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),

Town of Belchertown Department of Public Works
290 Jackson Street, P.O. Box 306
Belchertown, MA 01007-0670

is authorized to discharge from a facility located at:

Belchertown Water Reclamation Facility
175 George Hannum Road
Belchertown, MA 01007

to receiving water named: **Lampson Brook (MA34-06) to Connecticut River**

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

This permit shall become effective on the first day of the calendar month immediately following sixty days after signature.

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

This permit supersedes the permit signed on June 9, 2005, appealed and subsequently modified on December 16, 2005, and expired on October 30, 2010.

This permit consists of 20 pages in Part I including effluent limitations and monitoring requirements, **Attachment A (Discharge Outfall), Attachment B (Freshwater Acute Toxicity Test Procedure and Protocol, 2011)**, **Attachment C (Freshwater Chronic Toxicity Test Procedure and Protocol, 2013)** and **Part II** (25 pages including NPDES Part II Standard Conditions).

Signed this 31st day of July, 2014

/S/SIGNATURE ON FILE
_____
Ken Moraff, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

/S/SIGNATURE ON FILE
_____
David R. Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number **001** to Lampson Brook. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic		**Discharge Limitation**			**Monitoring Requirement** [*3]	
Parameter	**Units**	**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**[*3]
Flow (Monthly Average)[*2]	MGD	1.0 [*2]	—	Report	Continuous	Recorder
Flow[*2]	MGD	Report	—	—	Continuous	Recorder
BOD_5 [*4] (June 1 - Oct. 31)	mg/l	5	7.5	Report	1/Week	24-Hour Composite[*5]
BOD_5 [*4] (May)	mg/l	15	15	Report	1/Week	24-Hour Composite[*5]
BOD_5 [*4] (November 1 - April 30)	mg/l	30	30	Report	1/Week	24-Hour Composite[*5]
TSS [*4] (June 1 - Oct. 31)	mg/l	15	15	Report	1/Week	24-Hour Composite[*5]
TSS [*4] (May)	mg/l	20	20	Report	1/Week	24-Hour Composite[*5]
TSS [*4] (November 1 - April 30)	mg/l	30	30	Report	1/Week	24-Hour Composite[*5]
E. Coliform Bacteria[*1, *6] (April 1 - Oct. 31)	cfu/100 ml	126	—	409	1/Week	Grab
Dissolved Oxygen (April 1 - Oct. 31)	mg/l	Not less than 6.0 mg/l			1/Week	Grab
pH[*1]	Standard Units	6.5 – 8.3 (See Permit Part I.A.1.b.)			1/Day	Grab

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement	
Parameter		**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[*3]**
Total Ammonia Nitrogen[*7, *8]						
June 1 - October 31	mg/l	1	1	1.5	1/Month	24-Hour Composite[*5]
May	mg/l	7	7	10	1/Month	24-Hour Composite[*5]
November 1 - April 30	mg/l	10	10	15	1/Month	24-Hour Composite[*5]
Total Kjeldahl Nitrogen[*8]	mg/l, lbs/day	Report	—	Report	1/Month	24-Hour Composite[*5]
Total Nitrate Nitrogen[*8]	mg/l, lbs/day	Report	—	Report	1/Month	24-Hour Composite[*5]
Total Nitrite Nitrogen[*8]	mg/l, lbs/day	Report	—	Report	1/Month	24-Hour Composite[*5]
Total Nitrogen[*8]	mg/l, lbs/day	Report	—	Report	1/Month	24-Hour Composite[*5]
Copper, Total Recoverable[*11]	ug/l	8.85	—	13.2	1/Month	24-Hour Composite[*5]
Aluminum, Total Recoverable[*9, *10]	ug/l	87	—	792	1/Month	24-Hour Composite[*5]
Total Phosphorus[*9, *12] (April 1- October 31)	mg/l	0.11	—	Report	1/Week	24-Hour Composite[*5]
Total Phosphorus[*9, *12] (Nov 1-March 31)	mg/l	0.25	—	Report	1/Week	24-Hour Composite[*5]
Ortho-phosphorus, dissolved (Nov 1-March 31)	lbs/day	Report	—	—	1/Month	24-Hour Composite[*5]
Ortho-phosphorus, dissolved (Nov 1-March 31)	mg/l	Report	—	—	1/Month	24-Hour Composite[*5]

Effluent Characteristic	Units	Discharge Limitation			Monitoring Requirement	
Parameter		**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[*3]**
Whole Effluent Toxicity[*1, *13, *14, *15, *16]	%	Acute	LC_{50}	$\geq$ 100%	2/Year	24-Hour Composite[*5]
	%	Chronic	NOEC	$\geq$ 94%	2/Year	24-Hour Composite[*5]
Hardness[*17]	mg/l		Report		2/Year	24-Hour Composite[*5]
Ammonia Nitrogen as N[*17]	mg/l		Report		2/Year	24-Hour Composite[*5]
Total Recoverable Aluminum[*17]	mg/l		Report		2/Year	24-Hour Composite[*5]
Total Recoverable Cadmium[*17]	mg/l		Report		2/Year	24-Hour Composite[*5]
Total Recoverable Copper[*17]	mg/l		Report		2/Year	24-Hour Composite[*5]
Total Recoverable Nickel[*17]	mg/l		Report		2/Year	24-Hour Composite[*5]
Total Recoverable Lead[*17]	mg/l		Report		2/Year	24-Hour Composite[*5]
Total Recoverable Zinc[*17]	mg/l		Report		2/Year	24-Hour Composite[*5]

Footnotes:

*1. Required for State Certification.

*2. The flow limit is **monthly average**. The permittee shall report the average and maximum daily flow each month.

*3. Effluent sampling shall be representative of the discharge.

A routine sampling program shall be developed in which samples are taken at the same location, same time, and same days of every month. Occasional deviations from the routine sampling program described above are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report.

All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

All required effluent samples shall be collected at the point specified below. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

PARAMETER:	SAMPLE LOCATION:
FLOW	Recorder in the Effluent Flume
E-COLI	After discharge from the disinfection chamber, prior to discharge into the Lampson Brook
BOD_5, TSS, pH RANGE, TOTAL AMMONIA AS N, TOTAL KJELDAHL NITROGEN, TOTAL NITRITE, TOTAL NITRATE, and WHOLE EFFLUENT TOXICITY	After discharge from the disinfection chamber, prior to discharge into Lampson Brook
BOD and TSS (Influent)	Influent Line prior to primary tanks
WET Dilution Water	Lampson Brook upstream of treated wastewater discharge outfall

*4. Sampling is required for influent and effluent.

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

*6. The monthly average limit for *Escherichia coli (E. coli)* is expressed as a geometric mean.

*7. See Part I.B.1., Special Condition 1 for requirements to evaluate and implement optimization of nitrogen removal.

*8. Total ammonia nitrogen, total Kjeldahl nitrogen, nitrite nitrogen, and nitrate nitrogen samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen (total nitrogen = total kjeldahl nitrogen + total nitrate nitrogen + total nitrite nitrogen).

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

Total Nitrogen (lbs/day) = [(average monthly total nitrogen concentration (mg/l) * total monthly flow (Millions of Gallons (MG)) / # of days in the month] * 8.34

The permittee shall operate the treatment facility to reduce the discharge of total nitrogen to the maximum extent possible, using existing treatment equipment at the facility.

*9. Total aluminum samples shall be collected concurrently with a total phosphorus sample.

*10. See Part I.B.2., Special Condition 2 for schedule of compliance.

*11. The minimum level (ML) for copper is defined as 3 ug/l. This value is the minimum level for copper using the Furnace Atomic Absorption analytical method 220.2. This method or another EPA-approved method with an equivalent or lower ML shall be used for effluent limitations less than 3 ug/l. Compliance/non-compliance will be determined based on the ML. Sampling results of 3 ug/l or less shall be reported as zero on the Discharge Monitoring Report. See also Part I.B.3., Special Condition 3 for schedule of compliance.

*12. The sampling frequency identified is the minimum sampling frequency. If any additional phosphorus sampling is conducted, including process control samples, the individual phosphorus results, including the day each sample was taken, the type of sample (i.e., 24-hour composite or grab), and the analytical method, must be reported on an attachment to the discharge monitoring report. Additionally, the chemical dosing rate for all chemicals added for the purpose of phosphorus removal shall be reported for each day of the month. Only 24-hour composite samples analyzed with an EPA-approved method shall be used in determining compliance with the permit limit. See also Part I.B.4., Special Condition 4 for schedule of compliance.

*13. The permittee shall conduct acute and chronic toxicity tests two times per year. The permittee shall test the daphnid, Ceriodaphnia dubia, only. Toxicity test samples shall be collected during the second week of the months of May and August. The test results shall be submitted by the last day of the month following the completion of the test. The results are due June 30th and September 30th, respectively. The tests must be performed in accordance with testing procedures and protocols specified in **Attachments B and C** of this permit.

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit** LC_{50}	**Chronic Limit** NOEC
May August	June 30th September 30th	Ceriodaphnia dubia (Daphnid) See **Attachments B and C**	≥ 100%	≥ 94%

*14. The LC_{50} is the concentration of 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 a 50% mortality rate.

*15. The chronic-no observed effect concentration (C-NOEC) is defined as the highest tested concentration of toxicant in effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in the EPA WET Method Manual EPA 821-R-02-013, section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship. The "94% or greater" is defined as a sample which is composed of 94% (or greater) effluent, the remainder being dilution water.

*16. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachments B and C, Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in **Attachments B and C**, 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 is found in Attachment G of the NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs) which is sent to all permittees with their annual set of DMRs and may also be found on the EPA, Region I web site at http://www.epa.gov/region01/enforcementandassistance/dmr.html. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachments B and C**. Any modification or revocation to this guidance shall be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachments B and C**. If the permittee has already received permission to use an alternative dilution water under the previous permit, the permittee does not need to repeat this approval process. If the permittee uses an alternative dilution water, the ambient water will still need to be tested.

17. For each whole effluent toxicity test, the permittee shall report on the appropriate discharge monitoring report (DMR) the concentrations of the hardness, ammonia nitrogen as nitrogen, total recoverable aluminum, cadmium, copper, lead, nickel, and zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the minimum quantification level shown in **Attachments B and C**. Also the permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.

Part I.A.1. (Continued)

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

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 Standard Units (S.U.) at any time.

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall not contain a visible oil sheen, foam, or floating solids at any time.

e. The permittee's treatment facility will maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal will be based on monthly average values.

f. The permittee is not authorized to use chlorine as a method of disinfection.

g. The results of sampling for any parameter analyzed in accordance with EPA approved methods above its required frequency must also be reported.

h. If the average annual flow in any calendar year exceeds 80 percent of the facility's design flow [0.8 mgd], the permittee will submit a report to MassDEP by **March 31st** of the following calendar year describing its plans for further flow increases and describing how it will maintain compliance with the flow limit and all other effluent limitations and conditions.

2. All POTWs must provide adequate notice to the Director of the following:

a. Any new introduction of pollutants into that POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For purposes of this paragraph, adequate notice will include information on:
(1) the quantity and quality of effluent introduced into the POTW; and
(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass Through:

a. Pollutants introduced into POTW's by a non-domestic source (user) will not pass through the POTW or interfere with the operation or performance of the works.

4. Toxics Control

a. The permittee will not discharge any pollutant or combination of pollutants in toxic amounts.

b. Any toxic components of the effluent will not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

5. Numerical Effluent Limitations for Toxicants

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

B. SPECIAL CONDITIONS

1. Nitrogen

Within **one year of the effective date of the permit**, 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. The methods to be evaluated include, but are not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. 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 is estimated to be 43.426 lbs/day, based on data reported from 2004 through 2005. The permittee shall also submit an annual report to EPA and the MassDEP, by **February 1st** each year, that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous year.

2. Aluminum

a. The permittee shall evaluate the ability of the existing treatment facilities, with small capital improvements, to achieve the monthly average and daily maximum aluminum limitations and shall submit a report on or before **36 months from the effective date of the permit** that summarizes the evaluation and includes a determination whether the existing facility is capable of reliably achieving the effluent limitations. The evaluation shall include optimization of dosing of aluminum compounds (while maintaining compliance with the total phosphorus limits). The evaluation shall include the following two milestones: (1) work with the Belchertown Water District to optimize corrosion control operations in the water supply system, and characterize the existing influent and effluent quality with respect to aluminum (accomplishing both tasks on or before **24 months from the effective date of the permit**), and (2) correlate the characterization of aluminum with any changes that might be occurring with the water supply system (accomplishing this task on or before **24 months from the effective date of the permit**).

b. If the permittee concludes that the existing facilities can achieve the monthly average and daily maximum limitations, the limits will become effective **36 months from the effective date of the permit**.

c. If the permittee concludes that the existing facilities cannot achieve the monthly average and daily maximum limitations (and EPA and MassDEP concur), the permittee shall complete necessary design and construction of any facilities necessary to achieve the limits within **59 months from the effective date of the permit**, at which time the effluent limits will become effective.

d. Until the limits are achieved, the Town shall submit reports to EPA and MassDEP at **12 months, 24 months, 36 months, 48 months, and 59 months, from the effective date,** describing progress towards attaining the effluent limitations, including a description of planning, design, and construction of any necessary facilities.

e. Until the limits become effective, the permittee shall minimize the discharge of aluminum, and conduct sampling as required by the permit (i.e., the compliance schedule does not affect the monitoring requirements).

