

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 South Hadley
Board of Selectmen**

is authorized to discharge from the facility located at:

**South Hadley Wastewater Treatment Plant
2 James Street
Chicopee, MA 01020**

to receiving water named:

Connecticut River (MA-34)

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

The Town of Chicopee and the Town of Granby are co-permittees for Part I.C. Unauthorized Discharges, and Part I.D. Operation and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection systems, owned and operated by the Towns. The responsible Town Departments are:

**Town of Granby
Granby Highway Department
250 State Street
Granby, MA 01033**

**Town of Chicopee
Chicopee Pollution Control Department
80 Medina Street
Chicopee, MA 01013**

This permit shall become effective on the first calendar of the month following 60 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 issued on June 12, 2006.

This permit consists of 17 pages in Part I including effluent limitations and monitoring requirements, 25 pages in Part II including Standard Conditions, and Attachment A - Whole Effluent Toxicity Test Protocol, Attachment B – Reassessment of Technically Based Industrial Discharge Limits, Attachment C – Industrial Pretreatment Annual Report and Attachment D – Summary of Required Report Submittals.

Signed this 27th day of September, 2012

/s/SIGNATURE ON FILE

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

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

<u>EFFLUENT CHARACTERISTIC</u>		<u>EFFLUENT LIMITS</u>					<u>MONITORING REQUIREMENTS</u> ³	
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>AVERAGE WEEKLY</u>	<u>AVERAGE WEEKLY</u>	<u>AVERAGE MONTHLY</u>	<u>AVERAGE WEEKLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE</u> ³ <u>TYPE</u>
FLOW ²	*****	*****	*****	4.2 MGD	*****	Report MGD	CONTINUOUS	RECORDER
FLOW ²	*****	*****	*****	Report MGD	*****	*****	CONTINUOUS	RECORDER
BOD ₅ ⁴	1051 lbs/Day	1576 lbs/Day	Report lbs/day	30 mg/l	45 mg/l	Report mg/l	2/WEEK	24-HOUR COMPOSITE ⁵
TSS ⁴	1051 lbs/Day	1576 lbs/Day	Report lbs/day	30 mg/l	45 mg/l	Report mg/l	2/WEEK	24-HOUR COMPOSITE ⁵
pH RANGE ¹	6.5 - 8.3 SU (SEE PERMIT PAGE 6 OF 18, PARAGRAPH I.A.1.b.)						1/DAY	GRAB
ESCHERICHIA COLI ^{1,6} (April 1- October 31)	*****	*****	*****	126 cfu/ 100 ml	*****	409 cfu/ 100 ml	2/WEEK	GRAB
TOTAL CHLORINE RESIDUAL ^{1,7,8} (April 1- October 31)	*****	*****	*****	1 mg/l	*****	1 mg/l	2/DAY	GRAB
WHOLE EFFLUENT TOXICITY ^{9, 10, 11}	<i>Ceriodaphnia dubia</i> : LC ₅₀ ≥ 50%						2/YEAR	24-HOUR COMPOSITE ⁵

CONTINUED FROM PREVIOUS PAGE

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

<u>EFFLUENT CHARACTERISTIC</u>	<u>EFFLUENT LIMITS</u>					<u>MONITORING REQUIREMENTS³</u>		
<u>PARAMETER</u>	<u>AVERAGE MONTHLY</u>	<u>AVERAGE WEEKLY</u>	<u>MAXIMUM DAILY</u>	<u>AVERAGE MONTHLY</u>	<u>AVERAGE WEEKLY</u>	<u>MAXIMUM DAILY</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE³ TYPE</u>
TOTAL PHOSPHORUS	***** *****	***** *****	***** *****	Report mg/l	***** *****	Report mg/l	1/MONTH	24-HOUR COMPOSITE ⁵
TOTAL NITROGEN ¹²	***** *****	***** *****	***** *****	Report mg/l	***** *****	Report mg/l	1/WEEK	24-HOUR COMPOSITE ⁵
AMMONIA NITROGEN ¹²	***** *****	***** *****	***** *****	Report mg/l	***** *****	Report mg/l	1/WEEK	24-HOUR COMPOSITE ⁵
TOTAL KJELDAHL NITROGEN ¹²	***** *****	***** *****	***** *****	Report mg/l	***** *****	Report mg/l	1/WEEK	24-HOUR COMPOSITE ⁵
TOTAL NITRITE ¹²	***** *****	***** *****	***** *****	Report mg/l	***** *****	Report mg/l	1/WEEK	24-HOUR COMPOSITE ⁵
TOTAL NITRATE ¹²	***** *****	***** *****	***** *****	Report mg/l	***** *****	Report mg/l	1/WEEK	24-HOUR COMPOSITE ⁵

Sampling Location: *Prior to chlorination with the exception of total residual chlorine and E. coli.*

Footnotes:

1. Required for State Certification.
2. Report annual average, monthly average, and the maximum daily flow. The limit is an annual average, which shall be reported as a rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months.
3. Effluent sampling shall be of the discharge and shall be collected at the point specified on page 3. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program 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.

4. Sampling required for influent and effluent.
5. 24-hour composite samples 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 E. coli is expressed as a geometric mean. E. coli monitoring shall be conducted concurrently with a total residual chlorine sample.
7. Total residual chlorine monitoring is required whenever chlorine is added to the treatment process (i.e. TRC sampling is not required if chlorine is not added for disinfection or other purpose). The limitations are in effect seasonally (April 1-October 31).

Chlorination (and dechlorination, if used) systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine chemicals occurred.

For every day that more than one grab sample is analyzed, the monthly DMR shall include an attachment documenting the individual grab sample results for that day, the date and time of each sample. The analytical method, and a summary of any operational

modifications implemented in response to the sampling results. This requirement applies to all samples taken, including screening level and process control samples. All test results utilizing EPA approved analytical method shall be used in the calculation and reporting of the monthly average and maximum daily discharge values submitted on the DMR.

8. Within 6 months of the effective date of the permit, the permittee will submit a report documenting the effectiveness of the chlorination (and dechlorination) systems. The report will specifically address how flow variability and chlorine demand variability affect compliance with the TRC and E. coli limits at all times. Sampling data shall be provided to support conclusions on how hourly and daily flow and chlorine demand variability affect permit compliance. The report will include a description of the chlorination (and dechlorination) systems and the methods for dosage control. The report will identify all changes necessary to ensure compliance with the TRC and E. coli limits at all times, including equipment modifications and upgrades, operational procedures (including calibration procedures and alarm/response procedures), and sampling protocols. The report will include a schedule for implementing all of the necessary changes. An annual report shall be submitted on November 30th of each year, summarizing all exceedances of the TRC and E. coli effluent limits during the previous year, the estimated or measured E. coli and chlorine discharge levels during the exceedance, and measures taken to fix the problem(s) and to prevent future occurrences.

9. The permittee shall conduct acute toxicity tests two (2) times per year and will test the daphnid, Ceriodaphnia dubia. Toxicity test samples shall be collected during the second week of the months of June and September. The test results shall be submitted by the last day of the month following the completion of the test. The results are due by July 31st and October 31st, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates Second Week in	Submit Results By:	Test Species	Acute Limit LC₅₀
June September	July 31 October 31	<u>Ceriodaphnia dubia</u> (daphnid)	≥ 50%

10. The LC₅₀ is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 50% limit means that a sample of 50% effluent shall cause no more than a 50% mortality rate.

11. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in **Attachment A**

(Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, which may be found on the EPA Region I web site at:

<http://www.epa.gov/Region1/enforcementandassistance/dmr.html>.

If the guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A**. Any modification or revocation to this guidance will be transmitted to the permittees. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outline in **Attachment A**.

12. See Part I.B, Special Conditions, for requirements to evaluate and implement optimization of nitrogen removal.

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 or greater than 8.3 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 shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.
- f. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.
- g. The results of sampling for any parameter done 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, the permittee shall submit a report to MassDEP by March 31 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 the 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 shall 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) shall not pass through the POTW or interfere with the operation or performance of the works.
4. Toxics Control
 - a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.
 - b. Any toxic components of the effluent shall 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

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 FOR 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 mass discharge of total nitrogen less than the existing annual average discharge load. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be **682** lbs/day.

The permittee shall also submit an annual report to EPA and MassDEP, **by February 1 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.

C. UNAUTHORIZED DISCHARGES

This permit authorizes the permittee and co-permittees to discharge only from the outfall(s) listed in Part I A.1. of this permit and only in accordance with permit's terms and conditions. Unless authorized by another NPDES permit, discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized and shall be reported to EPA and MassDEP in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at <http://www.mass.gov/dep/water/approvals/surffms.htm#sso>.

D. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

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

1. Maintenance Staff

The permittee and co-permittees shall 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 shall be described in the Collection System O & M Plan required pursuant to Section D.5. below.

2. Preventive Maintenance Program

The permittee and co-permittees shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed

to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement shall be described in the Collection System O & M Plan required pursuant to Section D.5. below.

3. Infiltration/Inflow

The permittee and co-permittees 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 and co-permittees shall 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. combination manholes);
- d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;
- 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 and co-permittees 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 goals, 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 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 this permit. The Plan shall include:
- (1) The required submittal from paragraph 5.a. above, updated to reflect current information;
 - (2) A preventive 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 an 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 and co-permittees 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 31. 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 (3.36 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 and co-permittees shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works¹ it owns and operates.

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 Part 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 Part 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 Part 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.

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

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

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

Which of the 40 C.F.R. Part 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

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and 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 than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	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.

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>

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 19** (*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. INDUSTRIAL PRETREATMENT PROGRAM

1. Limitations for Industrial Users:
 - a. Pollutants introduced into POTWs by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.
 - b. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial Users(s) and all other users as necessary, which together with appropriate changes in the POTW Treatment Plant’s facilities or operation, are essential to ensure continued compliance with the POTW’s NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 90 days of the effective date of this permit, the permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to influent and effluent pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety, and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form (Attachment B – Reassessment of Technically Based Industrial Discharge Limits) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA’s Local Limit Development Guidance (July 2004).
2. Industrial Pretreatment Program

- a. The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program and the General Pretreatment Regulations, 40 C.F.R. §403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):
 1. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP, but in no case less than once per year, and maintain adequate records.
 2. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.
 3. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.
 4. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
- b. The permit shall provide the EPA and the MassDEP with an annual report describing the permittee's pretreatment program activities for the twelve month period ending 60 days prior to the due date in accordance with 40 C.F.R. §403.12(i). The annual report shall be consistent with the format described in Attachment C (NPDES Permit Requirement for Industrial Pretreatment Annual Report) and shall be submitted no later than March 1st of each year.
- c. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 C.F.R. §403.18(c).
- d. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 C.F.R. §405 et. seq.
- e. The permittee must modify its pretreatment program to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the Industrial Pretreatment Program. The permittee must provide EPA, in writing, within 180 days of the effective date of this permit, proposed changes to the permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the permittee must address in its written submission the following areas: (1) enforcement response plan; (2) revised sewer use ordinances; (3) sludge control evaluations. The permittee will

implement these proposed changes pending EPA's approval under 40 C.F.R. §403.18.

G. MONITORING AND REPORTING

1. The permittee shall submit monitoring data and all other NPDES permit required reports to EPA 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. 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>. 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. A permittee submitting reports using NetDMR is no longer required to submit hard copies of DMRs or other reports to EPA and no longer 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, Toxicity Test Results and Nutrient Optimization Reports) to MassDEP until further notice from MassDEP.

