered or threatened species of fish, wildlife, or plants, or result in the adverse modification of critical habitat of such species. EPA initiates consultation concerning listed species under their purviews with the United States Fish and Wildlife Service (USFWS) for freshwater species, and NMFS for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in Franklin County to determine if the re-issuance of this NPDES permit could potentially impact any such listed species. No federally listed threatened or endangered species have been identified for Franklin County or the Town of Colrain. [12] However, one proposed endangered species, the

[12]See listings for Franklin County in *Federally Listed Endangered and Threatened Species in Massachusetts* at

northern long-eared bat (*Myotis septentrionalis*), was identified as "statewide". According to the USFWS, the northern long-eared bat is found in "winter – mines and caves, summer – wide variety of forested habitats." This species is not aquatic. Therefore, the proposed permit action will have no impact on this proposed species.

The two endangered species of anadromous fish which occur in Massachusetts, shortnose sturgeon (*Acipenser brevirostrom*) and Atlantic sturgeon (*Acipenser oxyrinchus*), have not been identified in North River.[13] Based on the expected normal distribution of these species, it is highly unlikely that they would be present in the vicinity of this discharge.

Therefore, consultation with NMFS or USFWS under Section 7 of the ESA is not required.

C. State Certification Requirements

EPA may not issue a permit unless the MassDEP either certifies that the effluent limitations contained in this permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards or it is deemed that the State has waived its right to such certification. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

D. Comment Period, Hearing Requests, and Procedures for Final Decisions

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 George Papadopoulos, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch, 5 Post Office Square – OEP06-1, Boston, MA 02109-3912. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 CFR §124.12 are satisfied. In reaching a final decision on the draft permit, EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA 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. Within 30 days following the notice of the Final permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board (EAB) consistent with 40 CFR §124.19.

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http://www.fws.gov/newengland/EndangeredSpec-Consultation_Project_Review.htm (updated 1/9/2015) and Massachusetts Natural Heritage & Endangered Species Program at http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/town-species-viewer.html

[13]See documents for shortnose sturgeon and Atlantic sturgeon at http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/mesa-list/list-of-rare-species-in-massachusetts.html

VII. EPA and MassDEP Contacts

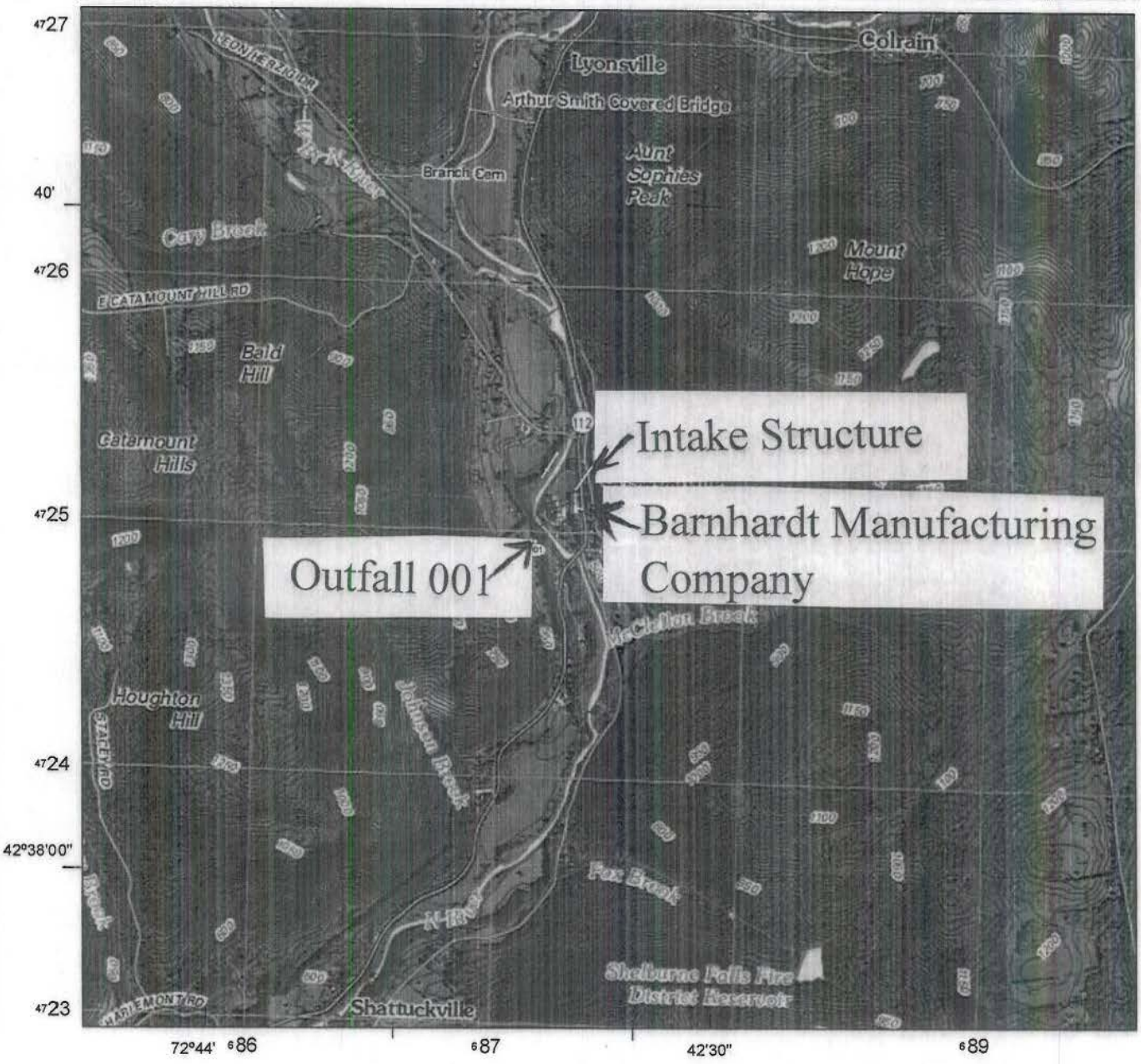
Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from the EPA and MassDEP contacts below:

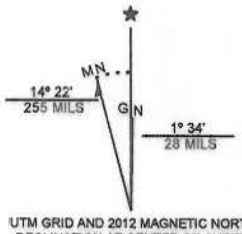
George Papadopoulos, Industrial Permits Section
5 Post Office Square - Suite 100 - Mailcode OEP 06-1
Boston, MA 02109-3912
Email: papadopoulos.george@epa.gov
Telephone: (617) 918-1579 FAX: (617) 918-1505

Xiaodan Ruan, MassDEP
Division of Wastewater Management
Surface Water Discharge Permit Program
1 Winter Street, 5th Floor
Boston, Massachusetts 02108
Telephone: (617) 654-6517; FAX: (617) 292-5696
Email: xiaodan.ruan@state.ma.us

2/6/2017

Ken Moraff, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency





UTM GRID AND 2012 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,00-m Squae ID
XN
Grid Zone Designation
18T

SCALE 1:24 000

KILOMETERS 1 0.5 0 1

METERS 1000 500 0 1000

MILES 1 0.5 0 1

FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011. A metadata file associated with this product is draft version 0.6.2

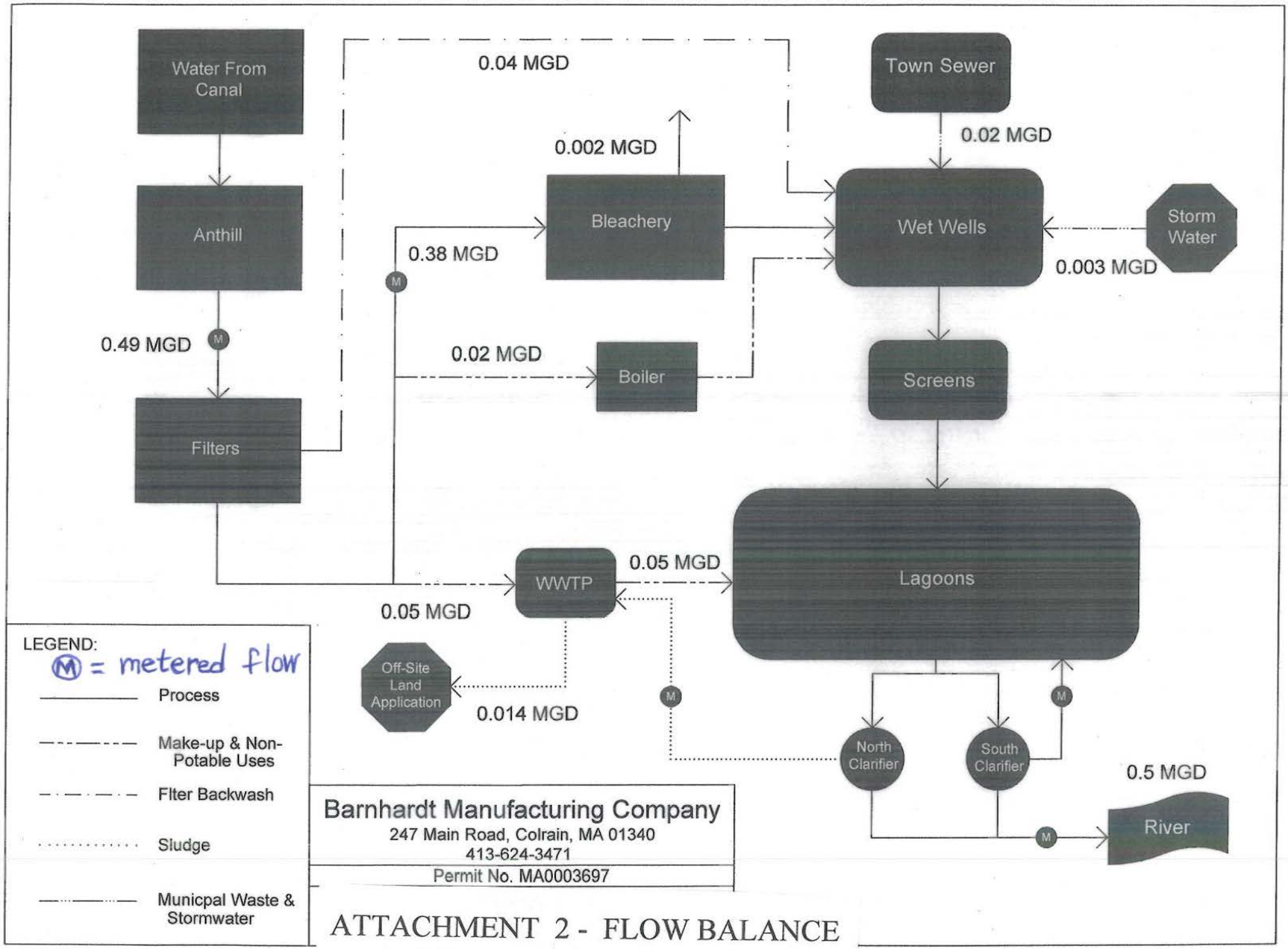
Reproduced from map produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1,000-meter grid; Universal Transverse Mercator, Zone 18T
10,000-foot ticks: Massachusetts Coordinate System of 1983 (mainland zone), Vermont Coordinate System of 1983