3. Copper

a. The permittee shall evaluate the ability of the existing treatment facilities, with small capital improvements, to achieve the monthly average and daily maximum copper limitations and shall submit a report on or before **36 months from the effective date of the permit** that summarizes the evaluation and includes a determination whether the existing facility is capable of reliably achieving the effluent limitations. The evaluation shall include optimization of corrosion control chemicals in the drinking water treatment process and enhanced copper removal at the wastewater treatment plant. The evaluation shall include the following two milestones: (1) work with the Belchertown Water District

to optimize corrosion control operations in the water supply system, and characterize the existing influent and effluent quality with respect to copper (accomplishing both tasks on or before **24 months from the effective date of the permit**), and (2) correlate the characterization of copper with any changes that might be occurring with the water supply system (accomplishing this task on or before **24 months from the effective date of the permit**).

b. If the permittee concludes that the existing facilities can achieve the monthly average and daily maximum limitations, the limits will become effective **36 months from the effective date of the permit**.

c. If the permittee concludes that the existing facilities cannot achieve the monthly average and daily maximum limitations (and EPA and MassDEP concur), the permittee shall complete necessary design and construction of any facilities necessary to achieve the limits within **59 months from the effective date of the permit**, at which time the effluent limits will become effective.

d. Until the limits are achieved, the Town shall submit reports to EPA and MassDEP at **12 months, 24 months, 36 months, 48 months, and 59 months, from the effective date,** describing progress towards attaining the effluent limitations, including a description of planning, design, and construction of any necessary facilities.

e. Until the limits become effective, the permittee shall minimize the discharge of copper, and conduct sampling as required by the permit (i.e., the compliance schedule does not affect the monitoring requirements).

4. Total Phosphorus

a. The permittee shall evaluate the ability of the existing treatment facilities, with small capital improvements, to achieve the April 1 – October 31 monthly average total phosphorus limitation and shall submit a report on or before **36 months from the effective date of the permit** that summarizes the evaluation and includes a determination whether the existing facility is capable of reliably achieving the effluent limitations. The evaluation shall include optimization of chemical dosing, including use of alternate chemicals if necessary. The evaluation shall include the following two milestones: (1) work with the Belchertown Water District to optimize corrosion control operations in the water supply system, and characterize the existing influent and effluent quality with respect to total phosphorus (accomplishing both tasks on or before **24 months from the effective date of the permit**), and (2) correlate the characterization of total phosphorus with any changes that might be occurring with the water supply system (accomplishing this task on or before **24 months from the effective date of the permit**).

b. If the permittee concludes that the existing facilities can achieve the April 1 – October 31 monthly average limit, the limits will become effective **36 months from the effective date of the permit**.

c. If the permittee concludes that the existing facilities cannot achieve the April 1 – October 31 monthly average limit (and EPA and MassDEP concur), the permittee shall complete necessary design and construction of any facilities necessary to achieve the limits within **59 months from the effective date of the permit**, at which time the effluent limits will become effective.

d. Until the limit is achieved, the Town shall submit reports to EPA and MassDEP at **12 months, 24 months, 36 months, 48 months, and 59 months, from the effective date**, describing progress towards attaining the effluent limitation, including a description of planning, design, and construction of any necessary facilities.

e. Until the April 1 – October 31 limit becomes effective, the permittee shall achieve a monthly average total phosphorus limit of 0.25 mg/l. Sampling for total phosphorus shall be conducted as required by the permit (i.e., the compliance schedule does not affect the monitoring requirements).

C. UNAUTHORIZED DISCHARGES

This permit authorizes discharges only from the outfall(s) listed on **Attachment A** and in Part I.A.1. of this permit.in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and must be reported to EPA and MassDEP in accordance with Part II. Section D.1.e.(1) of the General Requirements of this permit (Twenty-four hour reporting).

Notification of SSOs to MassDEP will be made on its SSO reporting form (which includes MassDEP regional office telephone numbers). The reporting form and instructions for its completion can be found on-line at: http://www.mass.gov/eea/agencies/massdep/service/approvals/sanitary-sewer-overflow-bypass-backup-notification.html.

D. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system will be in compliance with the General Requirements of Part II and the following terms and conditions. The permittee is required to complete the following activities for the collection system which it owns:

1. Maintenance Staff

The permittee will provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Provisions to meet this requirement will be described in the Collection System O & M Plan required pursuant to Section D.5. below.

2. Preventative Maintenance Program

   The permittee will maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program will include an inspection program designed to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement will be described in the Collection System O & M Plan required pursuant to Section D.5. below.

3. Infiltration/Inflow:

   The permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant's effluent limitations. Plans and programs to control I/I shall be described in the Collection System O & M Plan required pursuant to Section D.5. below.

4. Collection System Mapping

   Within 30 months of the effective date of this permit, the permittee shall each prepare a map of the sewer collection system it owns (see page 1 of this permit for the effective date). The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up to date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

   a. All sanitary sewer lines and related manholes;

   b. All combined sewer lines, related manholes, and catch basins;

   c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combined manholes);

   d. All outfalls, including the treatment plant outfall(s), CSOs, combined manholes, and any known or suspected SSOs;

   e. All pump stations and force mains;

   f. The wastewater treatment facility(ies);

   g. All surface waters (labeled);

   h. Other major appurtenances such as inverted siphons and air release valves;

   i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j. The scale and a north arrow; and

k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System Operation and Maintenance Plan

The permittee shall develop and implement a Collection System Operation and Maintenance Plan.

a. **Within six (6) months of the effective date of the permit**, the permittee shall submit to EPA and MassDEP:

(1) A description of the collection system management goal, staffing, information management, and legal authorities;

(2) A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of all recent studies and construction activities; and

(3) A schedule for the development and implementation of the full Collection System O & M Plan including the elements in paragraphs b.1. through b.8. below.

b. The full Collection System O & M Plan shall be completed, implemented, and submitted to EPA and MassDEP **within twenty four (24) months from the effective date of the permit**. The Plan shall include:

(1) The required submittal from paragraph 5.a. above, update to reflect current information;

(2) A preventative maintenance and monitoring program for the collection system;

(3) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;

(4) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;

(5) Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;

(6) A description of the permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include and

inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts; and

(7) An educational public outreach program for all aspects of I/I control, particularly private inflow.

(8) An Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The permittee shall submit a summary report of activities related to the implementation of its Collection System O & M Plan during the previous calendar year. The report shall be submitted to EPA and MassDEP **annually by March 31st**. The summary report shall, at a minimum, include;

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. If treatment plant flow has reached 80% of its design flow [0.8 mgd] based on the annual average flow during the reporting year, or there have been capacity related overflows, submit a calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year; and

f. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit.

7. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall provide an alternative power source(s) sufficient to operate its portion of the publicly owned treatment works[1] it owns and operates.

1 As defined at 40 CFR §122.2, which references the definition at 40 CFR §403.3.

E. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR §503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to Section 405(d) of the CWA, 33 U.S.C. §1345(d).

2. If both state and federal requirements apply to the permittee's sludge use and/or disposal practices, the permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 CFR §503 apply to the following sludge use or disposal practices.
   a. Land application - the use of sewage sludge to condition or fertilize the soil
   b. Surface disposal - the placement of sewage sludge in a sludge only landfill
   c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR §503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR §503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g. lagoons, reed beds), or are otherwise excluded under 40 CFR §503.6.

5. The 40 CFR. Part 503 requirements including the following elements:

   - General requirements
   - Pollutant limitations
   - Operational Standards (pathogen reduction and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - Reporting

   Which of the 40 CFR §503 requirements apply to the permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the permittee to assist it in determining the applicable requirements.[2]

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2 This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf .

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods), pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year.

less than 290	1/ year
290 to less than1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR §503.8.

7. Under 40 CFR §503.9(r), the permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the permittee contracts with *another* "person who prepares sewage sludge" under 40 CFR §503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR §503.9(r), for use or disposal, then the permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR §503.7. If the ultimate use or disposal method is land application, the permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

8. The permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§503.18 (land application), §503.28 (surface disposal), or §503.48 (incineration)) by **February 19th** (*see also* "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted to the address contained in the reporting section of the permit. If the permittee engages a contractor or contractors for sludge preparation and ultimate use or disposal, the annual report need contain only the following information:

   a. Name and address of contractor(s) responsible for sludge preparation, use or disposal.

   b. Quantity of sludge (in dry metric tons) from the POTW that is transferred to the sludge contractor(s), and the method(s) by which the contractor will prepare and use or dispose of the sewage sludge.

F. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit**, the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit**, the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting all DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

   a. Submittal of Reports Using NetDMR

      NetDMR is accessed from: http://www.epa.gov/netdmr. **Within one year of the effective date of the Permit**, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt out request").

      DMRs shall be submitted electronically to EPA no later than the **15th day of the month** following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the MassDEP Monthly Operations and Maintenance Report, as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall continue to send hard copies of reports other than DMRs (including Monthly Operation and Maintenance Reports) to MassDEP until further notice from MassDEP.

      As NetDMR requires that reports be submitted as attachments to a DMR, any report required under this permit shall be considered to be timely if it is electronically submitted with the next submitted DMR no later than the next DMR due date (15th of the month) following the permit-specified report due date.

   b. Submittal of NetDMR Opt Out Requests

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

All opt out requests should be sent to the following addresses:

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

And

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. All reports required under this permit (with one exception noted below regarding sludge monitoring reporting), including MassDEP Monthly Operation and Maintenance Reports, shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

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

All sludge monitoring reports required herein shall be submitted to the following address:

U.S. Environmental Protection Agency, Region 7
Biosolids Center
Water Enforcement Branch
11201 Renner Boulevard
Lenexa, Kansas 66219

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following addresses:

MassDEP - Central Regional Office
Bureau of Resource Protection
627 Main Street
Worcester, MA 01887

Copies of toxicity tests, nitrogen and phosphorus optimization reports, and aluminum evaluations only to:

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

And verbal reports, if required in **Parts I** and/or **II** of this permit, shall be made to both EPA-New England and to MassDEP.

G. 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 CMR 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 C.F.R. 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 will have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit will be effective only with respect to the Agency taking such action, and will 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 will 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 will remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

Attachment A
Advanced Wastewater Treatment Plant Discharge Outfall
NPDES Permit No. MA0102148
Belchertown, MA

Outfall:	Description of Discharge:	Outfall Location/Receiving Water:
001	Advanced Wastewater Treatment Plant Effluent	Lampson Brook

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

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

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

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

III. SAMPLE COLLECTION

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

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

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

IV. DILUTION WATER

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

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

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

and

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

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

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

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

V. TEST CONDITIONS

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

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

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

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

Footnotes:

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

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

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

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

Footnotes:

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

VI. CHEMICAL ANALYSIS

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

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

Notes:

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

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

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

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

No Observed Acute Effect Level (NOAEL)

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

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

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

FRESHWATER CHRONIC
TOXICITY TEST PROCEDURE AND PROTOCOL
USEPA Region 1

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

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

III. SAMPLE COLLECTION AND USE

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

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

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

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

IV. DILUTION WATER

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

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

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

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

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

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

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

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

and

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

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

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

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

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

V.1. Use of Reference Toxicity Testing

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

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

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

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

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

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

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

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

VI. CHEMICAL ANALYSIS

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

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

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

Notes:

1. Hardness may be determined by:

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

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

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

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

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

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

2. Test Variability (Test Sensitivity)

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

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

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

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

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

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

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

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

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

2. *Pimephales promelas*

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

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

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

3. *Ceriodaphnia dubia*

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

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

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

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

In addition to the summary sheets the report must include:

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

NPDES PART II STANDARD CONDITIONS
(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
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FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES.

NPDES PERMIT NO.: **MA0102148**

PUBLIC NOTICE START AND END DATES: February 13, 2014 – March 14, 2014

NAME AND ADDRESS OF APPLICANT:

Town of Belchertown Department of Public Works
290 Jackson Street
P.O. Box 670
Belchertown, MA 01007 - 0670

NAME AND ADDRESS OF FACILITY WHERE THE DISCHARGE OCCURS:

Belchertown Water Reclamation Facility
175 George Hannum Road
Belchertown, MA 01007

TO RECEIVING WATER: **Lampson Brook (Segment #MA34-06) to the Connecticut River**

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

CLASSIFICATION: **B (Warm Water Fishery)**

Table of Contents

Figures and Attachments:

I. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving waters. The existing permit expired on October 30, 2010 and is still in effect. The draft permit proposes an expiration date five (5) years from the effective date of the final permit.