- b. Submittal of Reports in Hard Copy Form

While we do not anticipate the need for the permittee to submit hard copies of reports to EPA, any hard copies that are submitted to EPA shall be submitted to the Director at the following address:

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

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

**Massachusetts Department of Environmental Protection
Central Regional Office
Bureau of Resource Protection
627 Main Street
Worcester, Massachusetts 01608**

Copies of toxicity test reports and nutrient optimization reports only to:

**Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, Massachusetts 01608**

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

H. 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 shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as a NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

Summary of Required Report Submittals*

Required Report	Date Due	Submitted by:	Submitted to:
Chlorination System Notification (Part I.A.1. Footnote 7)	With monthly DMRs, if interruption or malfunction of the chlorine dosing system occurs (See Footnote 7).	Town of South Hadley	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103
			MassDEP Division of Watershed Management Surface Water Discharge Permit Program 627 Main Street, 2 nd Floor Worcester, MA 01608
Chlorination System Report (Part I.A.1. Footnote 8)	Within 6 months of the effective date of the permit and then annually by November 1.	Town of South Hadley	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103
			MassDEP Division of Watershed Management Surface Water Discharge Permit Program 627 Main Street, 2 nd Floor Worcester, MA 01608

Required Report	Date Due	Submitted by:	Submitted to:
<p>Whole Effluent Toxicity Test Report (Part I.A.1. Footnotes 8 and 11)</p>	<p>By July 31st, October 31st of each year</p>	<p>Town of South Hadley</p>	<p>U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912</p>
			<p>MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103</p>
			<p>MassDEP Division of Watershed Management Surface Water Discharge Permit Program 627 Main Street, 2nd Floor Worcester, MA 01608</p>
<p>Flow Plan (Part I.A.1.h)</p>	<p>By March 31st of the following calendar year, if the average annual flow of any calendar year exceeds 80% of the facility's design flow.</p>	<p>Town of South Hadley</p>	<p>U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912</p>
			<p>MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103</p>
			<p>MassDEP Division of Watershed Management Surface Water Discharge Permit Program 627 Main Street, 2nd Floor Worcester, MA 01608</p>

Required Report	Date Due	Submitted by:	Submitted to:
Nitrogen Optimization Report (Part I.B)	Within 1 year of the effective date of the permit (See page 1 of permit for effective date).	Town of South Hadley	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912 MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103 MassDEP Division of Watershed Management Surface Water Discharge Permit Program 627 Main Street, 2 nd Floor Worcester, MA 01608
Annual Nitrogen Optimization Report (Part I.B)	Annually by February 1	Town of South Hadley	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912 MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103 MassDEP Division of Watershed Management Surface Water Discharge Permit Program 627 Main Street, 2 nd Floor Worcester, MA 01608

Required Report	Date Due	Submitted by:	Submitted to:
Notification of Sanitary Sewer Overflows (Part I.C)	Oral Report -Within 24 hours of discovery of event Written Report – Within 5 calendar days of discovery of event	Town of South Hadley Town of Granby Town of Chicopee	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103
Collection System Mapping (Part I.D.4)	Within 30 months of the effective date	Town of South Hadley Town of Granby Town of Chicopee	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103
Initial Collection System Operation and Maintenance Plan (Part I.D.5.a)	Within 6 months of the effective date	Town of South Hadley Town of Granby Town of Chicopee	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103

Required Report	Date Due	Submitted by:	Submitted to:
Full Collection System Operation and Maintenance Plan (Part I.D.5.b)	Within 24 months of the effective date	Town of South Hadley Town of Granby Town of Chicopee	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103
Annual Summary Report of Activities related to the implementation of Collection System O & M Plan	Annually by March 31	Town of South Hadley Town of Granby Town of Chicopee	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103
Annual Sludge Report (Part I.E.8)	Annually by February 19	Town of South Hadley	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103

Required Report	Date Due	Submitted by:	Submitted to:
Industrial Pretreatment Technical Evaluation	Within 90 days of the effective date	Town of South Hadley	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103
Industrial Pretreatment Program Annual Report	Annually by March 1 st	Town of South Hadley	U.S. Environmental Protection Agency Water Technical Unit (OES04-SMR) 5 Post Office Square – Suite 100 Boston, MA 02109-3912
			MassDEP Western Regional Office Bureau of Resource Protection (Municipal) 436 Dwight Street, Suite 402 Springfield, MA 01103

* This table is a summary of the reports required to be submitted under this NPDES permit as an aid to the permittee(s). If there are any discrepancies between the permit and this summary, the permittee(s) shall follow the permit requirements.

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

FACT SHEET

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

NPDES PERMIT NUMBER: MA0100455

NAME AND ADDRESS OF APPLICANT:

**Town of South Hadley
116 Main Street
South Hadley, MA 01075**

The Massachusetts municipalities of Granby and Chicopee are co-permittees for specific activities required by the permit. See Sections VI and VII of this fact sheet and Sections: I.B., I.C., I.E. and I.F. of the draft permit. The responsible municipal departments are:

**Town of Granby
Granby Highway Dept.
250 State Street
Granby, MA 01033**

**City of Chicopee
Chicopee Pollution Control Dept.
80 Medina Street
Chicopee, MA 01013**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**South Hadley Wastewater Treatment Plant
2 James Street
Chicopee, MA 01020**

RECEIVING WATERS: Connecticut River (Segment MA34-05)

CLASSIFICATION: Class B – Warm Water

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1. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency for the re-issuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water. The current permit was issued on June 12, 2006, became effective on August 11, 2006 and expired on August 11, 2011. A timely re-application was received on January 28, 2011. This draft permit is conditioned to expire five (5) years from the effective date.

2. TYPE OF FACILITY AND DISCHARGE LOCATION

The South Hadley Wastewater Treatment Plant (WWTP) is a 4.2 million gallon per day (mgd) conventional activated sludge, secondary wastewater treatment plant with chlorine disinfection, which discharges to the Connecticut River. The collection system is 95% separate sanitary sewers and 5% combined storm and sanitary sewers. The facility serves a population 17,900 from three communities; South Hadley (16,500, sanitary and combined), Chicopee (550, sanitary only in sewershed discharging to South Hadley) and Granby (850, sanitary only). The City of Chicopee and the Town of Granby are included as co-permittees to the current permit and are subject to permit conditions related to the operation and maintenance of their collection systems. The draft permit continues to include the co-permittees.

The plant is located on the eastern bank of the Connecticut River (See Figure 1) and is situated on land in the City of Chicopee that the Town of South Hadley acquired in the late 1950s when the plan for the original primary treatment facility was developed.

Since the last permit issuance, the permittee has eliminated the final three (3) combined sewer overflows (CSOs) and the sludge disposal method has changed from off-site incineration to off-site disposal at the South Hadley landfill.

The facility's discharge outfall is listed below:

<u>Outfall</u>	<u>Description of Discharge</u>	<u>Receiving Water</u>
001	Treated Effluent	Connecticut River

3. DESCRIPTION OF DISCHARGE

Quantitative descriptions of the discharge in terms of significant effluent parameters, based on discharge monitoring reports (DMRs) submitted for November 2009 through October 2011, and the January 2011 application, are shown in Table 1 and 2 of this fact sheet, respectively.

4. LIMITATIONS AND CONDITIONS

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

5. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATIONS

5.1. *Process Description*

The South Hadley Wastewater Treatment Plant is a conventional activated sludge, secondary treatment facility (Figure 2). Wastewater first undergoes preliminary treatment in an aerated grit chamber and then flows into primary settling tanks, where floating and settleable solids are removed. The primary effluent then flows into aeration tanks (the facility is equipped with 4 tanks, however, usually only 2 are in operation) where activated sludge biological treatment is provided, and then to the secondary clarifiers, where secondary sludge is removed. Treated wastewater is disinfected (seasonally, April 1-October 31), and discharged via a cascade to the Connecticut River.

Solids from the primary clarifiers and the activated sludge treatment process are pumped into two (2) gravity thickeners. A small amount of sodium hypochlorite is also injected for odor control (approximately 20 gallons per day), and adjusted as needed. Thickened sludge is pumped to a belt press for dewatering. Polymer is mixed with the thickened sludge to enhance dewatering. Dewatered sludge cake is then hauled by plant staff to the South Hadley Municipal Landfill for disposal. Filtrate from the dewatering process, and plant water used to clean the press, are discharged back to the primary settling tanks.

5.2. *Combined Sewer Overflows*

In 2006, when the current permit was issued, the applicant was in the process of eliminating the three (3) authorized Combined Sewer Overflows (CSOs): #004 (Main Street), #010 (Stonybrook), and #012 (Gaylord Street). The permit required that all CSOs be eliminated by December 31, 2007.

The Stonybrook CSO (#010) was sealed on September 17, 2007 following an upgrade of the Stonybrook pump station, which doubled its pumping capacity¹.

In the summer of 2007, the Town of South Hadley initiated two flow diversion projects in order to eliminate the remaining two CSOs (#004 Main Street and #012 Gaylord Street). In each case, new sewers were installed to divert sewage from the existing lines to other sewer lines. These final CSOs were located in the oldest part of town with the oldest infrastructure. These projects allowed the two remaining CSOs to be closed: CSO #012 on December 12th, and #004 on December 31, 2007². The closing of the CSOs allows the Town to focus its efforts on I/I removal.

In the past, discharge from the CSOs averted significant damage to the Main Street Pump

¹ Town of South Hadley, 2008, "Final Annual CSO Report – 2007"

² Town of South Hadley, 2008, "Final Annual CSO Report – 2007"

Station under emergency conditions. The Main Street Pump Station receives virtually all of South Hadley's wastewater, prior to pumping to the South Hadley Wastewater Treatment Plant. In February 2007, the Town requested guidance from MassDEP as to whether an emergency overflow could be designed into the South Hadley Collection System to provide similar protection in the absence of the CSOs. MassDEP, in consultation with EPA, advised that the overflow would be subject to regulatory definition and conditions of an Emergency Overflow and as such, would be allowed under the following conditions³:

1. Any discharge from such an Emergency Bypass would be an Unauthorized Discharge subject to the reporting requirements of the Town's NPDES permit for Unauthorized Discharges.
2. The Emergency Bypass is not a permitted CSO.
3. The Emergency Bypass shall only be opened by manual operation, at a location accessible in emergency conditions.
4. Design plans, and an emergency operation narrative, shall be submitted to the MassDEP for review and approval prior to construction of the Emergency Bypass. The narrative shall identify the steps to be taken to avoid such a bypass, the rare conditions under which the Emergency Bypass would require activation, and the reporting requirements of the Emergency Bypass is opened and discharge occurs.
5. Installation of the Emergency Bypass shall not be cause to delay Infiltration/Inflow reduction as stipulated in the Town's NPDES permit and in the Department's January 2, 2007 letter.
6. The MassDEP and EPA retain all enforcement options relating to Unauthorized Discharge of wastewater.
7. The Emergency Bypass is subject to 40 CFR, Section 122.41 (m) "Federal Bypass Regulation".

The Town has constructed the manual Emergency Overflow at East Main Street Pump Station. The Emergency Overflow discharges to the Connecticut River. As stated above, the use of this emergency overflow is not authorized by the draft permit and subject to the Part I.C. Unauthorized Discharges of the draft permit.

5.3. Co-permitting

The South Hadley Wastewater Treatment Plant treats wastewater from the municipalities of South Hadley, Chicopee and Granby. EPA Region 1 has included municipalities that own and operate a collection system but do not own or operate the treatment facility as limited co-permittees to assure that the collection system owned by the municipality is properly operated and maintained. The City of Chicopee and Town of Granby were included as a co-permittees in the current permit and will be maintained as co-permittees in the proposed permit.

³ MassDEP, 2007, Ltr from Mark Schleeweis, Program Chief, Wastewater Management, Western Regional Office, MassDEP to Jim Reidy, Superintendent, South Hadley Department of Public Works.

6. Statutory and Regulatory Authority

6.1. General Requirements

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. An NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements, including monitoring and reporting requirements. This draft NPDES permit was developed in accordance with the various statutory and regulatory requirements established pursuant to the CWA and any applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, and 125.

When developing permit limits, EPA is required to consider (a) technology-based requirements, (b) water quality-based requirements, and (c) all limitations and requirements in the current/existing permit. These requirements are described in the following paragraphs.

6.1.1. Technology-based Requirements

Under Section 301(b)(1)(B) of the Clean Water Act ("CWA"), publicly owned treatment works ("POTWs") must have achieved effluent limitations based upon Secondary Treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 C.F.R. Part 133.102. In addition, Section 301(b)(1)(C) of the CWA requires that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water.

Pursuant to 40 C.F.R. § 122.44 (d), permittees must achieve water quality standards established under Section 303 of the Clean Water Act (CWA), including state narrative criteria for water quality. Additionally, under 40 C.F.R. § 122.44 (d)(1)(i), "Limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." When determining whether a discharge causes, or has the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric criterion, the permitting authority shall use procedures which account for existing controls on point and non-point sources of pollution, and where appropriate, consider the dilution of the effluent in the receiving water.

6.1.2. Water Quality Standards; Designated Use; Outfall 001

The Connecticut River, in the vicinity of the discharge, is classified in the Massachusetts Surface Water Quality Standards (314 CMR 4.00) as a Class B, warm water fishery. *Class B waters are designated as a habitat for fish, other aquatic life and wildlife, including their reproduction, migration, growth and other critical functions and for primary and secondary recreation. Class B waters shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.*

A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR 4.02) as *waters in which the maximum mean monthly temperature generally exceeds 68° F (20° C) during the summer months and are not capable of supporting a year-round population of cold water stenothermal aquatic life.*

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and, as such, require the development of total maximum daily loads (TMDL). This segment of the Connecticut River (MA34-05), located downstream of the Holyoke Dam, Holyoke/South Hadley to the Connecticut state line, Longmeadow/Agawam, is listed as impaired and requiring the development of a TMDL. The listed impairments for this segment are *Escherichia coli* (*E. coli*) and Total Suspended Solids (TSS), which are attributed to weather wet events, particularly CSOs and PCBs in fish tissue which the source is unknown⁴.