Imagery.....NAIP, August 2010 - July 2011
Roads.....©2006-2011, TomTom
Names.....GNIS, 2011
Hydrography.....National Hydrography Dataset, 2010
Contours.....National Elevation Dataset, 2011
Boundaries.....Census, IBWC, IBC, USGS, 1972 - 2010

BARNHARDT MANUFACTURING COMPANY

ATTACHMENT 1
LOCATION MAP

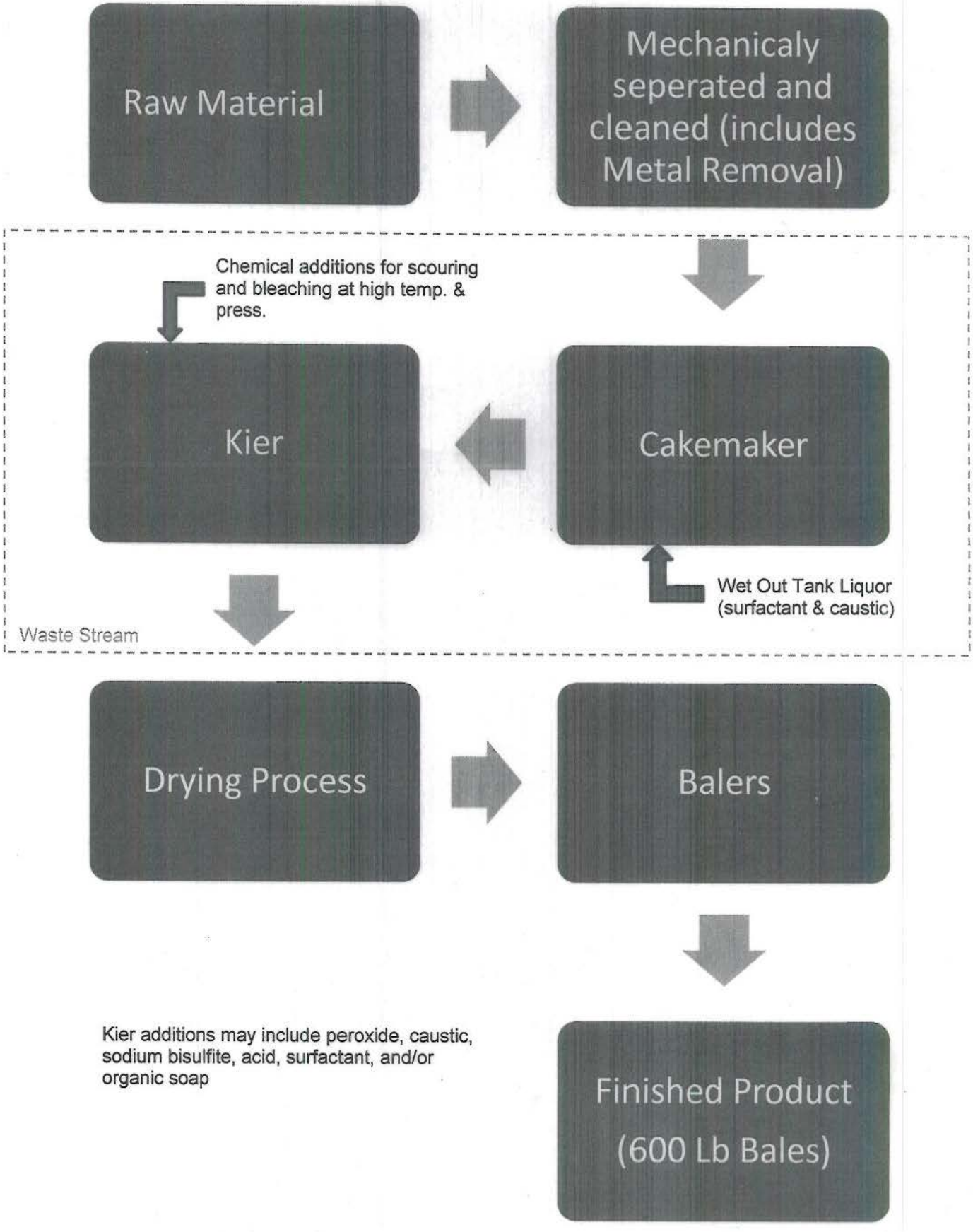
NPDES Permit No. MA0003697



ATTACHMENT 2 - FLOW BALANCE

ATTACHMENT 3

Process Flow Diagram



Attachment 4: Discharge Monitoring Data

Barnhardt Manufacturing Co. - MA0003697

Outfall Serial Number 001 - Monthly Reporting

Monitoring Period End Date	Biochemical Oxygen Demand		Total Suspended Solids		pH		Flow	
	lbs/day		lbs/day		SU	SU	MGD	MGD
	MA	DM	MA	DM	Min	Max	MA	DM
Mar-11	19.7	19.7	10	10	8.3	8.8	0.304	0.445
Apr-11	47	47	100	100	7.6	8.8	0.57	0.75
May-11	37.4	37.4	88	88	7.4	8.6	0.566	0.691
Jun-11	20	20	70	70	7.3	8.9	0.562	0.727
Jul-11	21	21	85	85	7	8.6	0.569	0.659
Aug-11	27	27	108	108	7.4	8.5	0.376	0.651
Sep-11	3	3	11	11	8.3	8.6	0.107	0.562
Oct-11	12	12	18	18	8.1	8.6	0.323	0.506
Nov-11	18	18	52	52	8.2	8.9	0.526	0.813
Dec-11	32	32	48	48	8.1	8.8	0.596	0.882
Jan-12	16	16	27	27	8.3	8.7	0.541	0.74
Feb-12	148	148	64	64	8.2	8.8	0.448	0.648
Mar-12	28.2	28.2	49	49	8.1	8.7	0.647	0.835
Apr-12	12.67	12.67	37	54	8.02	8.63	0.384	0.576
May-12	163.6	163.6	156	156	8.1	8.59	0.447	0.603
Jun-12	21.6	21.6	55.6	55.6	8.02	8.8	0.417	0.531
Jul-12	27	38	89	124	7.8	8.63	0.51	0.71
Aug-12	26	34	91	110	7.82	8.6	0.5	0.598
Sep-12	17	25	82	121	7.86	8.44	0.515	0.761
Oct-12	32.4	39	49	59	7.6	8.67	0.493	0.591
Nov-12	17.68	21.21	36.17	43.38	8	8.72	0.482	0.578
Dec-12	106	136	77	99	8.07	8.67	0.49	0.626
Jan-13	47	65	39	54	7.81	8.65	0.47	0.65
Feb-13	56	76	111	152	8.1	8.67	0.477	0.65
Mar-13	27	43	46	72	8.01	8.82	0.42	0.66
Apr-13	87	114	74	97	7.88	8.75	0.401	0.528
May-13	68	134	198	389	8.18	8.52	0.39	0.766
Jun-13	41	84	122	247	8	8.68	0.31	0.63