II. TYPE OF FACILITY AND DISCHARGE LOCATION

The facility is an advanced wastewater treatment plant and is engaged in the collection and treatment of municipal wastewater. Currently, the facility serves approximately 5,000 people in the Town of Belchertown. The facility does not serve any significant industrial users (SIUs). The treatment plant discharges into Lampson Brook. The facility's location is shown in **Figure 1**.

Information regarding the facility's treated discharge outfall is listed below:

Outfall:	Description of Discharge:	Outfall Location:
001	Advanced Wastewater Treatment Plant Effluent	42^{O} 16' 54" N /-72^{O} 25' 34"W

III. DESCRIPTION OF THE DISCHARGE

A quantitative description of the wastewater treatment plant discharge in terms of significant effluent parameters based on recent monitoring data is shown on **Attachment A** of this fact sheet. This facility's flow schematic is shown in **Figure 2**.

IV. LIMITATIONS AND CONDITIONS

The effluent limitations of the draft permit and monitoring requirements may be found in the draft NPDES permit.

V. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. BACKGROUND

a. Treatment Process Description

The wastewater treatment facility (WWTF) treatment processes include: automatic bar racks, grit removal, pre-equalization tanks, sequencing batch reactor, post-equalization tank, adsorption clarifier, cloth filter, and ultraviolet disinfection. Thickened sludge is held in an aerated tank. Approximately twice per week the sludge is trucked off-site and transported to the Cranston, Rhode Island Wastewater Treatment Facility for incineration. The Belchertown WWTF generates approximately 90.6 dry metric tons of sludge each year.

b. Collection System Description

The WWTF is a separate sewer system. A separate sanitary sewer conveys domestic, industrial and commercial sewage, but not storm water. It is part of a "two pipe system" consisting of separate sanitary sewers and storm sewers. The two systems have no interconnections; the sanitary sewer leads to a wastewater treatment plant and the storm sewer discharges to a local water body.

c. Permit Compliance Schedule

Given that the new, more stringent water quality-based aluminum, copper, and total phosphorus limitations will not be achievable upon the effective date of the final permit, the draft permit proposes a compliance schedule for achieving these limits. This schedule allows 30 months to complete the necessary assessments and to optimize the operations at the Town's Drinking Water Treatment Facility (which should reduce concentrations of metals in the wastewater treatment plant influent) and will allow time to assess, modify, and to optimize the operations at the WWTF. If optimization and small capital improvement projects do not result in attainment of the effluent limits, the schedule requires that design and construction of additional facilities to achieve the limits be completed within 59 months of the permit effective date. The Massachusetts Surface Water Quality Standards (MA SWQS) allow for schedules in permits where appropriate. See 314 CMR 4.03(1)(b).

d. Statutory and Regulatory Authority

General Statutory and Regulatory Background

Congress enacted the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." See CWA §101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is Section 402. See CWA §§ 303(a), 402(a). Section 402(a) establishes one of the CWA's principal permitting programs, NPDES. Under this section, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 304(b); 40 C.F.R. 122, 125, 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b). As a class, publicly owed treatment works (POTWs) must meet performance-based requirements based on available wastewater treatment technology. See CWA § 301(b)(1)(B). The performance level for POTWs is referred to as "secondary treatment". Secondary treatment is comprised of technology-based requirements expressed in terms of BOD_5, TSS, and pH. See 40 C.F.R. §133.

Water quality-based effluent limits, on the other hand, are designed to ensure that State water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of, "any more stringent limitation, including those necessary to meet water quality standards…established pursuant to any State law or regulation…" See 40 C.F.R. §§ 122.4(d)(1) (providing that a permit must contain effluent limits as necessary to protect State water quality standards, "including State narrative criteria for water quality") (emphasis added) and 122.44(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that States develop water quality standards for all water bodies within the State. See CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria", consisting of numeric concentrations and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an anti-

degradation provision, focused on protecting existing uses. See CWA § 303(c)(2)(A) and 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards. The applicable Massachusetts water quality standards can be found in Massachusetts Surface Water Quality Standards, 314 CMR 4.00, which include the statewide antidegradation policy to maintain and protect existing in-stream water quality, found at 314 CMR 4.04.

Receiving stream requirements are established according to numeric and narrative standards adopted under State law for each stream classification. When using chemical-specific numeric criteria from the State's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. Acute aquatic life criteria are generally implemented through average monthly limits.

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 C.F.R. § 125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. The regulations governing EPA's NPDES permit program are generally found in 40 C.F.R. §122, §124, §125, and §136.

Development of Water Quality-based Limits

The permit must limit any pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water-quality criterion. See 40 C.F.R. §122.44(d)(1)(i). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable 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 as determined from the permit's reissuance application, DMRs, and State and Federal Water Quality Reports; 3) sensitivity of the species to toxicity testing; 4) the statistical approach outlined in *Technical Support Document for Water Quality-Based Toxics Control*, March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, 5) dilution of the effluent in the receiving water.

Where a State has not established a numeric water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use," on a "case-by-case basis" using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an indicator parameter. See 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

Antibacksliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. EPA has also promulgated antibacksliding regulations, which are found at 40 C.F.R. §122.44(l). Unless applicable antibacksliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitations and State water quality standards. See CWA § 401(a)(1). The regulatory provisions pertaining to State certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. See 40 C.F.R. § 124.53(a). The regulations further provide that, "when certification is required…no final permit shall be issued…unless the final permit incorporates the requirements specified in the certification under §124.53(e)." See 40 C.F.R. §124.55(a)(2). Section 124.53(e) in turn provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary" to assure compliance with, among other things, State water quality standards. See 40 C.F.R. §124.53(e)(2), and shall also include "[a] statement of the extent to which each conditions of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards". See 40 C.F.R. §124.53(e)(3).

However, when EPA reasonably believes that a State water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA §301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §122.44(d)(1) and (5). It should be noted that under CWA § 401, EPA's duty to defer to consideration of state law is intended to prevent EPA from relaxing any requirements, limitations, or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." See 40 C.F.R. §12455(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. §122.4(d) and 40 C.F.R. §122.44(d).

e. Water Quality Standards; Designated Use; Outfall 001

The Belchertown WWTF discharges into Lampson Brook within Segment MA34-06. This river segment is 1.158 miles in length, and travels from the Town of Belchertown WWTF discharge to the confluence with Weston Brook in Belchertown, MA. From its confluence with Lampson Brook, Weston Brook flows for about one mile to Forge Pond, in Granby. Forge Pond outlets via Bachelor Brook, which flows about 7 miles, though several ponds, including Aldrich Lake in Granby and Pearl City Pond in South Hadley before discharging to the Connecticut River.

Lampson Brook has been designated as a Class B warm water fishery by the Massachusetts Surface Water Quality Standards (MA SWQS), 314 Code of Massachusetts Regulations ("CMR") 4.05(4)(a). The MA SWQS (314 CMR 4.02) defines warm water fisheries as waters in which the maximum mean monthly temperature generally exceeds 68^{o} Fahrenheit (20^{o} Celsius) during the summer months and are not capable of supporting a year-round population of cold water stenothermal aquatic life. The MA SWQS at 314 CMR 4.05(3)(b) state that Class B 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. They shall be a source of public water supply (i.e., where designated and with appropriate treatment). They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. They shall also have consistently good aesthetic value.

The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, the EPA released guidance on November 19, 2001, for the preparation of an integrated "List of

Waters" that could combine reporting elements of both §305(b) and 303(d) of the CWA. The integrated list format allows the states to provide the status of all their assessed waters in one list.

States choosing this option must list each water body or segment in one of the following five categories:

1) Unimpaired and not threatened for all designated uses; 2) Unimpaired waters for some uses and not assessed for others; 3) Insufficient information to make assessments for any uses; 4) Impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) Impaired or threatened for one or more uses and requiring a TMDL.

MassDEP's 2012 Integrated list of Waters (303(d) list[1]) includes segment M34-06 of Lampson Brook as a Category 5 Water and in need of a total maximum daily load (TMDL) for dissolved oxygen and total phosphorus. This assessment is based on the MassDEP's Connecticut River Watershed, 2003 Water Quality Assessment Report[2] published in October 2008. MassDEP Assessment Reports summarize the current state of the waterbody, including the results of water quality sampling and are the basis for the Integrated List of Waters. Weston Brook is listed as Massachusetts Category 5 Waters and in need of a TMDL for total phosphorus and Forge Pond is listed as a Category 5 Water for nutrient/eutrophication biological indicators and non-native aquatic plants. Bachelor Brook is listed as a Category 4 Water, with a completed TMDL. The TMDL was completed in 2001 and established a total phosphorus load for Aldrich Lake, which included a phosphorus wasteload allocation of 196 kg/yr for the Belchertown Wastewater Treatment Plant (WWTP).

f. Available Dilution

7 Day, 10 Year Low Flow

Water quality-based effluent limitations are established with the use of a calculated dilution factor, based on the available dilution of the effluent. Massachusetts water quality regulations require that the available effluent dilution be based upon the 7 day, 10 year low flow (7Q10 flow) of the receiving water (314 CMR § 4.03(3)(a)). The 7Q10 low flow is the mean low flow over seven consecutive days, recurring every ten years.

The facility design flow is 1.0 million gallons per day (mgd) or 1.547 cubic feet per second (cfs). The dilution factor used to calculate the water quality-based limits in the current permit was 1.065, based on a calculated 7Q10 receiving water flow of 0.1 cfs. There are no streamflow gages in Lampson Brook. The 7Q10 flow was estimated from the drainage area upstream of the discharge and gage data determined to be representative of Lampson Brook.

Using the 7Q10 data from the Cadwell Creek USGS gage station number 01174900[3], and drainage area information from the computer model Streamstats, a 7Q10 at the Belchertown outfall can be calculated as follows:

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[1] MassDEP, 2013, Final Massachusetts Year 2012 Integrated List of Waters: Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 303(d) and 305(b) of the Clean Water Act, Division of Watershed Management, Watershed Planning Program.

[2] Carr, Jamie W. and Laurie E. Kennedy, 2008, Connecticut River Basin, 2003 Water Quality Assessment Report, MassDEP, Division of Watershed Management, Report Number 34-AC-2.

[3] Ries, Kernell G, III, 1999, Streamflow Measurements, Basin Characteristics, and Streamflow Statistics for Low-Flow Partial-Record Stations Operated in Massachusetts from 1989 through 1996, U.S. Department of the Interior, U.S. Geological Survey, Report Number 99-4006.

$Q_s = Q_{001} = \frac{(A_{001})}{(A_{gage})} * (Q_{gage}) = \frac{(1.77 \text{ miles}^2)}{(2.55 \text{ miles}^2)} * (0.09 \text{ cfs}) = 0.06 \text{ cfs} = 0.1 \text{ cfs}$

Where:

Q_{gage} = Estimated 7Q10 flow at the Cadwell Creek USGS gage station number 01174900
= 0.09 cfs = 0.1 cfs

A_{gage} = Drainage area at the Cadwell Creek gage near Belchertown, MA = 2.55 miles^2

A_{001} = Lampson Brook drainage area at Outfall 001 = 1.77 miles^2

Based on the most recent instream low flow data available, the resulting dilution factor at the Belchertown WWTF Outfall 001 is calculated to be 1.065 using the following equation and data:

$\text{Dilution Factor (DF)} = \frac{(Q_s) + (Q_d)}{(Q_d)} = \frac{(0.1 \text{ cfs}) + (1.547 \text{ cfs})}{(1.547 \text{ cfs})} = 1.0646 = 1.065$

Where:

Q_s = 7Q10 flow at the treatment plant outfall = 0.1 cfs

Q_d = Treatment plant design flow = (1.0 mgd * 1.547) = 1.547 cfs

1.547 = converts million gallons per day (mgd) to cubic feet per second (cfs) units

This dilution factor is the same value used to calculate water quality based limits for the current permit.

The following statistical tools and stream flow gage data were used to prepare the preceding calculations. (See also: **Attachment B** of this Fact Sheet, Sample Calculations.)

USGS – *StreamStats is a web-based tool that allows users to obtain stream flow statistics, drainage-basin characteristics, and other information for user-selected sites on streams (i.e.,* http://water.usgs.gov/osw/streamstats/massachusetts.html). Streamstats was used to calculate the drainage area at the POTW.

USGS – gage flow data derived from the National Water Information System, Web Interface, http://ma.water.usgs.gov/water/default.htm.

USEPA – *DFLOW 3.1 is a Windows-based tool that allows users to estimate design stream flows for low flow analysis using instream flow gage records (i.e., http://water.epa.gov/ scitech/datait/models/dflow/index.cfm).* DFLOW was used to estimate the 7Q10 and 30Q10 stream flows.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001)

In addition to the State and Federal regulations described above, data submitted by the permittee in its permit application as well as in monthly discharge monitoring reports (DMRs) and in whole effluent toxicity (WET) test reports from 2009 to 2012 was used to evaluate the discharge during the effluent limitations development process (see **Attachment A**).

a. Flow

The flow limitation of 1.0 MGD in the current permit has been maintained in the draft permit. This is the design flow of the facility found in Form 2A, Part A, Section a.6. of the permit application. The 12-month rolling average requirement is new for this permit, and is consistent with other NPDES permits in the region. The draft permit requires continuous flow measurement, and also reporting of the average monthly and maximum daily flows.

b. Conventional Pollutants

1. Biochemical Oxygen Demand (BOD)

The BOD monthly average and weekly average concentration limits are the same as in the current and previous permits and are necessary to meet water quality standards. These limits were originally included in the permit issued on September 1991 based on a March 28, 1991 wasteload allocation performed by MassDEP.