The MassDEP's Connecticut River Watershed, 2003 Water Quality Assessment Report⁵ was 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. The previous fact sheet noted that sediments in the vicinity of the former Gas Works in Holyoke were contaminated with patches of hard and soft tar that contain high concentrations of polynuclear aromatic hydrocarbons (PAHs). The 2003 Assessment Report notes that remediation of the coal tar patches was done between 2002 and 2006 but additional acres of tar may remain. However, the segment no longer is listed on the Integrated Waters List for PAHs as MassDEP finds that the problem is confined to a relatively small localized area and therefore it was not appropriate to list the whole segment as impaired⁶.

The 2003 Assessment Report also states that 459 million gallons of CSO discharge per year had been eliminated from the Connecticut River since 2002, primarily due to efforts by Holyoke, Chicopee and Springfield. The CSO reductions due to South Hadley's efforts were not included in the report, but are approximately 17 million gallons per year, based on 1998 estimates⁷.

6.1.2.1. Available Dilution

Water quality based limits are established with the use of a calculated available dilution. Title 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water 7Q10. The 7Q10 is the lowest observed mean river flow for 7 consecutive days, occurring over a 10-year recurrence interval. Additionally, the facility design flow is used to calculate available effluent dilution.

⁴ MassDEP, 2008, Final Massachusetts Year 2008 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.

⁵ 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.

⁶ Personal Communication with Laurie Kennedy, MassDEP, July 22, 2011.

⁷ Personal Communication with Kurt Boisjolie, MassDEP, November 23, 2011.

The facility design flow is 4.2 million gallons per day or 6.5 cubic feet per second (cfs). The 7Q10 flow used in the previous permit is 1770 cfs (1144 MGD), as cited in the 1998 Water Quality Assessment Report for the Connecticut River, Appendix C. As noted in the previous permits, the updated USGS data for gage 01172003 below the Holyoke Dam at Holyoke was not used to calculate the dilution factor because the 7Q10 estimates were based on only 11 data points during 1985-1996. The dilution factor for the South Hadley WWTP discharge to the Connecticut River is 273.

$$\frac{\text{River flow (7Q10)} + \text{Daily average design effluent flow}}{\text{Daily average design effluent flow}} = \text{Dilution}$$

$$\frac{1770 \text{ cfs} + 6.5 \text{ cfs}}{6.5 \text{ cfs}} = 273$$

6.1.3. Permit Basis and Explanation of Effluent Limitations

6.1.3.1. Flow

The proposed flow limit is based on the average daily design flow of the treatment plant, which is 4.2 mgd. Flow is to be measured continuously. The permittee shall report the annual average flow each month using the annual rolling average method (See Permit Footnote 2). The average monthly and maximum daily flow for each month shall also be reported.

A review of 24 months of DMR data shows that the reported monthly flows have been in compliance with the 4.2 mgd flow limit (range = 2.80-3.60 mgd, avg = 3.14 mgd, n=24).

6.1.3.2. Conventional Pollutants

6.1.3.2.1. Biochemical Oxygen Demand (BOD₅)

The draft permit proposes the same BOD₅ limits as in the current permit, which are based on the secondary treatment requirements set forth at 40 CFR 133.102 (a)(1), (2), (4) and 40 CFR 122.45 (f). The secondary treatment limitations are a monthly average BOD₅ concentration of 30 mg/l and a weekly average concentration of 45 mg/l. The draft permit also requires the permittee to report the maximum daily BOD₅ value each month, but does not establish an effluent limit. The mass-based limitations for BOD are based on a 4.2 mgd design flow. The monitoring frequency continues to be two times per week.

A review of DMR data submitted over the last 24 months shows that there have been two (2) permit violations of BOD₅ concentration limits. Both violations of the concentration limits occurred in August 2010 and were slightly higher than the effluent limits (average monthly value of 32 mg/l and average weekly of 46.50 mg/l). Based on the DMR data, the average values for BOD₅ monthly average, weekly average and maximum daily were 16.57 mg/l (range 5.9-32 mg/l; n=24),

25.43 mg/l (12.10-53 mg/l; n=24) and 33.70 (14-66 mg/l; n=24), respectively.

BOD Mass Loading Calculations:

Calculations of maximum allowable loads for average monthly, average weekly and maximum daily BOD₅ are based on the following equation:

$L = C \times DF \times 8.34$ where:

L = Maximum allowable load in lbs/day.

C = Maximum allowable effluent concentration for reporting period in mg/l.

Reporting periods are average monthly and weekly and daily maximum.

DF = Annual average design flow of facility (4.2 mgd).

8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

(Concentration limit) [30] X 8.34 (Constant) X 4.2 (Design flow) = 1051 lb/day

(Concentration limit) [45] X 8.34 (Constant) X 4.2 (Design flow) = 1576 lb/day

There have been two violations of the average weekly mass limitation of 1276 with a reported 1863 lbs/day in February 2010 and 2851.9 lbs/day in April 2010.

There have also been five (5) violations of the BOD percent removal over the past 24 months (82% in January 2010, 84% in August 2010, 84% in September 2010, 83.3 in March 2011 and 83% in August 2011.). The August and September 2010 violations occurred during a plant upset caused by a filamentous bacteria outbreak.

6.1.3.2.2. Total Suspended Solids (TSS)

The draft permit proposes the same TSS limits as in the current permit, which are based on the secondary treatment requirements set forth at 40 CFR 133.102 (a)(1), (2), (4) and 40 CFR 122.45 (f). The secondary treatment limitations are a monthly average TSS concentration of 30 mg/l and a weekly average concentration of 45 mg/l. The draft permit also requires the permittee to report the maximum daily TSS value each month, but does not establish an effluent limit. The mass-based limitations for TSS are based on a 4.2 mgd design flow. The monitoring frequency continues to be two times per week.

A review of DMR data submitted over the last 24 months shows that there has been one permit violation of TSS concentrations limits (average weekly concentration value = 104 mg/l in January 2010). Based on a review of 24 months of DMR data, the average values for TSS concentration monthly average, weekly average and maximum daily were 8 mg/l (range 3-29 mg/l; n=24), 15.24 mg/l (2.80-104 mg/l; n=24) and 22.19 (5-204 mg/l; n=24), respectively.

TSS Mass Loading Calculations:

Calculations of maximum allowable loads for average monthly, average weekly and maximum daily TSS are based on the following equation:

$L = C \times DF \times 8.34$ where:

L = Maximum allowable load in lbs/day.

C = Maximum allowable effluent concentration for reporting period in mg/l.

Reporting periods are average monthly and weekly and daily maximum.

DF = Annual average design flow of facility (4.2 mgd).

8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

(Concentration limit) [30] X 8.34 (Constant) X 4.2 (Design flow) = 1051 lb/day
(Concentration limit) [45] X 8.34 (Constant) X 4.2 (Design flow) = 1576 lb/day

The permittee violated both the average weekly and maximum daily mass limitations in January 2010 with an average weekly concentration of 1176 lbs/day and a maximum daily concentration of 4478 lbs/day. There was also a significant violation of the 85% removal requirement that month with a removal percentage of only 72%. Based on discussions with the permittee, these violations are the result of significant rainfall events.

6.1.3.2.3. Eighty-Five Percent (85%) BOD₅ and TSS Removal Requirement

The provisions of 40 CFR §133.102(a)(3), (4) and (b)(3) requires that the 30 day average percent removal for BOD₅ and TSS be not less than 85%. This requirement was included in the previous permit.

A review of DMR data shows that BOD₅ and TSS removal percentages average 89% and 95%, respectively. As previously noted, there have been five (5) violations of the 85% removal requirement for BOD₅ and one (1) violation of the 85% removal requirement for TSS over the last 24 months.

6.1.3.2.4. pH

The draft permit includes pH limitations that are required by state water quality standards, and are at least as stringent as pH limitations set forth at 40 C.F.R. §133.102(c). The pH of the effluent shall not be less than 6.5 or greater than 8.3 standard units at any time. The monitoring frequency is daily.

A review of DMR data submitted over the last 24 months shows that there has been one (1) violation for pH. Based on the DMR data, the pH values have ranged from 6.4-7.8 standard units.

6.1.3.2.5. Bacteria

The current permit includes fecal coliform bacteria effluent limitations which

were established using the criteria in the MA SWQS at 314 CMR 4.05(3)(b) that were in effect at the time the current permit was issued in 2006. Revisions to the bacteria criteria in Massachusetts Water Quality Standards were approved by EPA in 2007. These criteria now include E. coli criteria rather than fecal coliform criteria for Class B waters.

6.1.3.2.5.1. *E. coli*

The draft permit includes proposed seasonal (April 1st – October 31st) E. coli limitations that are based upon the E. coli criteria in the revisions to the Massachusetts Surface Water Quality Standards (314 CMR § 4.05(3)(b)). The monthly average limitation proposed in the draft permit is 126 colony forming units (cfu) per 100 ml, expressed as a monthly geometric mean. The daily maximum limitation proposed in the draft permit is 409 cfu/100 ml. The E. coli monitoring frequency proposed in the draft permit is two times per week. The draft permit also requires that the E. coli samples be collected concurrently with a total residual chlorine (TRC) sample.

6.1.3.2.5.2. *Fecal Coliform*

With the change in the Massachusetts Class B water quality criteria from fecal coliform to E.Coli, the draft permit does not include limitations or monitoring requirements for fecal coliform. However, a review of DMR data shows that the monthly geometric mean fecal coliform bacteria discharge ranged from 3.70 to 369 cfu/100 ml. The maximum value reported over the last 24 months is 10,800 cfu/100 ml.

There have been five (5) violations of the fecal coliform requirements over the past 24 months. The majority of violations were violations of the maximum daily limit of 400 cfu/100 (4000 cfu/100 ml in August 2011; 560 cfu/100 ml in June 2011; 10800 cfu/100 ml in May 2011; and 4000 cfu/100 ml in October 2010). There was also a violation of the average monthly limitation of 200 cfu/100 ml with a reported value of 369 cfu/100 ml. Based on conversation with the permittee, these violations were the result of a mechanical failure of the chlorine pump, which has since been replaced.

6.1.3.3. *Non-conventional pollutants*

6.1.3.3.6. *Total Residual Chlorine*

Chlorine is a toxic chemical. The draft permit includes proposed total residual chlorine limitations that are calculated using national recommended water quality criteria. Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life.

The proposed TRC limitations are in effect whenever the disinfection system is in

use which should only be when the E. coli limits are in effect (April 1-October 31).

The acute and chronic water quality criteria for chlorine defined in the 2002 EPA National Recommended Water Quality Criteria for freshwater are 19 ug/l and 11 ug/l, respectively. Given the dilution factor of 273, the total residual chlorine limits have been calculated as 5.2 mg/l and 3.0 mg/l. However, the State's Implementation Policy for the Control of Toxic Pollutants in Surface Waters, February 23, 1990 limits the maximum effluent concentration of TRC to 1 mg/l. Total Residual Chlorine shall be measured two (2) times per day during the seasonal disinfection period, April 1 through October 31. Sampling shall be collected concurrent with the bi-weekly E. coli samples.

Total Residual Chlorine Limitations:

(acute criteria * dilution factor) = Acute (Maximum Daily)
(19 ug/l * 273) = 5187 ug/l = 5.2 mg/l

(chronic criteria * dilution factor) = Chronic (Monthly Average)
(11 ug/l * 273) = 3003 ug/l = 3.0 mg/l

A review of DMR data submitted over the last 24 months shows that there have been eleven (11) months in which the maximum daily Total Residual Chlorine limit was exceeded. EPA notes that the permit includes seasonal disinfection requirements, so the permittee has been required to disinfect for only 14 of the last 24 months. Therefore, the permittee has exceeded the maximum daily limit during 79 percent of the months it was required to disinfect. Based on the DMR data, the average values for Total Residual Chlorine average monthly and maximum daily were 0.62 ug/l (range 0.5-0.7 ug/l; n=24) and 1.33 ug/l (range 0.98-2.10 ug/l; n=24), respectively.