Jul-13	22	35	56	89	7.88	8.32	0.45	0.715
Aug-13	60	219	178	219	7.02	8.33	0.453	0.559
Sep-13	43.8	85.2	67	131	7.22	8.55	0.404	0.786
Oct-13	13.7	20.4	32	48	8.11	8.5	0.41	0.611
Nov-13	16	25.6	28	44.9	8.06	8.42	0.34	0.54

Dec-13	24.44	58.35	37.6	89.8	8.04	8.51	0.225	0.538
Jan-14	9.687	30.07	14.46	44.89	8.06	8.51	0.1764	0.5382
Feb-14	12.6	21.7	21.6	36.8	8.18	8.63	0.232	0.401
Mar-14	62.15	104.7	46.6	78.5	8.42	8.66	0.2329	0.3923
Apr-14	92.5	127.6	121	167	7.89	8.59	0.2845	0.3923
May-14	94.4	208.4	166.4	367.5	8.3	8.59	0.2977	0.6576
Jun-14	19.02	50.99	29.9	80.26	8.12	8.66	0.422	1.13
Jul-14	13.32	27.55	33.29	68.87	7.4	8.56	0.3992	0.8258
Aug-14	16.29	20.2	28.5	35.4	8.1	8.3	0.488	0.606
Sep-14	16.2	19.1	38.4	45.5	8.1	8.3	0.484	0.574
Oct-14	13.6	20.2	17	25.3	8	8.6	0.408	0.607
Nov-14	43.12	56.81	75.46	99.42	7.9	8.4	0.431	0.568
Dec-14	198.7	259	61.9	80.7	7.3	8.5	0.39	0.509
Jan-15	26.5	34.7	28.1	36.8	8	8.7	0.374	0.49
Feb-15	82.58	102.5	52.55	65.24	8	8.5	0.45	0.559
Mar-15	884	1525	129	223	7.8	8.4	0.3786	0.653
Apr-15	48	68	76	108	7.9	8.4	0.48	0.68
May-15	377.5	502.8	377.5	502.8	7.9	8.6	0.453	0.603
Jun-15	118	140	321	381	7.4	8.5	0.567	0.673
Jul-15	131	215	134	221	6.8	8.5	0.402	0.662
Aug-15	13.9	21.9	48.7	76.8	6.7	8.6	0.417	0.658
Sep-15	15.2	20	72.5	97.6	6.9	8.5	0.434	0.585
Oct-15	11.8	19	17.7	28.5	7.1	8.3	0.353	0.57
Nov-15	6.56	14	8.19	17.1	7.8	8.5	0.197	0.41
Dec-15	9.7	17.11	64.7	114	7.6	8.3	0.204	0.36
Jan-16	9.39	16.94	54.15	97.73	7.7	8.4	0.216	0.391
Feb-16	8.25	13.3	11.34	18.3	7.7	8.4	0.247	0.399
Mar-16	15.85	20.13	29.34	37.28	7.3	8.5	0.352	0.447
2010 Permit Limits	300 lbs/d	510 lbs/d	250 lbs/d	510 lbs/d	6.5 min	9.0 max	Report gpd	0.89 MGD
Minimum	3	3	8.19	10	6.7	8.3	0.107	0.36
Maximum	884	1525	377.5	502.8	8.42	8.9	0.647	1.13
Average	60.8	110.5	73.3	104	7.81	8.58	0.41	0.61
Violations	2	1	1	0	0	0	-------	1
Measurements	61	61	61	61	61	61	61	61