The percent removal limit during this period is based on secondary treatment requirements in 40 CFR 133.102. The draft permit also requires that the maximum daily concentration be reported.

2. Total Suspended Solids (nonfilterable) (TSS)

The TSS monthly average and weekly average concentration limits are the same as in the current and previous permits and are necessary to meet water quality standards. These limits were originally included in the permit issued on September 1991 based on a March 28, 1991 wasteload allocation performed by MassDEP.

The percent removal limit during this period is based on secondary treatment requirements in 40 CFR 133.102. The draft permit also requires that the maximum daily concentration be reported.

3. pH

The draft permit includes pH limitations which are required by state water quality standards, and are protective of pH standards set forth at 314 CMR 4.05(b)(3), for Class B waters. The pH requirements are more stringent than those required under 40 CFR § 133.102(c). The pH limits are carried forward from the current permit, and so are consistent with antibacksliding requirements of 40 CFR § 122.44(1). The monitoring frequency for pH is set at once per day in the draft permit.

4. *Escherichia Coli Bacteria (E. coli)*

The *Escherichia Coli (E. coli)* limits for outfall 001 are based on state water quality standards for Class B waters (314 CMR 4.05(b)(4)). The State of Massachusetts promulgated new bacteria criteria in the MA SWQS (314 CMR 4.00) on December 29, 2006, which were approved by EPA on September 19, 2007. The *E. coli* bacteria limits proposed in the draft permit for Outfall 001 are 126 cfu per 100 ml geometric mean and 409 cfu per 100 ml maximum daily value (this is the 90% distribution of the geometric mean of 126 cfu per 100 ml). The current permit requires bacteria limitations and monitoring year round. Since seasonal limits will provide adequate water quality protection, the draft permit proposes seasonal bacteria limits and monitoring, from April 1st – October 31st, to ensure the protection of the receiving water during the recreational period. The proposed bacteria monitoring frequency in the draft permit is once per week.

c. Non-Conventional Pollutants

Nutrients: Ammonia-Nitrogen, Nitrogen, and Phosphorus

Nutrients are compounds containing nitrogen and phosphorus. Although nitrogen and phosphorus are essential for plant growth, high concentrations of these nutrients can cause eutrophication, a condition in which aquatic plant and algal growth is excessive. Plant and algae respiration and decomposition reduces dissolved oxygen concentrations in the water, creating poor habitat for fish and other aquatic animals. In addition, nitrogen in the form of ammonia can be toxic to aquatic life. The toxicity level of ammonia depends on the temperature and pH of the receiving water (USEPA 1999).

1. Ammonia-Nitrogen (NH_3-N)

The current permit includes the same ammonia limitations that are proposed in the draft permit. The draft permit includes seasonal limits, which are as follows:

	monthly average	weekly average	maximum daily
June through October	1 mg/l	1 mg/l	1.5 mg/l
November through April	10 mg/l	10 mg/l	15 mg/l
May	7 mg/l	7 mg/l	10 mg/l

The seasonal limit of 1 mg/l comes from a MassDEP March 18, 1991 wasteload allocation, and was initially incorporated into the September 26, 1991 permit for the period of April through October 15 along with winter (October 16 to March 31) limits of 3 mg/l, 3 mg/l, and 4.5 mg/l for monthly average, weekly average and maximum daily. The July 11, 1997 permit limits changed, based on MassDEP's recommendations that the limits in the 1991 permit were more stringent than necessary to meet water quality standards. The proposed draft permit ammonia-nitrogen limits above meet water quality standards and are protective of instream toxicity.

It is important to mention, for clarification purposes, that there were no modifications made to the ammonia-nitrogen limits that became effective in the final permit that was issued on July 11, 1997. The permit modification issued on December 16, 2005 incorrectly listed the ammonia-nitrogen limits, which should have been written to reflect the limits listed above.

2. Total Nitrogen

It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen. In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a TMDL for addressing nitrogen-driven eutrophication impacts in 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 25percent 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 below). The estimated current point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively are 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day,

based on recent information and including all POTWs in the watershed. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated 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 – detailed summary attached as **Exhibit A**.

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met, and the overall loading from MA, NH and VT wastewater treatment plants discharging to the Connecticut River watershed has been reduced by about 36 percent.

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 intends to include a permit condition for all existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic and Thames River watersheds, requiring the permittees to evaluate alternative methods of operating their treatment plants to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase, and that the aggregate 25 percent reduction is maintained. Such a requirement has been included in this permit. EPA also intends to work with the State of Vermont to ensure that similar requirements are included in its discharge permits.

Specifically, the draft permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and MassDEP within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The draft permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be 43.426 lbs/day. The draft 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. The draft permit also includes average monthly and maximum daily reporting requirements for total nitrogen (TN), ammonia nitrogen, total Kjeldahl nitrogen (TKN), total nitrite nitrogen (NO_2), and total nitrate nitrogen (NO_3) at a sampling frequency of once per month in the effluent.

The agencies will annually update the estimate of all out-of-basin total nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by the New England

Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although not a permit requirement, it is strongly recommended that any facilities planning that might be conducted for this facility should consider alternatives for further enhancing nitrogen reduction.

The draft permit proposes to maintain the current permit's monitoring of TN, ammonia nitrogen, TKN, NO_2, and NO_3 at a sampling frequency of once per month in the effluent. The monitoring requirements for the Town of Belchertown WWTP are also consistent with other similar-sized POTWs in the Connecticut River Watershed.

3. Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: (1) increasing 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 dense and excessive plant growth in a water body that results from nutrients entering the system as a result of human activities. Discharges from municipal and industrial wastewater treatment plants, agriculture runoff, and stormwater are examples of human-derived (i.e., anthropogenic) sources of nutrients in surface waters.

The MA SWQS under 314 CMR 4.05(5)(c) require that, unless naturally occurring, surface waters must be free from nutrients that cause or contribute to impairment of the existing or designated uses, and the concentration of phosphorus may not exceed site specific criteria developed in a TMDL. Nutrients are also prohibited in concentrations that would cause or contribute to cultural eutrophication. As discussed in a previous section, this segment of Lampson Brook appears on the Massachusetts 303(d) list for dissolved oxygen and total phosphorus, which is based on the MassDEP's 2003 Water Quality Assessment Report for the Connecticut River Watershed. Other downstream waters, including Weston Brook and Forge Pond also appear on the 303(d) list as impaired for phosphorus, and there is an approved TMDL for Aldrich Lake that includes a 202 kg/year wasteload allocation for the Belchertown WWTP.

The total phosphorus limit in the current permit is a year-round monthly average limit of 0.25 mg/L. This limit was calculated to attain water quality standards in Forge Pond. Limits necessary to protect the intervening waters of Lampson Brook and Weston Brook, also impaired for phosphorus, were not calculated. Similarly, the limits were not checked for consistency with the TMDL wasteload allocation for Aldrich Lake. In the following discussion, EPA presents the calculation supporting the existing permit limits to protect Forge Pond, calculates limits necessary to attain water quality standards in Lampson Brook, and Weston Brook, and then compares these limits to the wasteload allocation for Aldrich Lake to ensure they are sufficiently stringent.

In the absence of numeric criteria for phosphorus, EPA uses nationally-recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. EPA has published national guidance documents which contain recommended total phosphorus criteria and other indicators of eutrophication. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends that in-stream phosphorus concentrations not exceed 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly into lakes or impoundments, and 0.025 mg/l within a lake or reservoir.

More recently, EPA has released recommended 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 criteria represent conditions in waters within ecoregions that are minimally impacted by human activities, and thus free from the effects of cultural eutrophication. Belchertown is located within Ecoregion XIV, Eastern Coastal Plains. The recommended total phosphorus criterion for this ecoregion, found in Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV (EPA December 2000) is 24 ug/l (0.024 mg/l).

The effects-based criteria (i.e., the Gold Book) are typically used by the Region because it is more directly associated with an impairment to a designated use (e.g. fishing). 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 designated use impairments. Referenced-base values (e.g, the Ecoregion criteria) 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.

Limits to Attain Water Quality Standards in Forge Pond:

To prevent the development of biological nuisances and to control accelerated or cultural eutrophication, total phosphates as phosphorus should not exceed 50 ug/l in any stream at the point it enters any lake or reservoir (EPA Water Quality Criteria for Water 1986). EPA and MassDEP developed a phosphorous limit for the current Belchertown WWTP NPDES permit to control eutrophication of Forge Pond. Information contained in the document entitled "Diagnostic/Feasibility Study for the Management of Forge Pond" published in February 1989, was used to develop the limit. The current permit's phosphorus permit limit calculations were as follows:

Phosphorus Limit Calculation:

Major Forge Pond Inputs (1986 May – September average)

		Mean Total Phosphorus	
	Mean Flow	ug/l	lb/day
Bachelor Brook	6.5 cfs	13.6	0.48
Forge Pond Brook	2.6 cfs	35.3	0.49
Weston Brook	3.7 cfs	294	5.9
	12.8 cfs (8.3 MGD)		

Allowable load to Forge Pond = 8.3 MGD x (8.34 lbs/gallon) x 0.05 mg/l P[4] = 3.46 lbs/day
Weston Brook NPS load = 2.0 MGD[5] x (8.34) x 0.024[6] mg/l P = 0.40 lbs/day
Allowable WWTP P load = 3.46 lbs/day - 0.48 lbs/day – 0.49 lbs/day– 0.40 lbs/day = 2.09 lbs/day
Allowable WWTP P concentration = 2.09 lbs/day / (8.34) 1.0 MGD = 0.25 mg/l

[4] from *Water Quality Criteria (Gold Book)*, 1986
[5] Weston Brook flow – Belchertown WWTP flow (0.35 MGD) = 2.0 MGD
[6] Average of Bachelor Brook and Forge Pond Brook = 0.024 mg/l

Due to eutrophication concerns in the downstream lake and the potential for higher winter phosphorus loadings to accumulate in the sediments and contribute to the eutrophication problem, the limit in the current permit is in effect year round, as recommended by MassDEP in its March 28, 1991 wasteload allocation.

Limits to Attain Water Quality Standards in Lampson Brook:

In this evaluation, EPA has decided to apply the Gold Book criterion of 100 ug/l (0.1 mg/l) because it was developed from an effects- based approach versus the reference conditions-based approach used in the derivation of the ecoregion criteria. The effects-based approach is preferred in this case because it is more directly associated with an impairment of designated use (e.g., fishing). 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 proposed limitation was calculated using a mass balance equation that is solved to calculate an effluent limitation (Cd) that would result in attainment of the Gold Book criterion of 100 ug/l under 7Q10 conditions. The calculations are as follows:

$$Cwwtp = \frac{\{(Qr + Qwwtp) * Cwq – (Qr * Cr)\}}{Qwwtp}$$

Where:

Qr = 7Q10 flow of the Lampson Brook downstream of the discharge = 0.1 cfs
Qwwtp = Design flow of the Belchertown WWTF = 1.547 cfs
Cwq = In-stream water quality criteria = 100 ug/l
Cr = Instream phosphorus concentration located upstream of the discharge = 30 ug/l[7]
Cwwtp = Phosphorus concentration in the Belchertown discharge = discharge limit

$$Cwwtp = \frac{(0.1 + 1.547) * 100 – (0.1 * 30)}{1.547}$$

Cwwtp = 104.52 ug/l = 0.11 mg/l

EPA notes that this limit is sufficiently stringent to also protect Weston Brook, and that the calculated limit meets the level of treatment to achieve the “highest and best practical treatment” for point sources contributing to eutrophication, since this level of treatment has been defined as achieving a monthly average total phosphorus concentration of 0.2 mg/l or less.

This limit, which is more stringent than the 0.25 mg/L limit in the current permit, would be applied during the growing season months of April through October to prevent plant growth. It will not be necessary to achieve this limit during the colder weather months when plants are not growing.

[7] *Total Maximum Daily Loads of Phosphorus for Selected Connecticut Basin Lakes*, published by MassDEP, December 17, 2001, pages 37 – 42 [Report No. MA34002-2001-4].

Limits Necessary to attain Water Quality Standards in Aldrich Lake:

The MassDEP TMDL, "Total Daily Load of Phosphorus for Selected Connecticut Basin Lakes" includes a wasteload for the Belchertown WWTP of 202 kg/yr for protection of Aldrich Lake. This load was based on achieving a 66 percent reduction in the 605 kg/year load estimated to reach the lake from the WWTP prior to its upgrade to remove phosphorus. The actual WWTP load prior to its upgrade was estimated at 1352 kg/yr, but MassDEP estimated that about 55 percent of this load was either uptaken or stored prior to reaching Aldrich Lake. The estimated reduction was based on data collected prior to the upgrade of the treatment plant through waters that were acknowledged to be highly nutrient impaired, and so significantly overestimate an acceptable level of uptake/storage for a healthy ecosystem.