The permittee acknowledges that they have had difficulty with TRC control⁸. The diaphragm pumps were replaced with peristaltic pumps, eliminating the mechanical issues the plant previously had with the old pumps. Chlorine dosage should be flow proportional through the SCADA system, yet the facility continues to need to adjust the pumps through the SCADA system. Plant staff has considered a communication error in the system but have been unable to pinpoint a cause or source thus far.

The draft permit also includes a new requirement that the permittee to report individual grab samples for every day that more than one grab sample is analyzed. The requirement applies to all samples taken, including screening level and process control samples. More details of this requirement can be found in footnote 7 of the draft permit.

⁸ Labonte, Melissa, 2011, Personal Communication.

6.1.3.3.7. Total Phosphorus

The Massachusetts Water Quality Standards (314 CMR 4.00) do not contain numerical criteria for total phosphorus. The narrative criteria for nutrients is found at 314 CMR 4.05(5)(c), which states; “Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00”. The standards also require that “Any existing point source discharges containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs. . .to remove such nutrients to ensure protection of existing and designated uses.” MADEP has established that a monthly average total phosphorus limit of 0.2 mg/l represents the highest and best practical treatment for POTWs.

EPA has produced several guidance documents that contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water (“the Gold Book”) recommends in-stream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impounds, and 0.025 mg/l within a lake or reservoir.

More recently, EPA has released “Ecoregional Nutrient Criteria”, established as part of an effort to reduce problems associated with excess nutrient in water bodies in specific areas of the country. The published criteria represent conditions in waters in each specific ecoregion which are minimally impacted by human activities and thus representative of waters without cultural eutrophication.

In developing NPDES permit limits, EPA prefers to use the Gold Book criteria because these are effects-based criteria (i.e. a concentration at which one would expect eutrophication to occur) rather than the Ecoregion criteria, which are reference based (i.e. a concentration typically found in unimpacted waters). Use of the reference-based criteria could result in a limit more stringent than necessary to achieve water quality standards.

Elevated concentrations of chlorophyll a, excessive algal and macrophyte growth, and low levels of dissolved oxygen are all effects of nutrient enrichment. The relationship between these factors and high in-stream total phosphorus concentrations is well documented in scientific literature, including guidance developed by EPA to address nutrient over-enrichment (Nutrient Criteria Technical Guidance Manual – Rivers and Streams. (EPA July 2000 [EPA-822-B-00-002])).

According to the 2003 Connecticut River Water Quality Assessment Report, algal production, as indicated by chlorophyll a levels, was low at stations in the

Connecticut River⁹. Summertime in-stream phosphorus data was collected in 2003 and documented in the Assessment Report. Sampling stations 04C and 05A bracket the South Hadley WWTP, however, they are approximately 12.5 miles apart and include the discharges from the Holyoke WWTP and its CSOs. Station 04C is located upstream of the confluence of the Connecticut River with the Mill River near the Oxbow, Northhampton/Hadley and Station 05A is located at Route 90, West Springfield/Chicopee.

Summary of Total Phosphorus Data for Stations 04C and 05A

Date	Station	Total Phosphorus (mg/l)
July 9, 2003	04C	0.015
	05A	0.026
August 6, 2003	04C	0.026
	05A	0.027
September 10, 2003	04C	0.012
	05A	0.022

Source: Mitchell, Peter, MassDEP, 2006, "Appendix B: Connecticut River Watershed, DWM 2003 Water Quality Monitoring Data", pp. B1-B40.

The data table above shows increases in the concentration of total phosphorus in the receiving water when comparing data collected upstream of the South Hadley WWTF and that collected downstream, however all values are less than the Gold Book criteria of 100 ug/l and most are less than the Ecoregion criteria of 24 ug/l.

DMRs submitted by the permittee report total phosphorus values between 0.20 and 3.70 mg/l with an average concentration of 1.14 mg/l.

Using a mass balance equation, EPA calculated reasonable potential for phosphorus as follows:

$$Cr = [Qs * Cs + Qd * Cd] / Qr$$

where:

Qs = 7Q10 flow of the Connecticut River (upstream of the discharge) = 1770 cfs

Qd = Design Flow of South Hadley WWTP = 4.2 mgd = 6.5 cfs

Qr = Flow downstream of the WWTP = 1770 cfs + 6.5 cfs = 1776.5

Cr = Downstream receiving water phosphorus concentration (ug/l)

Cs = Upstream receiving water phosphorus concentration = 26 ug/l

Cd = WWTP discharge phosphorus concentration limit = 3.7 mg/l = 3700 ug/l

$$Cr = [1770 * 26 + 6.5 * 3700] / 1776.5 = 40 \text{ ug/l}$$

⁹ Beskenis, Joan, MassDEP, 2006, "Connecticut River Watershed: 2003 Chlorophyll a and Periphyton Technical Memorandum," p E8.

This calculation shows that under 7Q10 receiving water conditions, with the upstream phosphorus concentration at the maximum measured concentration, and with the treatment plant discharging at its design flow and its maximum measured phosphorus concentration, the resulting downstream concentration would be less than the Gold Book criteria. Therefore, there is no reasonable potential for the discharge to cause or contribute to an exceedance of water quality standards, so no limit is required. However, the monitoring frequency has been increased from quarterly to monthly to be consistent with other similar-sized POTWs in the Connecticut River Watershed.

6.1.3.3.8. 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 Total Maximum Daily Load (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 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see table 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 Loading¹⁰ (lbs/day)	TMDL Target¹¹ (lbs/day)	Current Loading¹² (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

¹⁰ Estimated loading from TMDL, (see Appendix 3 to CT DEP “Report on Nitrogen Loads to Long Island Sound,” April 1998).

¹¹ Reduction of 25% from baseline loading.

¹² 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 % reduction is maintained. Such a requirement has been included in this permit. We also intend 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 793 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 (NO₂), and total nitrate nitrogen (NO₃) at a sampling frequency of once per week in the effluent.

The agencies will periodically 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.

DMRs submitted by the permittee report total Kjeldahl nitrogen values between 1.20 and 20.7 mg/l with an average concentration of 11.10 mg/l. Nitrite plus nitrate values range from 1.5-13.2 mg/l and an average concentration of 6.3 mg/l. The current permit did not require the permittee to report total nitrogen, ammonia nitrogen or individual results for nitrate and nitrite.

The draft permit calls for the monitoring of total nitrogen (TN), ammonia nitrogen, total Kjeldahl nitrogen (TKN), total nitrite nitrogen (NO₂), and total nitrate nitrogen (NO₃) at a sampling frequency of once per week in the effluent. This adds monitoring for total nitrogen, ammonia nitrogen and individual results for nitrate and nitrite. This change in monitoring requirements makes the requirements for South Hadley WWTP consistent with other similar-sized POTWs in the Connecticut River Watershed.

6.1.3.4. Whole Effluent Toxicity (WET)

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards include the following narrative statement and requires 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.

National studies conducted by the EPA have demonstrated that domestic 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 sources, the state narrative water quality criterion, and in accordance with EPA national and regional policy and 40 C.F.R. §122.44(d), the draft permit includes a whole effluent acute toxicity limitation (LC₅₀ =50%. (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 Massachusetts Department of Environmental Protection's Division of Watershed Management's toxics policy requires toxicity testing for all major dischargers, such as the South Hadley WWTP. In addition, EPA recognizes that toxicity testing is required to assure that the synergetic effect of the pollutants in the discharge do not cause toxicity, even though the pollutants may be at low concentration in the effluent. Thus,

the draft permit includes a whole effluent toxicity limitation requirement for the 001 outfall, to assure that the facility does not discharge combinations of toxic compounds into the Connecticut River in amounts which would affect aquatic or human life.

6.1.3.4.1. *Ceriodaphnia dubia*

The draft permit carries forward a requirement for semi-annual acute toxicity tests using the species *Ceriodaphnia dubia*. The tests must be performed in accordance with the test procedures and protocols specified in **Permit Attachment A**. The tests will be conducted two times per year during the second week of the months of June and September.

The LC50 limit of $\geq 50\%$ is established by EPA/MassDEP policy for facilities with a dilution greater than 100:1 (See MassDEP's "Implementation Policy for the Control of Toxic Pollutants in Surface Waters, February 23, 1990).

6.1.3.4.2. *Salvelinus fontinalis*

During the informal consultation under Section 7 of the Endangered Species Act (ESA) for a nearby facility (Chicopee Water Pollution Control Facility), EPA received a request from the National Marine Fisheries Service (NMFS) to include a test species more representative of the federally endangered shortnose sturgeon in the WET testing. Upon review of this request and the available scientific evidence concerning the effect of toxic substances on the shortnose sturgeon, EPA determined that it will include a requirement for additional WET testing of the species *Salvelinus fontinalis* (brook trout) in the draft permit. NMFS has agreed that this additional testing satisfies its concerns.

The South Hadley WWTP also discharges to the Connecticut River approximately five miles upstream of the Chicopee facility. As such, EPA has concluded that it will require additional WET testing of the species, *Salvelinus fontinalis* (brook trout) in the draft permit for South Hadley as well.

EPA is aware that there is limited available research lends support to a concern that fathead minnow may not fully reflect the effect of toxic substances on shortnose sturgeon.¹³ We have investigated potentially representative species, keeping in mind that NPDES permits must incorporate monitoring for which there are applicable EPA-approved methods. In doing so, Region 1 notes that nationwide EPA guidance strongly discourages the use of non-standard species for toxicity testing. As stated in

¹³ F. James Dwyer, et al., "Assessing Contaminant Sensitivity of Endangered and Threatened Aquatic Species: Part I. Acute Toxicity of Five Chemicals", Arch. Environ. Contam. Toxicol. 48, 143–154 (2005) and F. James Dwyer, et al., "Assessing Contaminant Sensitivity of Endangered and Threatened Aquatic Species: Part III. Effluent Toxicity Tests", Arch. Environ. Contam. Toxicol. 48, 174–183 (2005).

EPA's water quality-based toxics control document.¹⁴

Since whole effluents are complex mixtures of toxicants, generalizations about sensitive and nonsensitive species are difficult to make. For example, one generalization is that trout are considered sensitive organisms requiring high-quality water. However, this generalization may not apply in all cases; trout are very sensitive to oxygen depletion but may be relatively insensitive to certain toxicants. . .

Sometimes, regulatory agencies require testing on representative resident species under the assumption that such tests are needed to assess impact to local biota. EPA considers it unnecessary to test resident species since standard test species have been shown to represent the sensitive range of all ecosystems analyzed. Resident species toxicity testing is strongly discouraged unless it is required by State statute or some other legally binding factor, or it has been determined that a unique resident species would be far more protective of the receiving water than the EPA surrogate species.

In response to NMFS's request, Region 1 has concluded that, for this facility, collection of toxicity data on a more representative species would provide an appropriate method to allow an assessment and comparison of potential toxic effects. The most representative species for which an EPA-approved method exists appears to be the brook trout, *Salvelinus fontinalis*. Based on the scientific literature¹⁵ and information obtained from Dr. Tara Duffy¹⁶, EPA is satisfied that, on the whole, brook trout are potentially more sensitive to contaminants than the fathead minnow. Also, the fact that brook trout are native to this region makes them a more reasonable selection than a non-native species. Spring and fall are the periods where shortnose sturgeon are most likely to be in the vicinity of the discharge, as they migrate between spawning, summer feeding and overwintering habitat. EPA is therefore proposing twice yearly (June and September) WET testing on the brook trout and reporting of the LC50, concurrent with testing on the *Ceriodaphnia dubia*. This concurrent testing would take place for two years in order to provide a baseline of data for assessment of this approach.

Discussions with professionals¹⁷ familiar with WET testing protocols have raised the issue that the life stage of brook trout used in WET testing may not be available throughout the year. Since the inability to fulfill a permit requirement due to a lack of test

¹⁴ US EPA Technical Support Document For Water Quality-based Toxics Control, 1991, pp 16-17. EPA/505/2-90-001.

¹⁵ F. James Dwyer, et al., "Assessing Contaminant Sensitivity of Endangered and Threatened Aquatic Species: Part I. Acute Toxicity of Five Chemicals", Arch. Environ. Contam. Toxicol. 48, 143-154 (2005) and F. James Dwyer, et al., "Assessing Contaminant Sensitivity of Endangered and Threatened Aquatic Species: Part III. Effluent Toxicity Tests", Arch. Environ. Contam. Toxicol. 48, 174-183 (2005)

¹⁶ Tara Duffy, Ph.D., (USGS Conte Anadromous Fish Research Center, Turners Falls, MA.), 1 November, 2011, personal communication.