Barnhardt Manufacturing Co. - MA0003697

Outfall Serial Number 001 - Monthly Reporting

Monitoring Period End Date	Production		Temperature		*E.Coli*		COD	
	lbs/day		°F		Cfu/100 ml		lbs/day	
	MA	DM	MA	DM	Min	Max	MA	DM
Mar-11	60447	73310						
Apr-11	61852	76291			75	235	1484	1484
May-11	54510	79503			76.25	130		
Jun-11	64938	82357			23.48	170		
Jul-11	62044	80876			43.56	60	1125	1125
Aug-11	60636	78901			11.89	50		
Sep-11	21902	69587			1.78	10		
Oct-11	52394	77429			9.69	22	637	637
Nov-11	59467	84755						
Dec-11	63091	82992						
Jan-12	63320	80328					1001	1001
Feb-12	64173	87003						
Mar-12	5656	80511						
Apr-12	59017	92695			45	102	697	697
May-12	64057	82291			137	550		
Jun-12	62158	80687			20.5	48	1008	1008
Jul-12	69902	86633			59	118	978	1362
Aug-12	76253	90625			18.4	46	1168	1398
Sep-12	65874	91826			11.5	28	945	1396
Oct-12	74847	90934			34.8	106	576	690
Nov-12	67296	91909					844	1012
Dec-12	70744	91913					695	888
Jan-13	73899	89274	59	68			862	1193
Feb-13	76350	90068	60	62			1233	1680
Mar-13	74287	91840					862	1354
Apr-13	78225	94171	69	75	899	1850	940	1237
May-13	79277	90320	81	85	692	1950	62	121
Jun-13	79478	94418			26	66	1153	2343
Jul-13	76226	96356	83	94	148	600	1467	2332
Aug-13	75000	88865	85	88	115	450	994	1226
Sep-13	69012	88310	77	90	39	120	943	1835
Oct-13	67777	74498	75	82	8.4	26	581	866
Nov-13	67701	89109	65	69			652	1035
Dec-13	60264	87662	53.8	58				
Jan-14	63977	90813	56.6	66			361.5	1122

Feb-14	63700	84181	59	63				
Mar-14	68742	90492	61.6	68				
Apr-14	73642	87415	69.4	78	12	36	937.2	1292.2
May-14	70739	91227	76.4	80	5	10		
Jun-14	51152	90590	82.25	84	2	2		
Jul-14	115059	143815	84.6	89	2	2	516	1067
Aug-14	71127	91166	82	87	2	2		
Sep-14	73518	83983	78.2	85	4.4	14		
Oct-14	61554	82244	70.6	80	23.5	86	547	815
Nov-14	66537	79174	60.5	67				
Dec-14	59289	81647	51.6	63				
Jan-15	67097	79357	47.4	58			748	981.5
Feb-15	70826	78543	50.75	61				
Mar-15	64864	88684	60.2	67				
Apr-15	77157	94522	70	81	106	470	1137	1613
May-15	68964	89214	82.2	96	41.25	135		
Jun-15	72609	89727	81.6	86	10	10		
Jul-15	65369	81840	87	93	10	10	1191	1960
Aug-15	72582	82173	89.6	97	12.5	20		
Sep-15	68999	78551	87.4	96	16	40		
Oct-15	66562	79756	77	85	10	10	521	841
Nov-15	48936	78746	75	85				
Dec-15	50523	77205	64.8	68				
Jan-16	69729	82841	61.25	65			572	1032
Feb-16	61321	78554	62.8	72				
Mar-16	72717	76830	65.8	72				
2010 Permit Limits	Report lbs/d	Report lbs/d	Report °F	Report °F	126 cfu/ 100ml	409 cfu/ 100ml	3807 lbs/day	7614 lbs/day
Minimum	5656	69587	47.4	58	2	2	62	121
Maximum	115059	143815	89.6	97	899	1950	1484	2343
Average	65891	85927	66.8	73.4	78.6	217	857	1208
Violations	------	------	-------	-------	4	6	0	0
Measurements	61	61	61	61	35	35	32	32