In order to determine if the limits calculated for the protection of Lampson Brook and Forge Pond would also achieve the TMDL wasteload allocation, EPA calculated the total yearly load from the Belchertown WWTP if it were discharging at its design flow and achieving the 0.1 mg/l monthly average limit necessary to protect Lampson Brook during the months of April through October, and achieving the 0.25 mg/l limits necessary to protect Forge Pond during the months of November through March.

Load for April through October (214 days):

0.11 mg/l * 1.0 MGD * 3.785 * 214 = 89 kg

Load for November through March (151 days):

0.25 mg/l * 1.0 MGD * 3.785 * 151= 143 kg

Total yearly load = 143 kg.+ 89 kg = 232 kg

While this load exceeds the TMDL load of 202 kg, the estimate does not account for phosphorus uptaken or stored in the system between the discharge and the lake. EPA believes it is reasonable to assume that 14 percent of the discharge load (32 kg/year) will be stored or uptaken and that this amount is consistent with achieving water quality standard in the intervening waters. Accordingly, EPA is not making the phosphorus limits more stringent to achieve the TMDL load in Aldrich Lake.

Limits in Draft Permit

Based on the calculations performed above, EPA has included a monthly average total phosphorus limit of 0.11 mg/l for the months of April through October to attain water quality standards in Lampson Brook and has retained the 0.25 mg/l monthly average limit for the months of November through March to attain water quality standards in Forge Pond. These limits are consistent with the 202 kg/yr wasteload allocation of the TMDL for Aldrich Lake.

A seasonal (November 1st – March 31st) once per month monitoring requirement for dissolved ortho-phosphorus is also proposed in the draft permit. Monitoring for ortho-phosphorus is necessary to identify whether the particulate fraction remains low and to further understand the dynamics of phosphorus during the non-growing season.

Phosphorus Enforcement Status:

The permittee was issued an administrative compliance order (AO) on July 19, 2004 by EPA to address phosphorus permit limitation exceedances among other violations of the permit.

The Order to address the phosphorus permit limitation exceedances included: (1) a requirement to submit a detailed evaluation explanation of specific causes of violations of the average monthly total phosphorus limitation of 0.25 mg/l contained in the Permit, (2) provide recommendations for interim and long-term corrective measures to eliminate total phosphorus violations, and (3) propose an implementation schedule for achieving and maintaining full compliance with the Permit.

All of the Order's requirements have been met by the Town. In summary, the Town's report, prepared by Tighe & Bond Consulting Engineers and dated October 12, 2004, concluded that most of the exceedances were directly related to three separate unrelated instances of mechanical failure that have each been resolved. Some of the additional conditions that were potentially linked to somewhat higher final effluent phosphorus concentrations included: septage deliveries, mixed liquor dissolved oxygen, sludge decant volumes, and sludge processing. Recommendations for corrective measures were included in the report, as well as an implementation schedule.

d. Toxics Control

1. Total Residual Chlorine (TRC)

This treatment facility began using ultraviolet (UV) light for disinfection during September 2000. Since chlorine is not used at this facility, effluent limits and monitoring requirements for total residual chlorine are not included in the draft permit.

e. Metals

Certain metals in water can be toxic to aquatic life. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. An evaluation of the concentration of metals in the facility's effluent (from Whole Effluent Toxicity reports submitted to the permitting agencies from February 2009 through February 2012) was used to determine reasonable potential for toxicity caused by aluminum, cadmium, chromium, copper, lead, nickel and zinc.

Metals may be present in both dissolved and particulate forms in the water column. However, extensive studies suggest that it is the dissolved fraction that is biologically available, and therefore, presents the greatest risk of toxicity to aquatic life inhabiting the water column. This conclusion is widely accepted by the scientific community both within and outside of EPA (Water Quality Standards Handbook: Second Edition, Chapter 3.6 and Appendix J, EPA 1994 [EPA 823-B-94-005a]. Also see http://www.epa.gov/waterscience/standards/ handbook/chapter03.html#section6). As a result, water quality criteria are established in terms of dissolved metals.

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

The facility's effluent concentrations (from **Attachment B**) were characterized assuming a lognormal distribution in order to determine the estimated 95th percentile of the daily maximum. For metals with hardness-based water quality criteria, the criteria were determined using the equations in EPA's National Recommended Water Quality Criteria: 2002, using the appropriate factors for the individual metals found in the MA Standards (see table below). The downstream hardness was calculated to be 88.7 mg/l as $CaCO_3$, using a mass balance equation with the design flow, receiving water 7Q10, an upstream median hardness of 84.4 mg/l as $CaCO_3$ and an effluent average hardness of 89 mg/l as $CaCO_3$.

Calculation of hardness in the receiving water:

$$Cr = \frac{QdCd + QsCs}{Qr} = \frac{(1.547\ cfs)(89\ mg/l) + (0.1\ cfs)(84.4\ mg/l)}{(0.1\ cfs + 1.547\ cfs)} = 88.72\ mg/l$$

Where:

Qs = 7Q10 river stream flow upstream of plant = 0.1 cfs
Qd = Design discharge flow from plant = 1.0 MGD = 1.547 cfs
Qr = Combined stream flow (7Q10 + plant flow) = (0.1 + 1.547) = 1.647 cfs
Cs = Upstream hardness concentration = 84.4 mg/l as $CaCo_3$
Cd = Plant discharge hardness concentration = 89 mg/l as $CaCo_3$
Cr = Receiving water hardness concentration

Therefore, a hardness of 88.7 mg/l as $CaCo_3$ was used to calculate the water quality criteria for certain metals.

The following table presents the factors used to determine the acute and chronic total recoverable criteria for each metal:

Metal	Parameters				Total Recoverable Criteria	
	ma	ba	mc	bc	Acute Criteria (CMC) (ug/L)	Chronic Criteria (CCC) (ug/L)
Aluminum	—	—	—	—	750	87
Cadmium	1.0166	-3.9240	0.7409	-4.7190	1.89	0.25
Chromium III	0.819	3.7256	0.819	0.6848	1634.39	78.12
Copper	0.9422	-1.7000	0.8545	-1.702	12.50	8.42
Lead	1.273	-1.46	1.273	-4.705	70.09	2.73
Nickel	0.846	2.255	0.846	0.0584	423.91	47.13
Zinc	0.8473	0.884	0.8473	0.884	108.24	108.24

*Acute Criteria (CMC) = exp{ma*ln(hardness)+ba}
**Chronic Criteria (CCC) = exp{mc*ln(hardness)+bc}

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

$$Q_d C_d + Q_S C_S = Q_r C_r$$

Rewritten as:

$$C_r = \frac{Q_d C_d + Q_S C_S}{Q_r}$$

Where:

Q_d = design discharge flow from plant = 1.0 MGD = 1.547 cfs
C_d = effluent metals concentration, in ug/l (95th percentile)
Q_S = stream flow upstream of plant (7Q10 upstream = 0.1 cfs)
C_S = upstream metals concentration, in ug/l (median)
Q_r = combined stream flow (7Q10 + plant flow) = (0.1 + 1.547) = 1.647 cfs
C_r = resultant in-stream metals concentration, in ug/l

Reasonable potential is then determined by comparing this resultant in-stream concentration (for both acute and chronic conditions) with the criteria for each metal. In EPA's Technical Support Document for Water Quality Based Toxics Control, EPA/505/2-90-001, March 1991, commonly known as the "TSD", box 3-2 describes the statistical approach in determining if there is reasonable potential for an excursion above the maximum allowable concentration. If there is reasonable potential (for either acute or chronic conditions), the appropriate limit is then calculated by rearranging the above mass balance to solve for the effluent concentration (C_d) using the criterion as the resultant in-stream concentration (C_r). See the table below for the results of this analysis with respect to aluminum, cadmium, chromium, copper, lead, nickel and zinc. Also, see **Attachment C** for a discussion of the statistical analysis performed on the effluent data.

Metal	**Qd**	**Cd [1] (95th Percentile)**	**Qs**	**Cs [2] (Median)**	**Qr = Qs + Qd**	**Cr = (QdCd +QsCs) /Qr**	**Criteria**		**Reasonable Potential**	**Limit = (Qr*Criteria-Qs*Cs)/Qd**	
	mgd	**ug/l**	**mgd**	**ug/l**	**mgd**	**ug/l**	**Acute (ug/l)**	**Chronic (ug/l)**	**Cr > Criteria**	**Acute (ug/l)**	**Chronic (ug/l)**
Aluminum	1.547	4206	0.1	98	1.647	3956.6	750	87	Acute and Chronic	792	87 [3]
Cadmium		0		0		0.00	1.88	0.247	N	N/A	N/A
Chromium		0		0		0.00	1634.4	78.11	N	N/A	N/A
Copper		27.63		1.8		26.06	12.5	8.42	Acute and Chronic	13.2	8.85
Lead		0.8		0		0.75	70.08	2.73	N	N/A	N/A
Nickel		3.9		1.8		3.77	423.91	47.13	N	N/A	N/A
Zinc		99.2		4.4		93.4	108.24	108.24	N	N/A	N/A

[1] Data from the 2009-2012 Whole Effluent Toxicity (WET) testing were used to calculate values for aluminum, cadmium, copper, lead, nickel and zinc. Data from 2009-2012 discharge monitoring reports (DMRs) were also used to calculate values for copper and aluminum (see Attachment B).
[2] Median upstream data taken from WET testing on Lampson Brook just upstream of the Belchertown WWTF (see Attachment B).
[3] Limit is set at the criteria because the calculated limit would have been below the criteria.

As indicated in the table above, the concentrations of aluminum and copper in the discharge have a reasonable potential to cause or contribute to an exceedance of the applicable water quality criteria. Therefore, aluminum and copper limits are included in the draft permit. Since the concentration of cadmium, chromium, lead, nickel and zinc do not indicate a reasonable potential to cause or contribute to an exceedance of the applicable water quality criteria, limits for these metals are not proposed for the draft permit. Monitoring for metals will continue to be required as part of the annual WET tests.

Copper Enforcement Status

The permittee was issued an administrative compliance order (AO) on July 19, 2005 by EPA to address copper permit limitation exceedances.

The Order to address the copper permit limitation exceedances included: (1) a requirement to prepare an annual report summarizing the measures that were taken by the Town during the previous calendar year to further reduce the level of copper in the Town's wastewater treatment plant discharge, (2) a 20 microgram per liter (ug/l) interim limit for total copper, (3) a comprehensive Copper Optimization Report in the event the Town violates the 20 ug/l interim total copper limit for two consecutive months, or for three months within a twelve-month period, (4) a detailed evaluation and explanation of the specific causes of the violations of the total copper limitations contained in the Permit, (5) provide recommendations for interim and long-term corrective measures to eliminate total copper violations, and (6) propose an implementation schedule for achieving and maintaining full compliance with the Permit.

All of the Order's requirements have been met by the Town. In addition to meeting the Order's requirements, the Belchertown Water District also implemented a corrosion control program which included using sodium carbonate as a corrosion control inhibitor in their two water supply pumping stations, Daigle Well and Jabish Brook.

f. Whole Effluent Toxicity

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The MA SWQS, found at 314 CMR § 4.05(5)(e), include the following narrative statements and require that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria:

All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife. For pollutants not otherwise listed in 314 CMR 4.00,the National recommended water quality criteria: 2002, EPA 822-r-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 State either establishes a site specific criterion or determines that naturally occurring background concentrations are higher. Where the State determines that naturally occurring background concentrations are higher, those concentrations shall be the allowable receiving water concentrations. The State may establish site specific criteria for toxic pollutants based on site specific considerations. Site-specific limits, human health risk levels and permit limits will be established in accordance with 314 CMR 4.05(5)(e)(1)(2)(3)(4).

National studies conducted by the EPA have demonstrated that domestic sources, as well as industrial sources, contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. Based on the potential for toxicity from domestic and industrial contributions, the state narrative water quality criterion, the level of dilution at the discharge location, and in accordance with EPA national and regional policy and 40 CFR § 122.44(d), the draft permit includes a whole effluent acute toxicity (lethal concentration to 50% of the test organisms, or LC_{50}) limitation and a chronic toxicity (no observed effluent concentration, or C-NOEC) monitoring requirement. (See also: *Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants*, 49 Fed. Reg. 9016, March 9, 1984, and EPA's *Technical Support Document for Water Quality-Based Toxics Control*, September, 1991.)