¹⁷ Bruce Grantham (Lotic Inc., Unity, ME) to Gerald Szal (MassDEP), 19 September 2011, in possession of John H. Nagle (US EPA); Kenneth Simon (EnviroSystems, Inc., Hampton, NH), 15 September, 2011, personal communication.

subjects could result in a non-compliance issue, EPA has decided to allow rainbow trout (*Oncorhynchus mykiss*) to be used in place of brook trout, if brook trout are not available for testing. Rainbow trout and brook trout are generally thought to be equivalent in sensitivity under WET test conditions¹⁸.

The permit shall be modified or alternatively revoked and reissued, to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the toxicity tests indicate the discharge causes an exceedance of any state water quality criterion. Results from these toxicity tests are considered “New Information” and the permit may be modified pursuant to 40 CFR 122.62(a)(2).

7. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

The permit standard conditions for ‘Proper Operation and Maintenance’ are found at 40 CFR §122.41(e). These conditions require proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. Similarly, the permittee and co-permittees have a ‘duty to mitigate’ as stated in 40 CFR §122.41 (d). This requires the permittee and co-permittees to take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment.

Inadequate operation and maintenance of collection systems can result in adverse impacts to human health and the environment. For example, inadequate maintenance can result in overflows caused by blockages or pump station failure. Excessive inflow and infiltration¹⁹ (I/I) into the collection system may displace sanitary flow, reducing the capacity and the efficiency of the treatment works and may cause bypasses to secondary treatment. It also greatly increases the potential for sanitary sewer overflows (SSO) in separate systems, and combined sewer overflows in combined systems.

EPA has determined that specific permit conditions related to collection system operation and maintenance are necessary to ensure that collection system overflows and flow-related violations at the treatment facility are minimized.

The current permit required the permittee and co-permittees to develop and maintain I/I removal programs as an integral component of a collection system operation and maintenance plan.

South Hadley

The Town of South Hadley has an ongoing I/I program as required by the current permit. The

¹⁸ Bruce Grantham (Lotic Inc.,Unity, ME) to Gerald Szal (MassDEP), 19 September 2011, in possession of John H. Nagle (US EPA).

¹⁹ Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering 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.

Permittee submitted an Infiltration and Inflow Control Plan in February 2007 in compliance with its NPDES permit. The Plan was revised in April 2007 to address comments by the MassDEP. In December 2007, the Town completed the elimination of the three (3) remaining combined sewer overflows (CSOs). In its 2011 application, the Town of South Hadley estimated that an average of 770,000 gallons of I/I per day flows into the treatment plant.

The draft permit includes requirements for the permittee to continue to control I/I and to update and/or revise its current I/I control plan. The new plan will now be called a Collection System O & M Plan. Specific requirements for the Plan can be found in Section C.5 of the draft permit.

Summary of I/I Control Plan and Past Studies

The South Hadley Sewer System is aging, with many parts dating back to the 1920s and 30s. There is approximately 75 miles of collector and interceptor sewer. The Town has conducted several engineering studies related to I/I:

Year Completed	Study	Purpose related to I/I
1992	Sewer System Evaluation Survey	Identified sources of I/I
1998	Long-Term Planning Evaluation	CSO separation project
2001	Comprehensive Wastewater Management Plan	Discussed issues related I/I in each of the major interceptors
2004	Comprehensive Study of Judd Brook Interceptor	Identified excessive I/I
2007	I/I Control Plan	I/I management

Key Elements of the South Hadley I/I Control Plan (with April 2007 updates)

Sewer Maintenance

- Annual catch basin cleaning
- Maintenance flushing of sewer mains in known trouble areas
- Maintenance root cutting and degreasing in known problem areas
- Maintenance drainage line flushing
- Contracted vapor root treatment program
- Develop a policy and procedures for a routine siphon cleaning and flushing program
- Build and maintain access roads and pathways for inspection and maintenance of cross-country sewer interceptor and siphon lines
- Develop inspection policy and procedure to identify and target problematic areas
- Develop and implement long-range improvement plan for areas within roadways, to stay ahead of paving program
- Continue to expand root cutting and chemical treatment programs in target areas to keep lines free flowing

System Mapping

- Paper maps being addressed by the Town Engineer
- System mapping as part of Phase II Stormwater
- Building data layer of catch basins and outfalls
- Purchases computers and software for mapping

Roof Leaders, Sump Pumps and Yard Drains

- Develop formal program to address residential I/I
- Assessor's Office Questionnaire
- Incorporate information in GIS for determining priorities and target areas
- EPA Watershed Initiative Grant to develop a rebate program for disconnecting illicit connections and developing on-site recharge.

Public Education

- Notices on sewer bills
- Brochures on I/I
- Announcements on Community Access Channel

Chicopee

The Town of Chicopee submitted an I/I Control Plan in January 2006. The Town of Chicopee has its own POTW which is regulated under NPDES Permit MA0101508. The I/I Control Plan and subsequent annual reports were submitted in compliance with that permit. The plan and annual reports do address "Sewershed 2" which is the only portion of Chicopee which discharges to the South Hadley WWTP.

Granby

The Town of Granby submitted an I/I Control Plan on March 26, 2007. Annual reports were submitted on June 20, 2007, October 10, 2008 and July 24, 2009. The Town of Granby has a newer collection system and its I/I Control Plan is consistent with its limited I/I.

The proposed permit includes several additional Operation and Maintenance requirements. The permittee and co-permittees are required to prepare a map of the sewer collection systems it owns within 30 months of the effective of the permit. The permittee and co-permittees are also required to complete and implement collection system operation and maintenance plans within 24 months of the effective date of the permit. Details regarding these requirements can be found in the Section C.4 and C.5 of the draft permit.

8. SLUDGE INFORMATION AND REQUIREMENTS

The draft permit requires that the permittee comply with all existing federal and state laws that apply to sewage sludge use and disposal practices and with the Clean Water Act Section 405(d) technical standards (see 40 CFR Section 503) and that it submit an annual reports describing its sludge disposal practices. Sludge from the treatment plant is now sent to the South Hadley Landfill in South Hadley, MA. Because the final disposal or use of the permittees sludge is done by others, the permittee is not currently subject to the requirements of 40 CFR Section 503.

However, if the ultimate sludge disposal method changes, the permittee is responsible for complying with the applicable state and federal requirements.

The draft permit requires the permittee to submit an annual report by February 19th.

9. INDUSTRIAL USERS

The permittee is required to administer a pretreatment program based on authority granted under 40 C.F.R. Part 403 and Section 307 of the CWA. The permittee's pretreatment program received EPA approval on July 16, 1985 and, as a result, appropriate pretreatment program requirements were incorporated into the existing permit that were consistent with the approval and federal pretreatment regulations in effect when the permit was issued.

Periodically, the Federal Pretreatment Regulations in 40 C.F.R. Part 403 are amended. Those amendments establish new requirements for implementation of the pretreatment program. Upon reissuance of this NPDES permit, the permittee is obligated to modify its pretreatment program to be consistent with the current Federal regulations. Those activities that the permittee must address include, but are not limited to, the following: (1) develop and enforce EPA approved specific effluent limits (technically-based local limits); (2) revise the local sewer use ordinance or regulation, as appropriate, to be consistent with Federal regulations; (3) develop an enforcement response plan; (4) implement a slug control evaluation program; (5) track significant noncompliance for industrial users; and (6) establish a definition of and track significant industrial users. These requirements are necessary to ensure continued compliance with the NPDES permit.

In addition to the requirements described above, the draft permit requires the permittee to submit to EPA in writing, within 180 days of the effective date of the permit, a description of proposed changes to the permittee's pretreatment program deemed necessary to assure conformity with current federal pretreatment regulations. These requirements are included in the draft permit to ensure that the pretreatment program is consistent and up to date with all pretreatment requirements in effect. Lastly, the permittee must continue to submit, annually on **March 1st** a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

10. ANTI-BACKSLIDING

Anti-backsliding as described in Section 402 (o) of the Clean Water Act and 40 CFR §122.44(l)(1), requires reissued permits to contain limitations as stringent than those of the previous permit. There are limited exceptions to this requirement.

The draft permit does not include any less stringent effluent limitations and so is consistent with antibacksliding.

11. ANTIDegradation

The Massachusetts Antidegradation Policy is found at Title 314 CMR 4.04. The Commonwealth has also developed implementation procedures²⁰. All existing uses of the Connecticut River must be protected. EPA believes that the antidegradation policy has been met because the draft permit is being reissued with allowable discharge limits as or more stringent than the current permit with the same parameter coverage.

12. ESSENTIAL FISH HABITAT

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §1801 et seq. (1998)), EPA is required to consult with the National Fisheries Services (NOAA Fisheries) if EPA's action or proposed action that it funds, permits, or undertakes, may adversely impact any essential fish habitat (EFH). The Amendments broadly define essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. §1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. §600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. §1855(b)(1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

Anadromous Atlantic salmon (*Salmo Salar*) is the only managed species believed to be present during one or more lifestages within the area which encompasses the discharge site. Although the last remnant stock of Atlantic salmon indigenous to the Connecticut River was believed to have been extirpated over 200 years ago, an active effort has been underway throughout the Connecticut River system since 1967 to restore this historic run²¹. Atlantic salmon may pass in the vicinity of the discharge either on the migration of juveniles downstream to Long Island Sound or on the return of adults to upstream areas. The area of the discharge on the river mainstem is not suitable for spawning, which is likely to occur in smaller tributaries where the appropriate gravel or cobble riffle substrate can be found.

EPA has concluded that the limits and conditions contained in this draft permit minimize adverse effects to Atlantic Salmon EFH for the following reasons:

²⁰ Haas, Glenn, MassDEP, 2009, "Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00".

²¹ Holyoke Water Power. 1997. Application for new license for major project existing dam for the Holyoke Project FERC NO. 2004-MA. Exhibit E, Resident Fish Survey. 24pp.

- This is a reissuance of an existing permit;
- The dilution factor (273) is high;
- The Connecticut River is approximately 620 feet wide in the vicinity of the discharge, providing a large zone of passage for migrating Atlantic salmon that is unaffected by the discharge;
- The facility discharge pipe is located along the east bank of the Connecticut River. The fish passage system of the Holyoke Dam, which is 0.7 miles upstream of the discharge, is located on the west bank of the Connecticut River. Atlantic salmon moving upstream will likely be drawn to the attractant flow of the Holyoke Dam fish passage system and remain in the middle of the river or along the west bank, some distance from the facility discharge;
- WWTP limits specifically protective of aquatic organisms have been established for chlorine, based on EPA water quality criteria;
- The facility withdraws no water from the Connecticut River, so no life stages of Atlantic salmon are vulnerable to impingement or entrainment from this facility;
- Acute toxicity tests will be conducted four times per year to ensure that the discharge does not present toxicity problems;
- CSO discharges have been removed in accordance with past permit requirements;
- The draft permit prohibits the discharge of pollutants or combination of pollutants in toxic amounts;
- The effluent limitations and conditions in the draft permit were developed to be protective of all aquatic life;
- The draft permit prohibits violations of the state water quality standards.

EPA believes that the draft permit limits adequately protect Atlantic Salmon EFH, and therefore additional mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for our conclusion, NOAA Fisheries will be notified and an EFH consultation will be initiated.

13. ENDANGERED SPECIES ACT CONSULTATION

13.1. Introduction

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

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

13.2. Atlantic Sturgeon

On January 31, 2012, NOAA's Fisheries Service announced a final decision to list five distinct population segments (DPSs) of Atlantic sturgeon under the Endangered Species Act. The Chesapeake Bay, New York Bight, Carolina, and South Atlantic populations of Atlantic sturgeon will be listed as endangered, while the Gulf of Maine population will be listed as threatened.

The following information was taken primarily from a NMFS letter²² dated December 19, 2011:

Atlantic sturgeon have some potential to travel up the mainstem of the Connecticut River into the state of Massachusetts. Atlantic sturgeon are a long-lived, late maturing, estuarine-dependent, anadromous species, feeding primarily on benthic invertebrates²³. They have been historically reported in the Connecticut River as far upstream as Hadley, MA. However, significant evidence that Atlantic sturgeon moved past Enfield, CT into the upper Connecticut river was previously rare since this species tends to remain in the lower river in the range of the salt wedge (River Mile 6 – 16)²⁴. In 2006, an adult Atlantic sturgeon was observed in the spillway lift at the Holyoke dam, providing some indication that this species may move further upstream into the freshwater reaches of the Connecticut River. However, extensive sampling and the lack of any strong evidence of Atlantic sturgeon spawning indicates that the presence of this species in the vicinity of the discharge is unlikely [Chicopee Discharge].