Barnhardt Manufacturing Co. - MA0003697

Outfall Serial Number 001 - Monthly Reporting

Monitoring Period End Date	Total Chromium		Total Phenols		Total Sulfide		Total Copper
	lbs/day		lbs/day		lbs/day		mg/l
	MA	DM	MA	DM	Min	Max	Daily Maximum
Mar-11							0.06
Apr-11	0.084	0.084			0.16	0.16	0.015
May-11							0.015
Jun-11							0.017
Jul-11	0.003	0.003			0.2	0.2	0.025
Aug-11							0.035
Sep-11							0.029
Oct-11	0.009	0.009			18	18	0.035
Nov-11							0.034
Dec-11							0.028
Jan-12	0.004	0.004			0.55	0.55	0.016
Feb-12							0.007
Mar-12							0.025
Apr-12	0.0349	0.0349			0.32	0.32	0.029
May-12							0.013
Jun-12	0.0094	0.0119			0.348	0.443	0.022
Jul-12	0.013	0.018			0.43	0.59	0.0256
Aug-12	0.013	0.018			0.43	0.59	0.029
Sep-12	0.013	0.019			0.43	0.59	0.022
Oct-12	0.0078	0.0093			0.41	0.49	0.02
Nov-12	0.0078	0.0093			0.41	0.49	0.021
Dec-12	0.013	0.019			0.43	0.59	0.038
Jan-13	0.002	0.003			0.41	0.49	0.0378
Feb-13	0.0023	0.0033			0.2	0.27	0.018
Mar-13	0.0021	0.003			0.18	0.28	0.027
Apr-13	0.008	0.01			0.33	0.44	0.0167
May-13	0.008	0.015			0.325	0.638	0.023
Jun-13	0.006	0.013			0.26	0.53	0.02
Jul-13	0.009	0.014			0.37	0.59	0.0647
Aug-13	0.009	0.011			0.37	0.466	0.03
Sep-13	0.0008	0.016			0.336	0.655	0.029
Oct-13	0.006	0.009			0.34	0.51	0.025
Nov-13							0.027
Dec-13							0.028

Jan-14	0.0036	0.0112			0.145	0.449	0.031
Feb-14							0.043
Mar-14			0.022	0.067			0.026
Apr-14					0.237	0.327	0.03
May-14							0.045
Jun-14			0.036	0.049			0.026
Jul-14					0.333	0.689	0.048
Aug-14							0.033
Sep-14			0.0499	0.1033			0.173
Oct-14					0.34	0.51	0.016
Nov-14							0.017
Dec-14			0.05	0.08			0.022
Jan-15	0.009	0.12			0.312	0.409	0.02
Feb-15							0.027
Mar-15			0.015	0.015			0.002
Apr-15					0.1	0.1	0.03
May-15							0.026
Jun-15			0.071	0.084			0.131
Jul-15					0.17	0.28	0.035
Aug-15							0.042
Sep-15			0.05	0.08			0.041
Oct-15					0.15	0.24	0.028
Nov-15							0.039
Dec-15			0.15	0.24			0.041
Jan-16	0.002	0.02			0.09	0.16	0.035
Feb-16							0.038
Mar-16			0.027	0.049			0.035
2010 Permit Limits	Report lbs/d	1.1 lbs/d	Report lbs/d	1.0 lb/d	1.0 lb/d	2.0 lbs/d	Report mg/l
Minimum	0.002	0.003	0.015	0.015	0.09	0.1	0.002
Maximum	0.084	0.12	0.15	0.24	18	18	0.173
Average	0.012	0.015	0.052	0.085	0.87	1.0	0.033
Violations	------	0	------	0	1	1	------
Measurements	61	61	9	9	31	31	61

Barnhardt Manufacturing Co. - MA0003697

Outfall Serial Number 001 - Monthly Reporting

Monitoring Period End Date	Ammonia Nitrogen, As N	Total Kjeldahl Nitrogen	Nitrite-Nitrate Nitrogen	Total Phosphorus
	lbs/day	lbs/day	lbs/day	mg/l
	Daily Maximum	Daily Maximum	Daily Maximum	Daily Maximum
Mar-11	19.7	27	4.14	
Apr-11	2.9	7.3	0.4	4.54
May-11		9.6	0.02	
Jun-11		7.9	0.27	
Jul-11	3.6	10	0.81	2.74
Aug-11		18	38	
Sep-11		13	33	
Oct-11	4	12	9.8	3.3
Nov-11		15	7.5	
Dec-11		7.8	0.1	
Jan-12	3	10.8	0.025	0.1
Feb-12		20.8	0.02	
Mar-12		13.5	0.03	
Apr-12	26.78	17.3	0.56	2.6
May-12	9	18.6	0.06	
Jun-12	2.3	11.1	0.04	4.4
Jul-12	4	10.7	0.06	21
Aug-12	4	11.1	0.04	0.3
Sep-12	6	9.03	1.4	2.6
Oct-12	4.5	9.4	15.47	4.42
Nov-12	2.26	8.97	0.12	4.42
Dec-12	2.29	14.2	0.04	1.1
Jan-13	2.9	8.54	0.06	0.6
Feb-13	3.25	13.5	0.03	0.96
Mar-13	7	11.6	0.06	0.99
Apr-13	4.5	13.4	0.05	2.5
May-13	14	18.6	0.06	3.1
Jun-13	4.41	18.4	0.08	1.71
Jul-13	13	21	22.6	6.6
Aug-13	7.3	15.9	0.07	3.3
Sep-13	4.26	14.7	0.06	1.9
Oct-13	6.7	9.29	3	4
Nov-13	7.72	11.8	4.43	2.9
Dec-13	1.05	12.2	0.05	