The MassDEP's Division of Watershed Management has a current toxics policy which requires toxicity testing for all major dischargers such as the Belchertown WWTF (*Implementation Policy for the Control of Toxic Pollutants in Surface Waters*, MassDEP 1990). In addition, EPA feels that toxicity testing is required to assure that the synergistic effect of the pollutants in the discharge does not cause toxicity, even though the pollutants may be at low concentrations in the effluent. The inclusion of whole effluent toxicity limitations in the draft permit will assure that the Belchertown WWTF does not discharge combinations of toxic compounds into Lampson Brook in amounts which would affect aquatic or human life.

Pursuant to EPA Region I Policy, and MassDEP's *Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 1990), dischargers having a dilution factor less than 10 are required to conduct acute and chronic toxicity testing four times per year unless there are passing results over an extended period of time. In accordance with the above guidance, the draft permit includes an acute toxicity limit (LC_{50} of $\geq$ 100%) and a chronic toxicity limit (C-NOEC of $\geq$ 94 %). The permittee shall conduct the acute and chronic toxicity tests using the daphnid, *Ceriodaphnia dubia* (*C. dubia*), as the test species. Toxicity testing must be performed in accordance with the EPA Region I test procedures and protocols specified in **Attachments B and C** of the draft permit (Freshwater Acute Toxicity Procedure and Protocol and Freshwater Chronic Toxicity Procedure and Protocol), and the tests will be conducted twice per year since there have been numerous consecutive passing test results during the past three years. The requirements for WET testing recently changed. It has come to EPA Region I's attention that the modified acute toxicity test in the current permit, which is conducted as part of the chronic toxicity test, is not an approved method under 40 CFR Part 136. As of March 2013, the modified acute testing requirement is being replaced by a standalone acute toxicity test. The acute toxicity testing protocol is Attachment B to the draft permit. EPA and the MassDEP may use the results of the toxicity tests and chemical analyses conducted by the permittee, required by the permit, as well as national water quality criteria, state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants.

The C-NOEC calculations are as follows: (1/dilution factor * 100) = (1/1.065 * 100) = 94 percent

VI. SLUDGE CONDITIONS

Section 405(d) of the CWA requires that EPA develop technical standards regarding the use and disposal of sewage sludge. On February 19, 1993, EPA promulgated technical standards. These standards are required to be implemented through permits. The conditions in the permit satisfy this requirement.

VII. INFILTRATION/INFLOW (I/I)

Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes or deteriorated joints. Inflow is extraneous flow that enters the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity and the efficiency of the treatment works and may cause bypasses of secondary treatment. It greatly increases the potential for sanitary sewer overflows (SSO) in separate systems, and combined sewer overflows (CSO) in combined systems.

The draft permit includes a requirement for the permittee to control infiltration and inflow (I/I) within the sewer collection system it owns and operates. The permittee shall develop an I/I removal program commensurate with the severity of I/I in the collection system. This program may be scaled down in sections of the collection system that have minimal I/I.

VIII. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

The standard permit conditions for "Proper Operation and Maintenance", set forth at 40 C.F.R. §122.41(e), require the proper operation and maintenance of permitted wastewater systems and associated facilities to achieve permit conditions. The requirements at 40 C.F.R. §122.41(d) impose a "duty to mitigate" upon the permittee, which requires that "all reasonable steps be taken to minimize or prevent any discharge violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment". EPA and the MassDEP maintain that an I/I removal program is an integral component to ensuring compliance with the requirements of the permit under the provisions at 40 C.F.R. §122.41(d) and (e).

General requirements for proper operation and maintenance, and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.D. and I.E. of the draft permit. These requirements include mapping of the wastewater collection system, preparing and implementing a collection system operation and maintenance plan, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to separate sewer collection systems (combined sewers are not subject to I/I requirements) to the extent necessary to prevent SSOs and I/I related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary. These requirements are included to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment.

Several of the requirements in the draft permit are not included in the current permit, including collection system mapping, and preparation of a collection system operation and maintenance plan. EPA has determined that these additional requirements are necessary to ensure the proper operation and maintenance of the collection system and has included schedules for completing these requirements in the draft permit.

IX. ANTIDEGRADATION

No lowering of water quality is allowed, except in accordance with the state's antidegradation policy. All existing uses of Lampson Brook must be protected. This draft permit is being reissued with allowable discharge limits as, or more, stringent than those in the current permit and with the same parameter coverage. There is no change in outfall location. The public is invited to participate in the antidegradation finding through the permit public notice process.

X. ESSENTIAL FISH HABITAT DETERMINATION (EFH)

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 Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat," (16 U.S.C. § 1855(b)).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, 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 CFR § 600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific of habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

EFH 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. Lampson Brook has not been designated as a EFH riverine system, and thus EPA and the MassDEP have determined that a formal consultation with NMFS is not required.

XI. ENDANGERED SPECIES ACT (ESA)

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

Section 7(a)(2) of the CWA requires every Federal agency in consultation with and with the assistance of the Secretary of the Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish & Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. EPA has reviewed the federal endangered or threatened species of fish and wildlife to determine if any listed species might potentially be impacted by the reissuance of this NPDES permit. The review revealed that there are no federally-listed threatened or endangered species, or critical habitat within the vicinity of the Belchertown discharge and, therefore, a formal ESA consultation will not be required for this discharge.

XII. MONITORING AND REPORTING

The permittee is obligated to monitor and report sampling results to EPA and the MassDEP within the time specified within the permit. Timely reporting is essential for the regulatory agencies to expeditiously assess compliance with permit conditions.

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 includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The Draft Permit requires that, no later than one year after the effective date of the permit, the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt out request").

In the interim (until one year from the effective date of the permit), the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit discharge monitoring reports (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, including contacts for EPA Region 1, is provided on this website.

The Draft Permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will 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.

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

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the Draft Permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format.

XIII. STATE PERMIT CONDITIONS

The NPDES Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection (MassDEP) under federal and state law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the Director of the Division of Watershed Management pursuant to M.G.L. Chap. 21, §43.

XIV. GENERAL CONDITIONS

The general conditions of the permit are based on 40 C.F.R. §122, Subparts A and D and 40 C.F.R. §124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

XV. STATE CERTIFICATION REQUIREMENTS

EPA may not issue a permit unless the MassDEP either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards or waives its right to certify. Regulations governing state certification are set forth in 40 CFR §§124.53 and §124.55. The staff of the MassDEP has reviewed the draft permit and indicated to EPA that the limitations are adequate to protect water quality. EPA-New England has requested permit certification by the State and expects that the draft permit will be certified.

XVI. PUBLIC COMMENT PERMIT, PUBLIC HEARING, AND PROCEDURES FOR FINAL DECISION

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 before the close of the public comment period, to the U.S.EPA, Office of Ecosystem Protection, Municipal Permits Section (OEP06-1), 5 Post Office Square, Suite 100, Boston, MA 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the state agency for a public hearing to consider the draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after a public hearing, if such a 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. Permits may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

XVII. EPA AND MassDEP CONTACTS

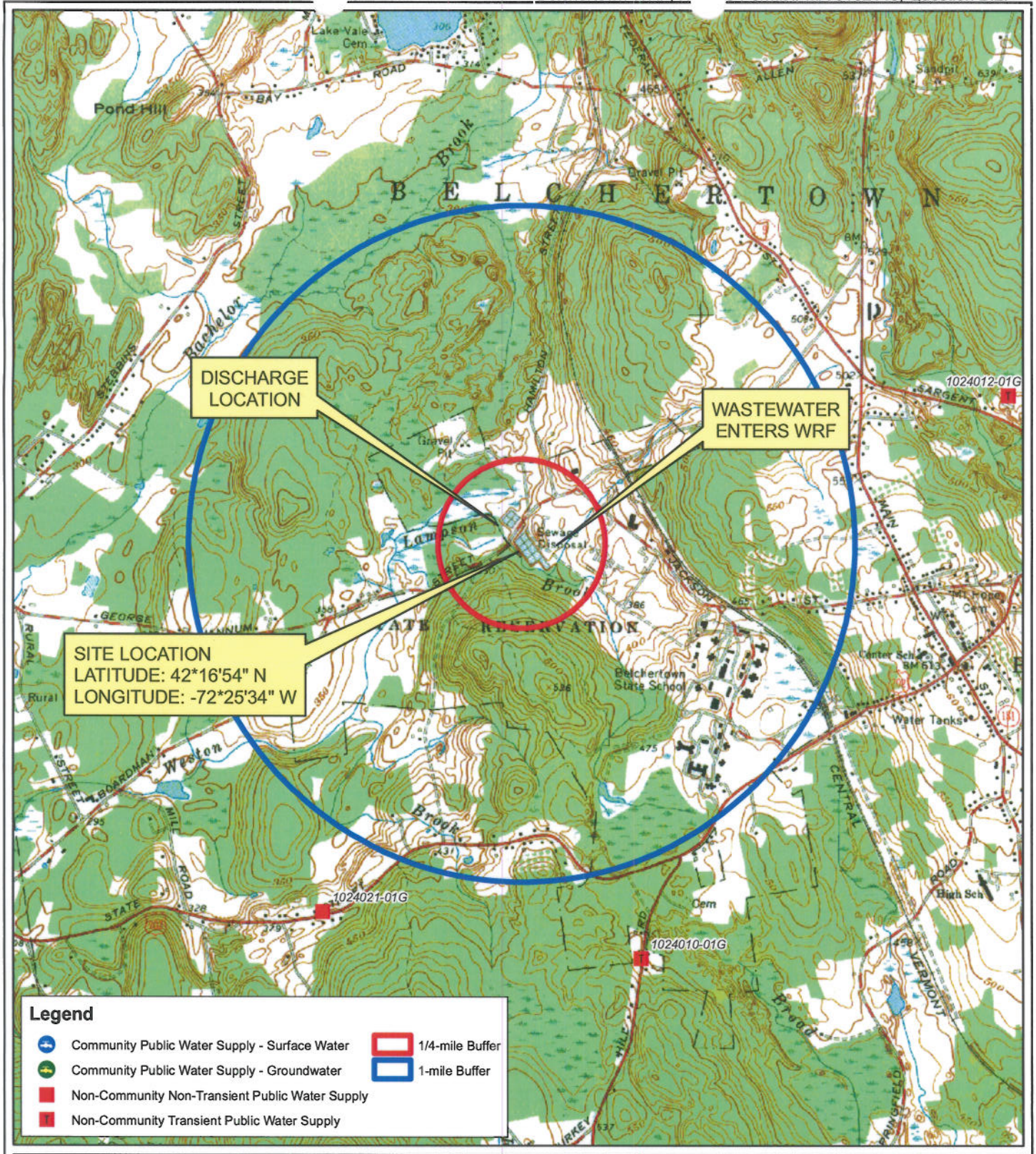
Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Janet Deshais
Chemical/Environmental Engineer
U.S. Environmental Protection Agency
Office of Ecosystem Protection (OEP06-1)
5 Post Office Square, Suite 100
Boston, MA 02109 - 3912
Telephone: (617) 918-1667
E-mail: deshais.janet@epa.gov

Claire Golden
Environmental Engineer
Bureau of Resource Protection
Department of Environmental Protection
205B Lowell Street
Wilmington, MA 01887
Telephone: (978) 694-3244
E-mail: claire.golden@state.ma.us

Date: _____
Ken Moraff, Director *
Office of Ecosystem Protection
U.S. Environmental Protection Agency

*Please address all comments to Janet Deshais and Claire Golden at the addresses above.



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Feet

Based on USGS Topographic Map for Belchertown, MA Quadrangle. Revised 1979. 10-foot Contour Interval.