The South Hadley WWTP is approximately five river miles upstream of the Chicopee facility discussed in the paragraph above. According to this information, it is unlikely that any Atlantic sturgeon would be present in the vicinity of this discharge as well. Based on the analysis presented here, a consultation is not required for Atlantic sturgeon at this time.

²² December 19, 2011, Letter from Patricia A. Kurkul, Regional Administrator, NOAA, National Marine Fisheries Service, Northeast Region, to John H. Nagle, EPA Region 1 ("NOAA's December 19, 2011, Chicopee WPCF Consultation Letter") (addressing ESA issues concerning EPA's proposed NPDES permit for the Chicopee, MA, WPCF).

²³ Atlantic Sturgeon Status Review Team (ASSRT). 2007. Status Review of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Gloucester (MA): Report to National Marine Fisheries Service, Northeast Regional Office. Web address: <http://www.nmfs.noaa.gov/pr/pdfs/statusreviews/atlanticsturgeon2007.pdf>.

²⁴ Savoy, T. and D. Shake. 1993. Anadromous Fish Studies in Connecticut Waters. Progress Report AFC-21-1. Connecticut Dept. Environ. Protect. 44p.

13.3. *Shortnose Sturgeon*

Based on EPA's assessment, the only endangered species potentially influenced by the reissuance of this permit is the shortnose sturgeon (*Acipenser brevirostrum*). It is EPA's preliminary determination that the operation of this facility, as governed by the permit action, is not likely to adversely affect the species of concern. It is our position that this permit action does not warrant a formal consultation under Section 7 of the ESA. The reasoning to support this position follows.

13.4. *South Hadley Facility*

The South Hadley WWTP is a 4.2 million gallon per day (mgd) conventional activated sludge, secondary wastewater treatment plant with chlorine disinfection, which discharges to the Connecticut River. The collection system is 95% separate sanitary sewers and 5% combined storm and sanitary sewers. The plant is located on the eastern bank of the Connecticut River (See Figure 1), approximately 0.9 miles downstream from the Holyoke Dam. The dilution factor of 273 has been calculated for the discharge.

The Connecticut River is a class B waters that have been designated as impaired for pathogens due to CSO discharges; the Connecticut River has also been designated as impaired due to PCBs and suspended solids.

13.5. *Shortnose Sturgeon Information*

Update information presented in this section on the life history and known habitat of shortnose sturgeon (SNS) in the Connecticut River was obtained from, among other sources, "The Connecticut River IBI Electrofishing NMFS Biological Opinion, Connecticut and Merrimack River Bioassessment Studies" (NMFS BO, July 30, 2009) and the Draft Endangered Species Act Section 7 Consultation Biological Opinion (BO) for the Holyoke Hydroelectric Project (Federal Energy Regulatory Commission (FERC) Permit #2004), issued to FERC by NOAA Fisheries on January 27, 2005 (NMFS BO 2005). Information dealing with the potential effects of pollutants on SNS was obtained from, among other sources, a detailed ESA response letter from NMFS to EPA regarding the Montague WPCF, dated September 10, 2008 (Montague Letter).

Information gathered from a variety of sources confirms the presence of shortnose sturgeon in the Connecticut River. Known concentration and spawning areas are located either upstream of the South Hadley WWTP discharge, near the Holyoke Dam, or at locations significantly downstream of the discharge (the closest at Agawam, MA, more than five miles downstream). The Connecticut River is approximately 620 feet wide in the vicinity of the discharge, giving passing shortnose sturgeon a large zone of passage that is unaffected by the discharge. In addition, shortnose sturgeon approaching the Holyoke Dam will likely be drawn to the attractant flow of the Dam's fish passage system and remain in the deeper central channel of the river or favor the west bank of the river, opposite from the bank where

the facility discharge is located. More detailed information on SNS in the Connecticut River is included below.

As reported above, a population of endangered shortnose sturgeon occurs in the Connecticut River. The population is largely divided by the Holyoke Dam, although limited successful downstream passage does occur. Modifications to the dam are currently ongoing to ensure the safe and successful upstream and downstream passage of fish, including shortnose sturgeon, at the Dam (Montague Letter).

The Holyoke Dam separates shortnose sturgeon in the Connecticut River into an upriver group (above the Dam) and a lower river group that occurs below the Dam to Long Island Sound. The abundance of the upriver group has been estimated by mark-recapture techniques using Carlin tagging (Taubert 1980) and PIT tagging (Kynard unpublished data). Estimates of total adult abundance calculated in the early 1980s range from 297 to 516 in the upriver population to 800 in the lower river population. Population estimates conducted in the 1990s indicated populations in the same range. The total upriver population estimates ranged from 297 to 714 adult shortnose sturgeon, and the size of the spawning population was estimated at 47 and 98 for the years 1992 and 1993 respectively. The lower Connecticut River population estimate for sturgeon >50 cm TL was based on a Carlin and PIT tag study from 1991 to 1993. A mean value of 875 adult shortnose sturgeon was estimated by these studies. Savoy estimated that the lower river population may be as high as 1000 individuals, based on tagging studies from 1988-2002. It has been cautioned that these numbers may overestimate the abundance of the lower river group because the sampled area is not completely closed to downstream migration of upriver fish (Kynard 1997). Other estimates of the total adult population in the Connecticut River have reached 1200 (Kynard 1998) and based on Savoy's recent numbers the total population may be as high as 1400 fish (Montague Letter). Regardless of the actual number of SNS in the river, the effective breeding population consists of only the upriver population, as no lower river fish are successfully passed upstream at the present time. This effective breeding population is estimated at approximately 400 fish (NMFS BO 2009).

Several areas of the river have been identified as concentration areas. In the downriver segment, a concentration area is located in Agawam, MA which is thought to provide summer feeding and over-wintering habitat. The Agawam concentration area is judged to be more than five miles downstream from the outfalls. Other concentration areas for foraging and over wintering are located in Hartford, Connecticut, at the Head of Tide (Buckley and Kynard 1985) and in the vicinity of Portland, Connecticut (CTDEP 1992). Shortnose sturgeon also make seasonal movements into the estuary, presumably to forage (Buckley and Kynard 1985; Savoy in press). Above the Dam, there are also several concentration areas. During summer, shortnose sturgeon congregate near Deerfield (NMFS BO). SNS that use the habitat in this area most likely to move into the Deerfield River. Many SNS overwinter at Whitmore. Successful spawning has been documented at two sites in Montague and this is thought to be the primary spawning site for shortnose sturgeon in the Connecticut River.

Although shortnose sturgeon early-life stages (ELSSs) have been captured downstream of the Holyoke Dam, evidence indicates that only minimal spawning occurs. In the mid 1980s, a multi-year study tracked ripe, pre-spawning adults congregating just below

the Holyoke Dam (Buckley and Kynard 1985b). At that time, the capture of ripe males and females together in the spring was believed to indicate imminent spawning. The Holyoke Dam area was systematically surveyed to determine depth, velocity, and substrate present under several hydro-power flow regimes during spawning (Buckley and Kynard 1985b). Because no efforts to capture shortnose sturgeon ELS were made, it is not known if successful egg release and fertilization had occurred. Recently, additional studies to identify shortnose sturgeon spawning downstream of the Holyoke Dam were conducted. In spring 2005 and 2006, ELS nets were set during known spawning temperatures at several sites between Hartford, CT (~ river mile 52) and Springfield, MA (~ river mile 94) for a total of 62,519 m³ of water sampled. No shortnose sturgeon ELS were captured as a result of these efforts; however, during unrelated ichthyoplankton sampling during the same years, three shortnose sturgeon larvae were captured (1 in 2005 and 2 in 2006; Kleinschmidt 2006, 2007).

One interpretation of these larval captures is that spawning may occur downstream of Holyoke Dam, perhaps at several sites. The low number of larvae captured downstream of Holyoke in 2005 and 2006 were consistent with the low numbers of ELS captured at the Montague site during the same years: 0 in 2005 (346,660 m³ of water sampled) and 4 eggs in 2006 (106,689 m³ of water sampled; Kieffer and Kynard in review-B). Because spawning success at Holyoke appeared to reflect success at Montague during the same years (Kynard et al. in review-C), few ELS may have been available downstream of Holyoke Dam during the 2005 and 2006 sampling, resulting in the low number of ELS captures. In addition, mid-column net tows capturing ELS totaled 100 m³ of sampled water, which is considered a very small amount of effort to capture larvae dispersed over a long distance. This suggests that increased sampling may have resulted in higher captures. The effort required to capture 13 embryos and larvae 3-15 km downstream of Montague in 1977 and 1978 was large in comparison, totaling 479.2 hours of effort (Taubert 1980). In addition, Whitworth (1996) states fall-line topography at Windsor Locks, CT (~ river mile 62) as a possible historic spawning area.

NMFS determined (December 2011 Letter) that adult and juvenile shortnose sturgeon are likely to occur in the vicinity of the Chicopee facility outfall year round, but further determined that ELS are less likely to be observed in this area of the Connecticut River, since spawning occurs further upstream in the Montague area near the confluence of the Deerfield and Connecticut Rivers. The South Hadley facility is relatively close (approximately 5 river miles upstream) to the Chicopee facility. It is reasonable to expect that adult and juvenile shortnose sturgeon are also likely to occur in the vicinity of the South Hadley facility outfall year round, but that ELS are less likely to be observed in this area.

13.6. *Pollutant Discharges Permitted*

The draft permit has been developed to ensure that discharges will not cause or contribute to violations of the Massachusetts Water Quality Standards (WQS) in the Connecticut River. The Massachusetts WQS include turbidity, dissolved oxygen and other standards to protect

aquatic life and incorporate EPA's aquatic life criteria for toxic pollutants, which were designed to be protective of the most sensitive aquatic species nationwide. EPA has further reviewed the discharges and effluent limits to ensure that they are specifically protective of the shortnose sturgeon. Specific pollutants, criteria and effluent limits are discussed below.

13.6.1. Total Suspended Solids

TSS can affect aquatic life directly by killing organisms or reducing growth rate or resistance to disease, by preventing the successful development of fish eggs and larvae, by modifying natural movements and migration, and by reducing the abundance of available food (EPA 1976). These effects are caused by TSS decreasing light penetration and by burial of the benthos. Eggs and larvae are most vulnerable to increases in solids.

The draft permit proposes the same TSS concentration limitations at the WPCF as in the existing permit. The average monthly and average weekly limits are based on the secondary treatment requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f) and are a monthly average TSS concentration of 30 mg/l, and a weekly average concentration of 45 mg/l.

Studies of the effects of turbid waters on fish suggest that concentrations of suspended solids can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton 1993). The studies reviewed by Burton demonstrated lethal effects to fish at concentrations of 580mg/L to 700,000mg/L depending on species. Sublethal effects have been observed at substantially lower turbidity levels. For example, prey consumption was significantly lower for striped bass larvae tested at concentrations of 200 and 500 mg/L compared to larvae exposed to 0 and 75 mg/L (Breitburg 1988 in Burton 1993). Studies with striped bass adults showed that pre-spawners did not avoid concentrations of 954 to 1,920 mg/L to reach spawning sites (Summerfelt and Moiser 1976 and Combs 1979 in Burton 1993). While there have been no directed studies on the effects of TSS on shortnose sturgeon, SNS juveniles and adults are often documented in turbid water. Dadswell (1984) reports that shortnose sturgeon are more active under lowered light conditions, such as those in turbid waters. (Montague Letter) As such, shortnose sturgeon are assumed to be at least as tolerant to suspended sediment as other estuarine fish such as striped bass.

As noted above, shortnose sturgeon eggs and larvae are less tolerant to sediment levels than juveniles and adults. Several studies have examined the effects of suspended solids on fish larvae. Observations in the Delaware River indicated that larval populations may be negatively affected when suspended material settles out of the water column (Hastings 1983). Larval survival studies conducted by Auld and Schubel (1978) showed that striped bass larvae tolerated 50 mg/l and 100 mg/l suspended sediment concentrations and that survival was significantly reduced at 1000 mg/L. According to Wilber and Clarke (2001), hatching is delayed for striped bass and white perch eggs exposed for one day to sediment concentrations of 800 and 1000 mg/L, respectively (Montague Letter).