Jan-14	2.43	16.2	0.05	1.43
Feb-14	46	42.2	0.57	
Mar-14		12.7	0.07	
Apr-14	9.53	30	0.08	3.3
May-14		10.1	0.16	
Jun-14		9.74	0.04	
Jul-14	13.38	27.8	19	2.44
Aug-14		9.58	3.88	
Sep-14		8.29	3.5	
Oct-14	1.9	7.71	4.73	1.35
Nov-14		9.17	13.68	
Dec-14		16.2	0.04	
Jan-15	1.18	8.93	0.08	0.45
Feb-15		14.1	0.04	
Mar-15		19.3	0.06	
Apr-15	0.25	9.55	0.03	1.13
May-15		31.7	0.06	
Jun-15		19.7	0.06	
Jul-15	9.4	14.4	0.07	4
Aug-15		7.84	12.9	
Sep-15		13.6	34.04	
Oct-15	7.2	27.9	8.7	1.4
Nov-15		18.5	19.3	
Dec-15		12.3	31.4	
Jan-16	3.65	13.8	16.24	4
Feb-16		6.45	2.36	
Mar-16		10.1	3.82	
2010 Permit Limits	42 lbs/day	Report mg/l	Report mg/l	Report mg/l
Minimum	0.25	6.45	0.02	0.1
Maximum	46	42.2	38	21
Average	7.4	14.4	5.2	3.1
Violations	1	-------	-------	-------
Measurements	36	61	61	32

Barnhardt Manufacturing Co. - MA0003697
Outfall Serial Number 001
Whole Effluent Toxicity (WET) Testing Chemical Analysis Results

WET Testing Month	LC50	C-NOEC	Hardness	Total Ammonia Nitrogen	Total Residual Chlorine	Total Cadmium
	%	%	mg/l CaCO3	mg/l	mg/l	mg/l
Jan-11	66	12.5	92.7	1.2	<0.02	0.001
Apr-11	100	12.5	45.4	0.69	0.1	0.0004
Jul-11	100	5	62	0.2	0.2	0.004
Oct-11	100	12.5	93	1.05	<0.02	0.0007
Jan-12	---	25	65.4	0.95	<0.02	0.0005
Apr-12	100	25	100	7.6	<0.02	0.0007
Jul-12	100	25	73.4	1.03	<0.02	0.0005
Oct-12	100	12.5	79.8	0.96	<0.02	0.0005
Jan-13	100	12.5	52.9	0.47	<0.02	0.0002
Apr-13	100	100	76	1.64	<0.02	0.0003
Jul-13	8.8	5	97.9	2.1	<0.02	0.0006
Oct-13	21.8	12.5	75.6	1.4	<0.02	0.0006
Jan-14	100	12.5	80.5	0.61	<0.02	0.0006
Apr-14	61.6	5	108	1.68	<0.02	0.0006
Jul-14	18.95	12.5	68.5	1.05	<0.02	0.0003
Oct-14	70.7	12.5	94.4	0.68	<0.02	0.0002
Jan-15	100	12.5	56.2	0.97	<0.02	0.0003
Apr-15	100	25	75.4	0.82	<0.02	0.0004
Jul-15	18.95	12.5	79.9	0.46	<0.02	0.0004
Oct-15	100	12.5	72.9	0.2	<0.02	0.0004
Jan-16	70.7	12.5	63.6	0.4	<0.02	0.0004
Apr-16	100	25	60.8	0.28	<0.02	ND
Jul-16	100	25	79.8	0.23	0.04	ND
2010 Permit Limits	$\geq$ 100%	$\geq$ 5%	Report	Report	Report	Report
Minimum	8.8	5	45.4	0.2	<0.02	<0.0002
Maximum	100	100	108	7.6	0.2	0.001
Average	79	19	76.2	1.16	0.023	0.0006

Barnhardt Manufacturing Co. - MA0003697
Outfall Serial Number 001
Whole Effluent Toxicity (WET) Testing Chemical Analysis Results

WET Testing Month	Total Chromium	Total Lead	Total Copper	Total Zinc	Total Nickel	Total Aluminum
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Jan-11	0.076	0.002	0.016	0.066	0.005	0.01
Apr-11	0.0005	0.0005	0.0208	0.043	0.0049	0.021
Jul-11	0.0005	0.0007	0.0203	0.0457	0.0034	0.043
Oct-11	0.003	0.0023	0.0352	0.0884	0.0063	0.112
Jan-12	0.001	0.0009	0.0233	0.0426	0.0033	0.056
Apr-12	0.0027	0.0016	0.0299	0.0625	0.0045	0.047
Jul-12	0.003	0.0021	0.0256	0.052	0.0032	0.06
Oct-12	0.0019	0.0009	0.0214	0.0433	0.0024	0.007
Jan-13	0.0006	0.0018	0.0378	0.0397	0.003	0.033
Apr-13	0.0024	0.0018	0.0167	0.0527	0.0033	0.08
Jul-13	0.0024	0.0009	0.0647	0.0761	0.0142	0.096
Oct-13	0.0018	0.0006	0.0259	0.0455	0.0034	0.039
Jan-14	0.0025	0.0007	0.0347	0.0622	0.0035	0.078
Apr-14	ND	0.0011	0.047	0.084	0.005	0.134
Jul-14	ND	0.0014	0.057	0.055	0.003	0.221
Oct-14	ND	0.001	0.025	0.066	0.004	0.049
Jan-15	0.003	0.0007	0.021	0.043	0.002	0.06
Apr-15	ND	0.001	0.048	0.042	0.004	0.072
Jul-15	ND	0.0003	0.084	0.056	0.005	0.104
Oct-15	ND	0.0004	0.035	0.043	0.003	0.042
Jan-16	0.002	0.0003	0.034	0.068	0.001	0.101
Apr-16	ND	ND	0.03	0.05	ND	0.03
Jul-16	ND	ND	0.04	0.07	ND	0.03
2010 Permit Limits	Report	Report	Report	Report	Report	Report
Minimum	ND	0.001	0.016	0.0397	0.001	0.007
Maximum	0.076	0.0023	0.084	0.0884	0.0142	0.221
Average	0.005	0.001	0.034	0.056	0.004	0.066