FIGURE 1

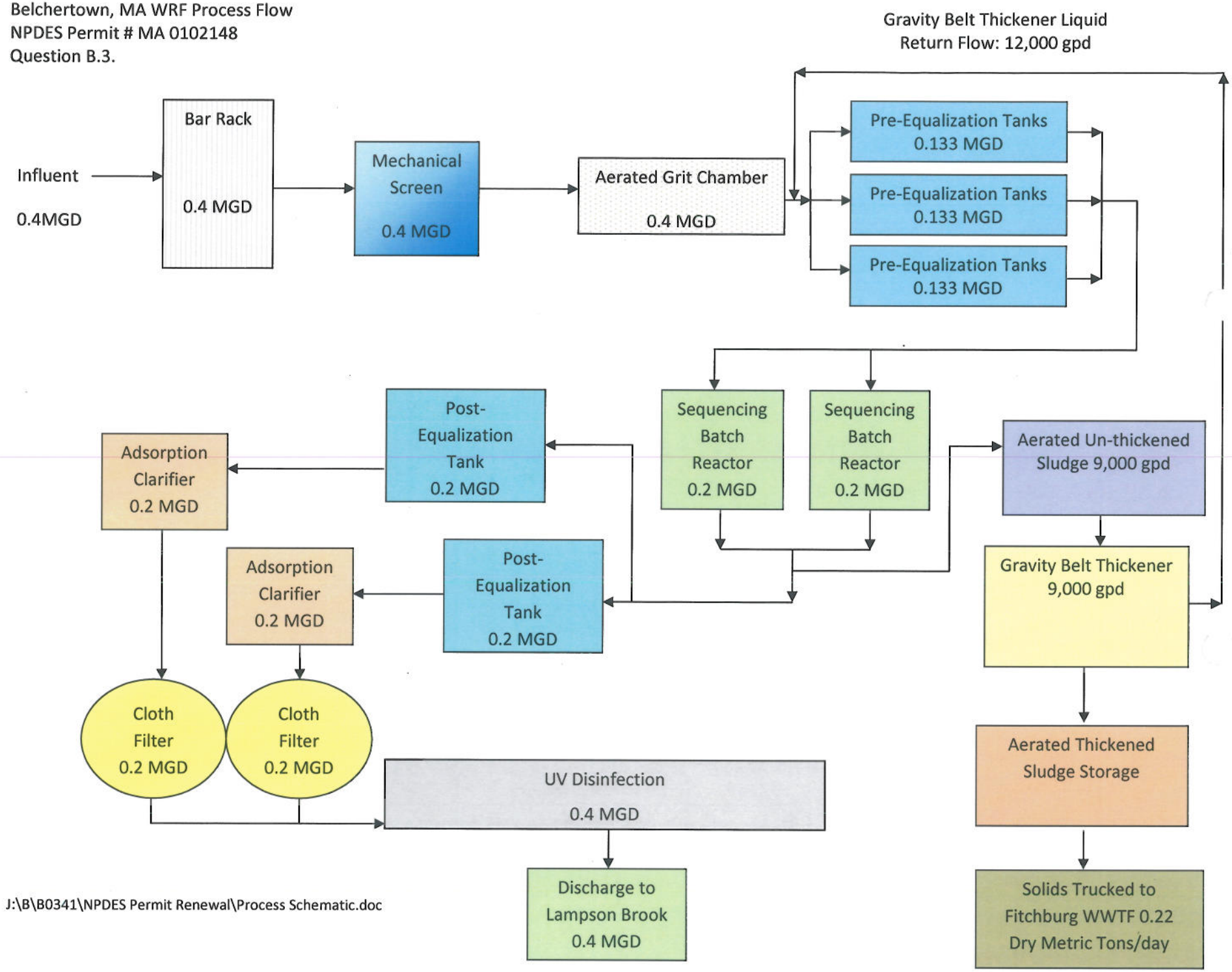
WRF LOCUS MAP

Town of Belchertown
Department of Public Works
NPDES Permit Renewal
Belchertown, Massachusetts

Tighe&Bond

November 2009

Belchertown, MA WRF Process Flow
NPDES Permit # MA 0102148
Question B.3.



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ATTACHMENT A
EFFLUENT MONITORING DATA
NPDES Permit No. MA0102148
Belchertown, MA

DESCRIPTION OF DISCHARGE: Advanced Wastewater Treatment Plant Effluent

DISCHARGE: Outfall 001 (The receiving water is the Lampson Brook.)

The discharge monthly reports for monthly average and daily maximum values listed below, were reported from February 2009 to February 2012 unless otherwise indicated.

EFFLUENT CHARACTERISTICS AT THE POINT OF DISCHARGE:

Parameter	Monthly Average (range)	Weekly Average (range)	Daily Maximum (range)
Flow, MGD (annual average)	0.239 – 0.854	-----	0.41 - 1.04
BOD, mg/l (June 1 – Oct 31)	0.82 – 2.4	1 – 3.3	1 – 3.3
BOD, mg/l (Nov 1 – April 31)	0.87 – 3.2	1.2 – 6.2	1.2 – 6.2
BOD, mg/l (May)	0.83 – 4	1.3 – 4.4	1.3 – 4.4
BOD, lbs/d	299 – 958	-----	-----
TSS, mg/l (June 1 – Oct 31)	1.4 – 6.7	2 – 14.3	2 – 14.3
TSS, mg/l (Nov 1 – April 31)	1.2 – 6.7	1.6 – 9.8	1.6 – 9.8
TSS, mg/l (May)	6.3 – 7.5	7.4 – 12.8	7.4 – 12.8
TSS, lbs/d	482 – 1078	-----	-----
pH, standard units	6.7 - 8 (minimum range)	(maximum range)	7.1 – 8.2
Total Fecal Coliform, cfu/100 ml	0.97 – 42.3 (monthly geometric mean)		2.9 - 264
Total Phosphorus, mg/l	0.04 – 0.23	-----	-----
Total Nitrite plus Nitrate, (as N), mg/l	0.78 – 15.6	-----	-----
Total Ammonia, (as N), mg/l (Jun-Oct)	0.11 – 0.37	0.2 – 0.38	0.2 – 0.38
Total Ammonia, (as N), mg/l (Nov-Ap)	0.2 – 9.9	0.2 - 15	0.2 - 15
Total Ammonia, (as N), mg/l (May)	0.2 – 0.24	0.2 – 0.36	0.2 – 0.36
Total Kjeldahl Nitrogen (as N), mg/l	1.0 – 12.7	-----	-----
Dissolved Oxygen, mg/l	7.3 – 12.5	-----	-----
Copper, ug/l	0 – 19.2	-----	2 – 19.2
Aluminum, ug/l	83.6 – 2270	-----	83.6 - 2280

Whole Effluent Toxicity (WET) Tests submitted by the permittee (February 2009 – February 2012):
LC_{50} (Ceriodaphnia dubia) $\geq$ 100% (10 tests)
C-NOEC (Ceriodaphnia dubia) $\geq$ 100% (9 tests), 94% (1 test)

Metals Chemistry Effluent Data
February 2009 – February 2012 (monthly average range):

Aluminum, ug/l	0.058 – 2.12
Copper, ug/l	0.0008 – 0.0234
Lead, ug/l	bdl – 0.001
Zinc, ug/l	0.0046 – 0.0579
Nickel, ug/l	0.0009 – 0.005

ATTACHMENT B
EFFLUENT CHEMISTRY
WHOLE EFFLUENT TOXICITY (WET) DATA
NPDES Permit No. MA0102148
Belchertown, MA

Effluent Chemistry WET Data, mg/l:

Parameter	2/09/09	5/12/09	8/10/09	11/16/09	12/07/09	2/08/10 (test 1)	2/08/10 (test 2)	5/11/10	8/09/10
Aluminum	0.157	0.052	1.69	1.5	0.453	0.118	0.364	1.06	0.111
Copper	0.0008	0.0234	0.0138	0.0105	0.015	0.0093	0.0089	0.0185	0.0134
Lead	bdl	bdl	bdl	0.0005	bdl	bdl	Bdl	bdl	bdl
Zinc	0.0092	0.042	0.0334	0.0579	0.046	0.051	0.0154	0.0487	0.0576
Nickel	0.0016	0.0023	0.0028	0.003	0.005	0.0018	0.0009	0.0016	0.0028
Cadmium	bdl	bdl	bdl	bdl	bdl	bdl	Bdl	bdl	bdl

Parameter	11/08/10	2/07/11	5/09/11	8/08/11	11/14/11	2/06/12	2/22/12
Aluminum	0.79	0.058	0.193	1.13	2.12	0.883	0.369
Copper	0.0187	0.0016	0.0177	0.0126	0.0138	0.0112	0.0184
Lead	bdl	bdl	bdl	0.001	bdl	bdl	bdl
Zinc	0.0393	0.0046	0.0289	0.0409	0.0284	0.0376	0.0463
Nickel	0.0017	0.0019	0.0015	0.0027	0.0011	0.0018	0.0019
Cadmium	bdl	bdl	bdl	bdl	bdl	bdl	bdl

Instream Chemistry WET Data, mg/l (located upstream of the Belchertown WWTF):

Parameter	2/09/09	5/12/09	8/10/09	11/16/09	12/07/09	2/08/10 (test 1)	2/08/10 (test 2)	5/11/10	8/09/10
Aluminum	0.424	0.051	0.209	0.044	0.08	0.222	0.089	0.037	0.107
Copper	0.0222	0.0013	0.0019	0.0018	0.003	0.0022	0.002	0.0012	0.0007
Lead	bdl	bdl	bdl	bdl	bdl	bdl	Bdl	bdl	bdl
Zinc	0.0644	0.0049	0.0059	0.0027	0.006	0.0046	0.0047	0.00487	0.003
Nickel	0.0016	0.0021	0.0031	0.0021	0.003	0.0021	0.0005	0.0022	0.0015
Cadmium	bdl	bdl	bdl	bdl	bdl	bdl	Bdl	bdl	bdl

Parameter	11/08/10	2/07/11	5/09/11	8/08/11	11/14/11	2/06/12	2/22/12
Aluminum	0.79	0.058	0.07	0.042	0.07	0.127	0.124
Copper	0.0187	0.0016	0.0041	0.0018	0.0017	0.002	0.0043
Lead	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Zinc	0.0393	0.0046	0.0064	0.001	0.0039	0.0043	0.0031
Nickel	0.0017	0.0019	0.0021	0.0017	0.0019	0.0021	0.0017
Cadmium	bdl	bdl	bdl	bdl	bdl	bdl	bdl

Average and Median Instream Chemistry WET Data, mg/l (located upstream of the Belchertown WWTF):

Parameter	Average (2/09/09 – 2/22/12)	Median (2/09/09 – 2/22/12)
Aluminum	0.159	0.098
Copper	0.0044	0.0018
Lead	bdl	bdl
Zinc	0.0102	0.0044
Nickel	0.002	0.0018
Cadmium	bdl	bdl

Note: "bdl" means below detection level. When calculating the average values above, half the quantifiable limit was used for "bdl" values.

ATTACHMENT C
SAMPLE CALCULATION OF
REASONABLE POTENTIAL DETERMINATION
NPDES Permit No. MA0102148
Belchertown, MA

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

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

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

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

Where:

μ_y = mean of Y
σ_y = standard deviation of Y
Y = ln[X]
z_p = the z-score for percentile "p"

For the 95^{th} percentile, $z_{95} = 1.645$, so that

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

The 95th percentile value is used to determine whether a discharge has a reasonable potential to cause or contribute to an exceedance of a water quality standard. The combination of the upper

[1] A different statistical approach is applied where the monitoring data set includes less than 10 samples.

bound effluent concentration with dilution in the receiving water is calculated to determine whether the water quality criteria will be exceeded.

Datasets including non-detect values

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

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

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

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

Where:

μ_y*= mean of Y values for data points above the detection limit;
σ_y*= standard deviation of Y for data points above the detection limit;
Y = ln[X*];
X*= monitoring data above detection limit; and
z_p* = an adjusted z score that is given by the equation:

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

where δ is the proportion of nondetects in the monitoring dataset.

k = total number of dataset
r = number of nondetect values in the dataset
δ = r/k

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

Example Calculations of z_p* for 95th percentile

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

Belchertown Water Reclamation Facility - Response to Comments

On February 13, 2014, the United States Environmental Protection Agency ("**EPA**") and the Massachusetts Department of Environmental Protection ("**MassDEP**") (together, the "**Agencies**") released for public comment a draft permit for the Belchertown Water Reclamation Facility ("**WRF**"). The draft permit was subject to a public comment period from February 13, 2014 to March 14, 2014. The Response to Comments below encompass written comments submitted to EPA and MassDEP during the public comment period.

Comments were received from the Town of Belchertown ("Town" or "Belchertown") in a letter dated March 13, 2014:

Comment #1:
We request that the EPA remove the limit for total aluminum from the permit. The effluent limit proposed for aluminum is 87 ug/l, which is equivalent to the EPA ambient water quality criteria for chronic exposure to aluminum. The ambient water quality was based on a survey conducted in 1988 of available aluminum toxicity literature. Since that time several aluminum specifications and toxicity studies have shown that aluminum alone is not sufficient to cause toxicity to aquatic organisms, but that it is the type of aluminum species present in the water that is the key factor in determining its toxicity. Aluminum specification, bioavailability, and toxicity are dependent on diverse water quality parameters such as the buffering capacity, dissolved organic carbon content, and pH of the water. It places a large burden on the Water Reclamation Facility to meet such a strict limit on aluminum when there is no clear detrimental effect to the receiving water.

Use of aluminum salts by the Water Reclamation Facility is critical for phosphorus reduction. By imposing the proposed aluminum limit, the regulatory agencies may be forcing the WRF to change to an iron-based coagulant instead of the aluminum-based coagulant currently being used. This change would require a near complete replacement of chemical handling and feed equipment.

Response #1:
In accordance with state and federal regulations, the discharge must meet individual water quality criteria and the aggregate effluent must not be toxic to aquatic life. The fact sheet clearly shows that the discharge of this pollutant has reasonable potential to cause or contribute to exceedances of water quality standards and also describes the basis for the limits in the draft permit.

EPA's Office of Water is planning to conduct a general review of the national water quality criteria to determine which criteria need updating. The aluminum criteria will be included in this review; however, the studies needed to update all the criteria, including aluminum, are expected to take at least several years. EPA – Region 1 must use the current water quality criteria for aluminum until the Office of Water publishes new criteria and these criteria are adopted by the State, at which time EPA will use the most recent criteria.