In a study on the effects of suspended sediment on white perch and striped bass eggs and larvae performed by the ACOE (Morgan et al. 1973), researchers found that sediment began to adhere to the eggs when sediment levels of over 1000 parts per million (ppm) were reached. No adverse effects to demersal eggs and larvae have been documented at levels at or below 50 mg/L (Montague Letter). This is above the highest level authorized for the WPCF by this permit. Based on this information, and the fact that the discharge limits for the proposed permit are well below the levels recorded for lethal and sublethal effects to fish species and their eggs and larvae, any effects of the discharge on shortnose sturgeon in compliance with the TSS permit limits will be insignificant and/or discountable.

13.6.2. Biological Oxygen Demand

The biological oxygen demand (BOD) water test is used to determine how much oxygen is being used by aerobic microorganisms in the water to decompose organic matter. If these aerobic bacteria are using too much of the dissolved oxygen in the water, then there will not be enough left over for the fish, insects, and other organisms that rely on oxygen. BOD has the potential to affect dissolved oxygen (DO) concentrations in the vicinity of and downstream from a wastewater treatment facility's outfall.

The draft permit for the WWTP proposes the same BOD₅ concentration limits as in the current permit, which are based on the secondary treatment requirements set forth at 40 CFR 133.102 (a)(1), (2), (4) and 40 CFR 122.45 (f). The secondary treatment limitations are a monthly average BOD₅ concentration of 30 mg/l and a weekly average concentration of 45 mg/l. EPA has determined that these effluent limits are sufficient to ensure that discharges from this facility do not cause an excursion below the Massachusetts water quality standard, which requires that Class B waters attain a minimum DO saturation of 5.0 mg/l. EPA also notes that discharges from the WPCF have consistently high DO concentrations (approximately 20 mg/l) due to the pure oxygen activated sludge treatment process used by the facility, further mitigating any impacts on DO levels in the Connecticut River from this facility. Shortnose sturgeon are known to be adversely affected by DO levels below 5 mg/l (Jenkins et al. 1994, Niklitschek 2001), the same threshold established in the Massachusetts WQS. As such, the BOD criteria are protective of shortnose sturgeon found in the Connecticut River.

13.6.3. pH

The draft permit requires that the discharge maintain a pH of 6.5 – 8.3. A pH of 6.0 – 9.0 is harmless to most marine organisms (Ausperger 2004) and is within the normal range of pH for freshwater. MassDEP water quality assessment reports indicate that pH levels in the Connecticut River are well within this range (from 7.4-7.6; see 2003 Connecticut River WQA, page B21). As such, no adverse effects to shortnose sturgeon are likely to occur as a result of the discharge of water of this pH into the Connecticut River.

13.6.4. Escherichia coli Bacteria

E. coli bacteria are indicators of the presence of fecal wastes from warm-blooded animals. The primary concern regarding elevated levels of these bacteria is for human health and exposure to pathogen-contaminated recreational waters. Fecal bacteria are not known to be toxic to aquatic life. *E. coli* limits are therefore designed to ensure compliance with human health criteria and are seasonal, corresponding to the recreational use season, consistent with the Massachusetts WQS. The bacterial limits set for the South Hadley WWTP are designed to protect human health and also to insure that dissolved oxygen criteria are met in the receiving water body. As indicated above, the monthly dissolved oxygen level set for this receiving water (5.0 mg/L) is protective of shortnose sturgeon. As such, the bacteria limits set in the current permit are not likely to adversely affect shortnose sturgeon or contribute to an excursion above water quality criteria set for this portion of the Connecticut River.

13.6.5. Chlorine

Based on the design flow of the WWTP and the dilution calculations, EPA has determined that a monthly average limit of 1.0 mg/l and a daily maximum limit of 1.0 mg/l of Total Residual Chlorine (TRC) would assure that the facility did not exceed the chronic and acute TRC standards (0.011 ug/l and 0.019 ug/l respectively).

There are a number of studies that have examined the effects of TRC (Post 1987; Buckley 1976; EPA 1986) on fish; however, no directed studies that have examined the effects of TRC on shortnose sturgeon. The EPA has set the Criteria Maximum Concentration (CMC or acute criteria; defined in 40 CFR 131.36 as equals the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (up to 96 hours) without deleterious effects) at 0.019 mg/L, based on an analysis of exposure of 33 freshwater species in 28 genera (EPA 1986) where acute effect values ranged from 28 ug/L for *Daphia magna* to 710 ug/L for the threespine stickleback. The CMC is set well below the minimum effect values observed in any species tested. As the water quality criteria levels have been set to be protective of even the most sensitive of the 33 freshwater species tested, it is reasonable to assume that the criteria are also protective of shortnose sturgeon.

The anticipated TRC levels in the Connecticut River satisfy the EPA's ambient water quality criteria and are lower than TRC levels known to effect aquatic life. As such, the discharge of the permitted concentrations of TRC is likely to have an insignificant or discountable effect on shortnose sturgeon.

13.6.6. Nitrogen

DO levels in the Long Island Sound estuary, approximately 75 miles downstream, have been determined to be impacted by nitrogen discharges from wastewater treatment plants on the Connecticut River and other tributaries. A TMDL has been developed that includes, *inter alia*, a Waste Load Allocation for Massachusetts, New Hampshire and Vermont wastewater facilities discharging to those receiving waters that is design to achieve the DO criteria (see Part 6.1.3.3.8 of this fact sheet). That

WLA is currently being met, and the draft permit contains conditions to ensure that the WLA continues to be met by requiring optimization of nitrogen removal, in order to ensure that nitrogen loads do not increase over the 2004-2005 baseline of 793 lbs/day.

Monitoring for nitrogen levels and the establishment of methods to further reduce the loading of nitrogen into the Connecticut River will ensure that the facility is not discharging nitrogen at a level that could impact dissolved oxygen levels that may affect shortnose sturgeon. As such, adverse impacts are unlikely to occur.

13.6.7. Total Phosphorus

Part 6.1.3.3.7 of this fact sheet contains a full discussion of total phosphorus. A calculation included in that section shows that under 7Q10 receiving water conditions, with the upstream phosphorus concentration at the maximum measured concentration, and with the treatment plant discharging at its design flow and its maximum measured phosphorus concentration, the resulting downstream concentration would be less than the Gold Book criteria. Therefore, there is no reasonable potential for the discharge to cause or contribute to an exceedance of water quality standards, so no limit is required. Adverse impacts are unlikely to occur to aquatic life, including shortnose sturgeon. However, the monitoring frequency has been increased from quarterly to monthly to be consistent with other similar-sized POTWs in the Connecticut River Watershed.

13.7. Whole Effluent Toxicity

In addition to analysis of specific toxic pollutants, EPA and MassDEP as a matter of policy include effluent limitations and monitoring requirements for toxicity bioassays (Whole Effluent Toxicity testing) (WET testing) in wastewater treatment facility permits. The principal advantages of such biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measure only be biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Part 6.1.3.4 of this fact sheet contains a detailed discussion of WET testing and the selection of appropriate test species.

The draft permit carries forward a requirement for semi-annual acute toxicity tests using the species *Ceriodaphnia dubia*. The tests must be performed in accordance with the test procedures and protocols specified in **Permit Attachment A**. The tests will be conducted two times per year during the second week of the months of June and September.

The LC50 limit of $\geq 50\%$ is established by EPA/MassDEP policy for facilities with a dilution greater than 100:1 (See MassDEP's "Implementation Policy for the Control of Toxic Pollutants in Surface Waters, February 23, 1990).

During the informal consultation under Section 7 of the Endangered Species Act (ESA) for a

nearby facility (Chicopee Water Pollution Control Facility), EPA received a request from the National Marine Fisheries Service (NMFS) to include a test species more representative of the federally endangered shortnose sturgeon in the WET testing. Upon review of this request and the available scientific evidence concerning the effect of toxic substances on the shortnose sturgeon, EPA determined that it will include a requirement for additional WET testing of the species *Salvelinus fontinalis* (brook trout) in the draft permit. NMFS has agreed that this additional testing satisfies its concerns.

Discussions with professionals²⁵ familiar with WET testing protocols have raised the issue that the life stage of brook trout used in WET testing may not be available throughout the year. Since the inability to fulfill a permit requirement due to a lack of test subjects could result in a non-compliance issue, EPA has decided to allow rainbow trout (*Oncorhynchus mykiss*) to be used in place of brook trout, if brook trout are not available for testing. Rainbow trout and brook trout are generally thought to be equivalent in sensitivity under WET test conditions²⁶.

The permit shall be modified or alternatively revoked and reissued, to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the toxicity tests indicate the discharge causes an exceedance of any state water quality criterion. Results from these toxicity tests are considered “New Information” and the permit may be modified pursuant to 40 CFR 122.62(a)(2).

13.8. Finding

Based on the above analysis of the location of the discharge, the permit limits and the water quality effects of the permit action, EPA has made the preliminary determination that the proposed reissuance of the NPDES permit for this facility is not likely to adversely affect shortnose sturgeon. Therefore EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from NMFS regarding this determination through the information in this fact sheet as well as a letter under separate cover.

Reinitiation of consultation will take place: (a) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or (c) if a new species is listed or critical habitat is designated that may be affected by the identified action.

14. UNAUTHORIZED DISCHARGES

The permittee is not authorized to discharge wastewater from any pump station emergency

25 Bruce Grantham (Lotic Inc.,Unity, ME) to Gerald Szal (MassDEP), 19 September 2011, in possession of John H. Nagle (US EPA); Kenneth Simon (EnviroSystems, Inc., Hampton, NH), 15 September, 2011, personal communication.

26 Bruce Grantham (Lotic Inc.,Unity, ME) to Gerald Szal (MassDEP), 19 September 2011, in possession of John H. Nagle (US EPA).

overflow. Overflows must be reported in accordance with reporting requirements found in Section D.1.e. of Part II of the permit (24-hour reporting). If a discharge does occur, the permittee must notify the EPA, the MassDEP, and others, as appropriate (i.e. local Public Health Department), both orally and in writing as specified in the draft permit.

15. MONITORING AND REPORTING

The effluent monitoring requirements have been established to yield data representative of the discharge under the 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 that precludes the use of NetDMR from 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. NetDMRs 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.

EPA currently conducts free training on the use of NetDMR and anticipates that the ability of this training will continue to assist permittees with the transition to use of NetDMR. To participate in upcoming trainings, visit <http://www.epa.gov/netdmr> for contact information for Massachusetts.

The draft permit requires the permittee to report monitoring results obtained during each calendar month using Net DMR, 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” request process. Permittees, who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing, to EPA at least sixty (60) days prior to the date the facility

would 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 sixty (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. Hard copies of DMRs must be postmarked no later than the 15th day of the month following the completed reporting period.

16. STATE PERMIT CONDITIONS

The NPDES Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection 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 MassDEP Commissioner.

17. GENERAL CONDITIONS

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

18. STATE CERTIFICATION REQUIREMENTS

The staff of the Massachusetts Department of Environmental Protection ("MassDEP") has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

19. PUBLIC COMMENT PERIOD 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 by the close of the public comment period, to the U.S. EPA, Office of Ecosystem Protection, Attn: Michele Cobban Barden, 5 Post Office Square, Suite-100, (OEP06-1), Boston, Massachusetts 02109-3912 or via email to barden.michele@epa.gov. The comments should reference the name and permit number of the facility for which they are being provided.