ATTACHMENT 5

Reasonable Potential Analysis for Phosphorus
no ND, >10 data points, Lognormal distribution

Dilution Factor:	14

Date	P (ug/l)	*Yi* lnAl (ug/L)
4/1/2011	4540	8.4207
7/1/2011	2740	7.9157
10/1/2011	3300	8.1017
1/1/2012	100	4.6052
4/1/2012	2600	7.8633
6/1/2012	4400	8.3894
7/1/2012	21000	9.9523
8/1/2012	300	5.7038
9/1/2012	2600	7.8633
10/1/2012	4420	8.3939
11/1/2012	4420	8.3939
12/1/2012	1100	7.0031
1/1/2013	600	6.3969
2/1/2013	960	6.8669
3/1/2013	990	6.8977
4/1/2013	2500	7.8240

Phosphorus - (Lognormal distribution, no ND)

Estimated Daily Maximum Effluent Concentration

k = number of daily samples =	32
u_y = Avg of Nat. Log of daily Discharge =	7.70114
s_y = Std Dev. of Nat Log of daily discharge =	1.06257
σ_y^2 = estimated variance = (SUM[$(y_i - u_y)^2$]) / (k-1) =	1.129054957
cv(x)= Coefficient of Variation =	0.137975633

99th Percentile Daily Max Estimate = exp (u_y + 2.326*s_y)

Estimated Daily Max 99th percentile =	**26178.1413**
Estimated Daily Max including Dilution Factor =	**1896.9668**

95th Percentile Daily Max Estimate = exp (u_y + 1.645*s_y)

Estimated Daily Max =	**12696.3507**
Estimated Daily Max including Dilution Factor =	**920.0254**

5/1/2013	3100	8.0392
6/1/2013	17100	9.7468
7/1/2013	6600	8.7948
8/1/2013	3300	8.1017
9/1/2013	1900	7.5496
10/1/2013	4000	8.2940
11/1/2013	2900	7.9725
1/1/2014	1430	7.2654
4/1/2014	3300	8.1017
7/1/2014	2440	7.7998
10/1/2014	1350	7.2079
1/1/2015	450	6.1092
4/1/2015	1130	7.0300
7/1/2015	4000	8.2940
10/1/2015	1400	7.2442
1/1/2016	4000	8.2940

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ECOSYSTEM PROTECTION
REGION I
BOSTON, MASSACHUSETTS 02109

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTION 301, 316(a), AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT.

DATE OF NOTICE: February 17, 2017 – March 18, 2017

PERMIT NUMBER: **MA0003697**

PUBLIC NOTICE NUMBER: MA-003-17

NAME AND MAILING ADDRESS OF PERMITTEE:

Barnhardt Manufacturing Company
P.O. Box 3
Colrain, MA 01340

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Barnhardt Manufacturing Company
247 Main Road
Colrain, MA 01340

RECEIVING WATER: **North River (Deerfield River Watershed), Class B water**

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") have cooperated in the development of a draft permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure compliance with the Clean Water Act ("CWA"), 33 U.S.C. sections 1251 et seq.,, the Massachusetts Clean Waters Act, G.L. c. 21, §§ 26-53, 314 CMR 3.00 and State Surface Water Quality Standards at 314 CMR 4.00.

INFORMATION ABOUT THE DRAFT PERMIT:

A fact sheet or a statement of basis (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) and the draft permit may be obtained at no cost at: http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html or by writing or calling EPA's contact person named below:

George Papadopoulos, US EPA
5 Post Office Square
Suite 100 (OEP 06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1579

The administrative record containing all documents relating to this draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of this draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by March 18, 2017, to the U.S. EPA, George Papadopoulos, 5 Post Office Square, Suite 100, Mailcode OEP 06-1, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the MassDEP for a public hearing to consider this draft permit. 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 Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this draft permit the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION AND APPEALS:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within thirty (30) days following the notice of the final permit decision any interested person may submit petition to the Environmental Appeals Board to reconsider or contest the final decision.

Douglas E. Fine, Assistant Commissioner
BUREAU OF WATER RESOURCES
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Ken Moraff, Director
OFFICE OF ECOSYSTEM PROTECTION
ENVIRONMENTAL PROTECTION
AGENCY