Comment #2:
The drastic reduction of the Total Phosphorus limit to 0.11 mg/l during the April 1 – October 31 time period will impose a significant burden on the Town, as it is less than half of Belchertown's current permit level. Removal of phosphorus at the Water Reclamation Facility is currently achieved through addition of a polyaluminum chloride to precipitate phosphorus into a form that can be removed through tertiary clarification and filtration. While the Facility routinely meets the existing phosphorus limit, it is anticipated that it would not be possible for the Town to reliably achieve the total phosphorus limit proposed in the draft permit without costly Facility upgrades to achieve phosphorus removal.

In addition, in the derivation of limits to attain water quality standards in Lampson Brook, EPA employs the "Gold Book" in-stream water quality criterion of 100 ug/l for phosphorus. The proposed drastically reduced limit should instead be based on site-specific data from Lampson Brook, as well as site-specific data which appropriately represent the effect of the discharge from the Water Reclamation Facility on the quality of the Brook, including a threshold for triggering eutrophication.

Response #2:
The rationale for the more stringent seasonal phosphorus limit has been explained in the Fact Sheet. We recognize the additional costs associated with meeting lower permit limitations; however, NPDES permits must be written so that the discharge does not cause or contribute to the exceedance of a water quality standard. The permittee is encouraged to investigate alternative methods of phosphorus removal in order to minimize potential secondary impacts of treatment and costs while meeting the permit limitations. The permit includes a schedule that allows for sufficient time to determine the most cost effective approach for meeting the limits.

As discussed in the fact sheet, Massachusetts Surface Water Quality Standards under 314 CMR 4.05(5)(c) require that, unless naturally occurring, surface waters must be free from nutrients that cause or contribute to impairment of the existing or designated uses, and the concentration of phosphorus may not exceed site specific criteria developed in a TMDL. Nutrients are also prohibited in concentrations that would cause or contribute to cultural eutrophication. This segment of Lampson Brook appears on the Massachusetts 303(d) list for dissolved oxygen and total phosphorus, which is based on the MassDEP's 2003 Water Quality Assessment Report for the Connecticut River Watershed. Other downstream waters, including Weston Brook and Forge Pond also appear on the 303(d) list as impaired for phosphorus, and there is an approved TMDL for Aldrich Lake that includes a 202 kg/year wasteload allocation for the Belchertown WRF.

EPA used Gold Book-recommended criterion of 0.1 mg/l to interpret narrative criteria in the state water quality standards. According to the discharge monitoring report data in Attachment A of the Fact Sheet, the Belchertown WRF discharged 0.04 mg/l to 0.23 mg/l of phosphorus during a previous three-year period. Based on this information, and given the available dilution of 0.1 cfs, calculations were made in the fact sheet that showed that the discharge has a reasonable potential to cause or contribute to exceed the Gold Book- recommended criterion, and that an effluent limitation of 0.11 mg/l was necessary during the growing season to ensure that the Gold Book criterion was achieved.

EPA decided to rely on the Gold Book threshold of 100 ug/l rather than the more stringent ecoregion criteria of 24 ug/l, given that it was developed from an effects-based approach, versus the ecoregion criteria that were developed on the basis of reference conditions**.** The effects-based approach is often more directly associated with an impairment to a designated use (i.e. fishing, swimming) and provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e., phosphorus) and a response variable (i.e., chlorophyll *a*) associated with designated use impairments. As the Gold Book notes, there are natural conditions of a water body that can result in either increased or reduced eutrophication response to phosphorus inputs; in some waters more stringent phosphorus reductions may be needed, while in others a higher total phosphorus threshold could be assimilated without inducing a eutrophic response.

In this case, EPA is not aware of any evidence that the Lampson Brook is unusually susceptible to eutrophication impacts, therefore, the 100 ug/l threshold appears sufficient in this receiving water. With respect to factors that can reduce susceptibility, the Gold Book identifies morphometric features (steep banks, great depths and substantial flows), limitation by nutrients other than phosphorus, reduced light penetration where waters are highly laden with natural silts or color, or other naturally occurring phenomena that limit plant growth.[1] EPA is not aware, and the permittee has not identified, any site-specific factors that would significantly reduce eutrophic response in the Lampson Brook downstream of the discharge. EPA evaluated the projected instream concentration under current permit limits, and calculated a total phosphorus limit based on meeting the Gold Book target of 100 ug/l for preventing eutrophication, applied under 7Q10 conditions. In performing this calculation, EPA assumed an upstream receiving water concentration of 30 ug/l.[2]

In addition, the Environmental Appeals Board issued a major decision on nutrients (*In re City of Attleboro Department of Wastewater*, NPDES Appeal No. 08-08, 14 E.A.D._ (EAB, September 15, 2009). In that decision, the Board found reasonable the Region's methodology of using EPA technical guidance and peer-reviewed literature for deriving numeric effluent limitations to implement narrative nutrient standards under 40 C.F.R. § 122.44(d)(1)(vi) in the absence of site-specific studies (or WLAs).

Therefore, given that plant growth supported by the phosphorus in the receiving water continues to be a concern in the segment downstream of the discharge, EPA believes that phosphorus discharged by the facility has the reasonable potential to cause or contribute to an exceedance of state water quality standards and has retained the phosphorus limitations in the final permit.

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[1] The Gold Book also includes waters where "technological or cost-effective limitations may help control induced pollutants"; "waters managed primarily for waterfowl or other wildlife" and waters where "phosphorus control cannot be sufficiently effective under present technology to make phosphorus the limiting nutrient". As these factors do not address water body response but instead alternative technological solutions or changes in management goals, EPA does not consider them as altering the threshold necessary to meet the narrative water quality standard.

2 *Total Maximum Daily Loads of Phosphorus for Selected Connecticut Basin Lakes*, published by MassDEP, December 17, 2001, pages 37 – 42 [Report No. MA34002-2001-4].

Comment #3:
Progress reports are required at 12, 24, 36, 48, and 59 months from the effective date of the permit, but paragraph (a) under the Special Conditions for Aluminum, Copper and Total Phosphorus requires one additional interim milestone report at 30 months from the effective date of the permit. The Town proposes deleting the progress reports required at 24 and 36 months, because it does not seem necessary to provide a report six months after, or six months before, the submission of the 30 month progress report. We do not anticipate a significant change in the content of reports generated at 24 and 30 months, or at 30 and 36.

Response #3:
In accordance with 40 CFR Part 122.47(3)(ii), the following compliance-related reporting dates will remain in the Final Permit: 12, 24, 36, 48, and 59 months of the effective date of the permit. The following milestone reporting dates have been removed from the Final Permit: "18 and 30 months of the effective date", since the federal regulations require a minimum of annual reporting of milestones for compliance schedules lasting longer than one year. The milestones required at the "18 months" and "30 months" timeframe have been changed to be accomplished on or before "24 months from the effective date of the permit" and "36 months from the effective date of the permit", respectively.

Comments were received from the Connecticut River Watershed Council ("CRWC") in a letter dated March 13, 2014:

Comment #1:
EPA has used the Cadwell Creek USGS gage station as a surrogate for Lampson Brook in order to estimate the 7-day, 10-year low flow (7Q10) of the receiving water. Now that MassDEP has posted an interactive online map as part of the Sustainable Water Management Initiative (SWMI), it is possible to look at whether subwatersheds are flow-impacted and therefore comparable. According to this tool (linked at htt://www.mass.gov/eea/agencies/massdep/water/watersheds/sustainable-water-management-initiative-swmi.html), Lampson Brook is in the yellow groundwater category and is >10-25% flow impacted. Cadwell Creek is light blue, and is >3-10% flow impacted. The 7Q10 for Lampson Brook based on Cadwell Creek may therefore be a high estimate. However, the 7Q10 is so low and most of the flow is coming from the Water Reclamation Facility (WRF), and this may not make a difference in determining limits. We have not done a similar analysis for Forge Pond flow inputs.

Response #1:
EPA considered several USGS gage stations, but the Cadwell Creek gage station is the only good comparable gage station with a long-term flow record. Even though the Cadwell Creek gage station is not an ideal representation of the receiving water, the expected 7Q10 dilution flow is very low and any differences using another gage station would have minimal impact on the permit limits.

Comment #2:
The June 2005 permit established pounds per day (lbs/day) limits for BOD and TSS, but those were appealed by the permittee and EPA issued a modified permit in December 2005 eliminating the loading limits. Based on the effluent monitoring data provided in Attachment A of the Fact Sheet, it appears that the facility is successfully meeting its monthly average and weekly average BOD and TSS concentration limits. The reported BOD and TSS lbs/day range for monthly average, however, greatly exceeds the permit limits that were part of the June 2008 permit, later modified. Attachment A shows a maximum

monthly average of 958 lbs/day and 1,078 lbs/day of BOD and TSS, respectively, being discharged into a very small water body (7Q10 of 0.1 cfs). Because Lampson Brook is impaired for dissolved oxygen, such high BOD and TSS loading from the facility is worth a detailed analysis, and this was lacking in the Fact Sheet.

Response #2:
EPA has become aware that the flow limit in the draft permit should have been reported as "average monthly" rather than "annual average". In the previous permit, Belchertown requested that the flow limit be retained as a monthly average limit instead of an annual average limit to obviate the need for mass limits. EPA and MassDEP impose mass limits when a flow limit is changed from monthly average to annual average to ensure that there is no increase in pollutant loading consistent with antidegradation requirements. In reissuing the permit, EPA inadvertently listed the flow limit as an annual average limit and is making this correction in the final permit.

The reported values for the TSS and BOD loadings were influent values. Therefore, the effluent values were in compliance with the permit limits.

Comment #3:
The Fact Sheet on page 9 states that the current permit requires bacteria limitations and monitoring "year round." This is not true. The current and draft permit sets bacteria limits during the period April 1 to October 31.

Response #3:
EPA concurs that the Fact Sheet contained a typographical error. The current and new permit includes bacteria limitations and monitoring from April 1 to October 31.

Comment #4:
The discussion on ammonia-nitrogen in the Fact Sheet on page 10 is confusing. The seasonal ammonia limits in the draft permit match the December 2005 modified permit limits, yet the Fact Sheet says that the December 2005 modified permit limits were incorrect. The Fact Sheet has a table with ammonia limits that matches the June 2005 permit, but not the draft permit as it implies. Please clear up this confusion.

Response #4:
The final permit reflects the following limits from the final permit issued on July 11, 1997:

	monthly average	weekly average	maximum daily
June through October	1 mg/l	1 mg/l	1.5 mg/l
November through April	10 mg/l	10 mg/l	15 mg/l
May	7 mg/l	7 mg/l	10 mg/l

Thank you for your comment. We apologize for any confusion this may have caused.

Comment #5:
The draft permit imposes fairly stringent limits on total phosphorus (TP) limits between April 1 and October 31. We are not in favor of using the 1986 Gold Book concentrations as the criterion for nutrients, and we do think that phosphorus is a problem in downstream waterbodies that needs to be addressed through this permit and through other efforts to address nonpoint source pollution. The new TP limits may be difficult to meet, and the permit allows the facility to spend some time evaluating whether in-house modifications can be implemented to achieve the limits. This is good. We hope that the facility can come up with low-cost and creative solutions to reduce TP in the effluent. We would suggest that Part (d) of the effluent characteristics listed in Part B, Special Conditions, in the permit be modified to say something to the effect that if after the 12 month report no steps have been made to optimize the plan to achieve the more stringent limits, that a contract engineer be retained to ensure that the remaining schedule laid out in the permit can be met.

Response #5:
In accordance with 40 C.F.R. § 122.47, the final permit includes a schedule of compliance that does require specific activities to take place within 18 months and 24 months of the effective date of the permit. Additionally, if the permittee is not able to comply with the permit limits within 30 months of the effective date of the permit, the schedule requires them to move quickly to complete design and initiate construction in order to be in compliance with the limits within 59 months of the effective date of the permit.

Comment #6:
If copper and aluminum have a reasonable potential to contribute to a water quality violation in this water body as laid out in the Fact Sheet, then CRWC is in favor of the more stringent limits. We note that the facility appears not to have had Whole Effluent Toxicity (WET) problems, however.

Response #6:
Your comment has been made a part of the record. Whole effluent toxicity limits are independently applied to protect against aggregate toxicity and are not necessarily protective of individual toxicants due to the limited species tested and the varying sensitivity of species to different toxicants.

Other Changes to the Final Permit

1. NetDMR

EPA has become aware that the requirement to submit reports as electronic attachments to DMRs using NetDMR has created confusion as to report due dates, as the report due dates generally differ from the DMR due date (the 15th of each month) and NetDMR does not allow submission of a report without a concurrently submitted DMR. Therefore, to assist in electronic reporting, EPA has added language to the Final Permit (Section I.F.1.a) stating that any report required under the permit shall be considered timely so long as it is electronically submitted with the next DMR submitted by the permittee following the permit report deadline.

2. Total Nitrogen

The final permit includes total nitrogen reporting in order to assess the concentration and mass loadings of total nitrogen (total nitrogen = total kjeldahl nitrogen + total nitrate nitrogen + total nitrite nitrogen).