Any person, prior to such date, may submit a request in writing to EPA and the State's 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. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates a significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA'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. Within thirty (30) days following the notice of final permit decision, permit may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

20. 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:

Michele Cobban Barden
EPA New England, Region1
5 Post Office Square, Suite-100 (OEP06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1539, FAX: (617)918-0539
Email: bardeen.michele@epa.gov

Kathleen Keohane
Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608
Telephone: (508) 767-2856, FAX: (508) 791-4131
Email: kathleen.keohane@state.ma.us

February 6, 2012
Date

Stephen Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Figure 1: Location of South Hadley Wastewater Treatment Plant

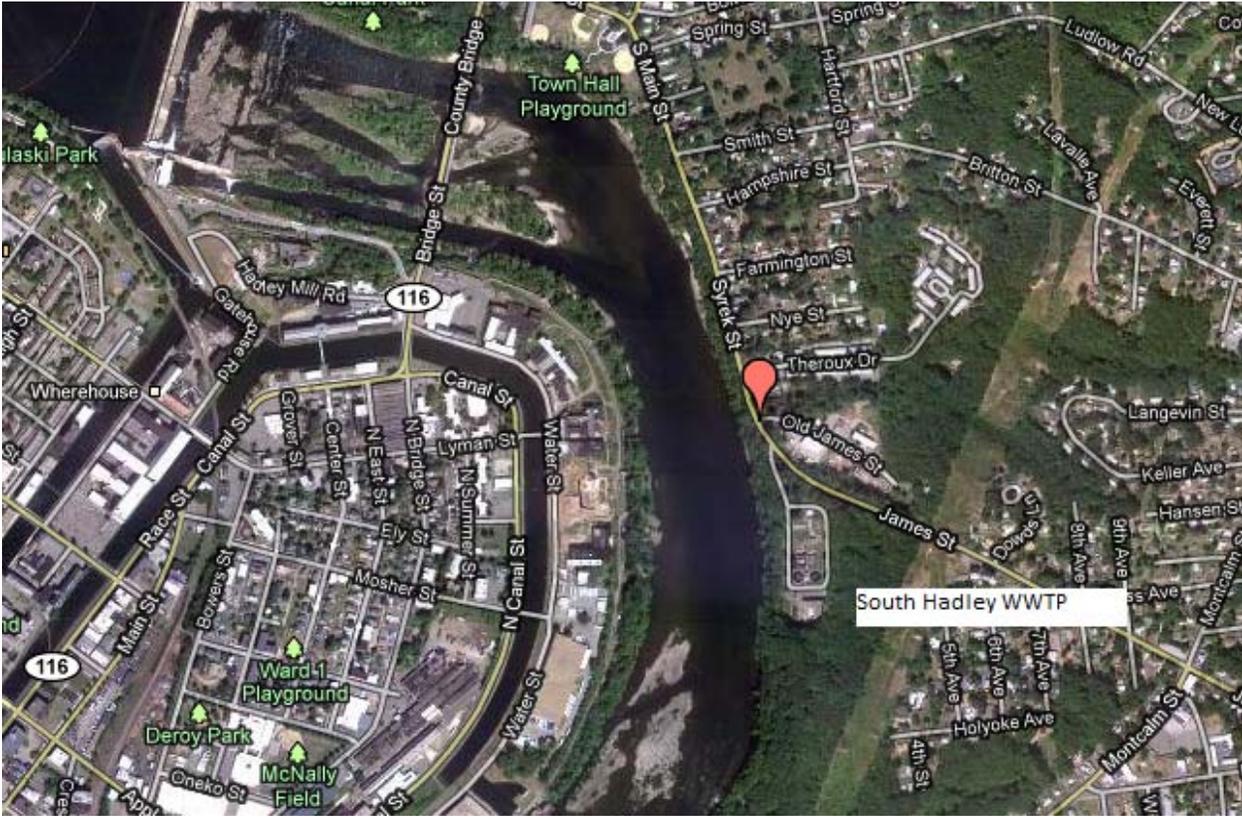
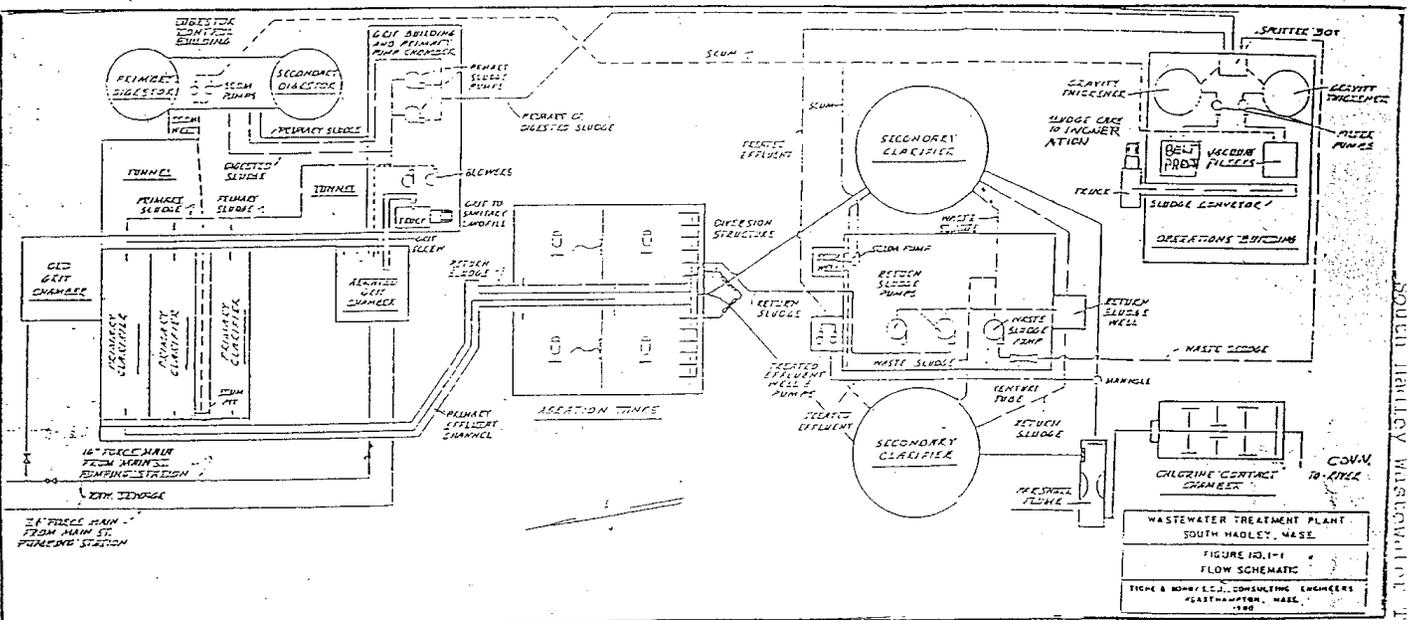


Figure 2: Flow Diagram



SOUTH HADLEY WASTEWATER TREATMENT PLANT
 MA0100455
 PROCESS
 FLOW SCHEMATIC

Table 1: Summary of Effluent Characteristics at Outfall 001

The following effluent characteristics were derived from analysis of discharge monitoring data collected from Outfall 001 from September 2009 through August 2011. All data taken from the monthly Discharge Monitoring Reports as retrieved from EPA's Permit Compliance System (PCS) data base. These effluent values characterize the treated wastewater discharged from this facility. The monthly data can be found on page 34.

Effluent Parameter	Average of Monthly Averages	Range of Monthly Averages	Maximum of Daily Maximums
Flow (MGD)	3.14	2.80-3.90	17.40
BOD ₅ (mg/l)	17.34	9.60-32	66
TSS (mg/l)	8.23	3-29	204
pH (standard units)	6.68	6.4-7.8	***
Fecal Coliform Bacteria (cfu/100 ml)	65.13	3.70-369	4000
Total Residual Chlorine (mg/l)	0.63	0.5-0.70	2.10
Total Phosphorus	0.96	0.20-3.70	***
Total Kjeldahl Nitrogen	11.52	2.03-20.70	***
Nitrite + Nitrate	5.77	0.29-13.20	***
LC50 (% effluent) <i>Ceriodaphnia dubia</i>	100	100	***

Table 2: Monthly Effluent Data

	Flow		BOD ₅					BOD % Removal	TSS					TSS % Removal	pH		Fecal Coliform Bacteria		Total Residual Chlorine		Total Phosphorus	Total Kjeldahl Nitrogen	Nitrite + Nitrate	LC50 - Ceriodaphnia dubia
	(MGD)		(mg/l)			lbs/day		%	(mg/l)			lbs/day		%	(S.U)		cfu/100 ml		mg/l		mg/l	mg/l	mg/l	%
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Minimum	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Minimum	Minimum	Maximum	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly	Average Monthly	Average Monthly	Maximum Daily
Effluent Limit	4.2	Report	30	45	Report	1051	1576	85%	30	45	Report	1051	1576	85%	6.5	8.3	200	400	1	1	Report	Report	Report	50
Oct-11	3.5	17.4	14.9	21	28	487	563.9	90%	7.6	11.5	14	252	311	96%	6.7	7.6	14.2	66	0.6	1.2	1.7	12.2	5.1	
Sep-11	3.4	17.4	5.9	14	14	202	446.5	95%	5.4	6.5	8	199	322.7	97%	6.6	7.5	9.4	140	0.61	1.6		1.2	11.3	
Aug-11	3.2	17.4	28	53	59	557	874	83%	16	35	43	286	543	92%	6.6	7.5	63.9	4000	0.7	1.5		13	12	
Jul-11	3.2	17.4	13.3	16.5	22	223	261.3	92%	5.5	7	9	94	131.1	98%	6.7	7.6	3.7	22	0.6	1.1	1.1	13	3.3	
Jun-11	3.2	17.4	16	28	40	368	601.2	86%	5.6	7	9	133	155.6	97%	6.76	7.41	15.3	550	0.6	1.07		2.3	13.2	100
May-11	3.1	17.4	11.3	15	19	371	656.4	91%	5	5	5	164	238.9	96%	7	7.5	25.1	10800	0.6	0.98		20	1.5	
Apr-11	3	17.4	13.7	31	45	520	1211.2	87%	5.5	6.5	8	141	202.4	97%	6.9	7.4	6.6	50	0.6	1.4	0.3	15	2.4	
Mar-11	3	17.4	11.7	18.5	23	587.6	689.3	83.3%	5.1	5.5	6	147	191.4	97%	6.5	7.5						11.5	9.1	
Feb-11	2.8	10.5	9.6	16.5	18	178.8	286.5	93.7%	5	5	5	48	50.4	98.5%	6.4	7.1					1.2	13.4	11.3	
Jan-11	2.8	10.5	18.5	20	30	327.6	372.6	90.3%	6.8	7.5	8	108	143.7	97.1%	6.5	7.2					3.7	19	6.8	
Dec-10	2.9	10.5	15	24	30	415.0	594.0	88.5%	6	8	11	115	174	97.2%	6.6	7.1						10.4	7.6	
Nov-10	2.9	10.5	19.7	24.5	36	444.2	499.9	87.5%	5.6	7.5	9	86.3	174.5	97.8%	6.8	7.4						12.5	9.5	
Oct-10	2.9	10.5	22.4	27	33	507.2	614.3	86.2%	11.3	20.5	23	266.1	602.9	93.6%	6.9	7.4	369	4000	0.7	1.39	0.36	15.7	3.5	
Sep-10	2.9	10.5	26	41	60	518.0	1049.0	84.0%	9	16	20	169	392	96.0%	6.7	7.5	5.8	82	0.6	2.1		9	5.3	100
Aug-10	2.9	10.5	32	46.5	52	573.0	818.0	84.0%	26	43.5	53	454	757	90.0%	6.8	7.8	11.7	320	0.6	1.3		13	1.6	
Jul-10	3	10.5	13.9	20.1	25	243.9	312.9	90.7%	3.8	3.9	6	73.3	78.5	95.6%	6.5	7.2	8.8	46	0.5	1	1	4.5	5.9	
Jun-10	3.2	10.5	17.6	22.8	27.7	346.5	513.6	90.9%	8.7	13.5	16	156.7	266.1	98.5%	6.5	7.6	7	131	0.6	1.1		5.5	8.2	100
May-10	3.2	10.5	20	22	26.4	428.4	473.2	87.9%	3.1	5.5	5.6	65.2	118.1	98.6%	6.6	7.4	7.02	56	0.6	1		12	5.5	
Apr-10	3.3	10.5	16.3	36.6	33.1	591.4	2851.9	92.6%	4.1	22	22	220.4	1658	96.7%	6.7	7.5	10.3	250	0.7	1.9	0.2	10.6	3.1	
Mar-10	3.33	10.53	13	12.1	44.1	723.4	467.2	87.0%	4.3	2.8	22	284.9	126.7	96.0%	6.8	7.3					1.1	3.6	2.3	
Feb-10	3.3	7.8	19	43	66	638.0	1863.0	88.0%	3	4	5	82	142	98.0%	6.7	7.4						15.4	4.8	
Jan-10	3.4	7.8	17	23	37	498.0	965.0	82.0%	29	104	204	1176	4478	72.0%	6.6	7.1						20.7	9	
Dec-09	3.4	9.2	10.3	16.7	18.4	340.4	601.5	91.5%	7.5	14.1	16.0	239.2	456.3	94.5%	6.6	7.3					0.76	10.9	3.6	
Nov-09	3.6	11.2	12.5	17.6	22.1	289.0	361.0	90.5%	3.0	4.0	5.0	80.0	85.0	97.9%	6.7	7.3						2.03	5.23	

Table 3: Summary of Effluent Characteristics from 2011 NPDES Application

Parameter	Maximum Daily Value	Average Daily Value	Units	Number of Samples
pH (minimum)	6.5	***	Standard Units	***
pH (maximum)	7.8	***	Standard Units	***
Flow Rate	10.50	2.90	MGD	365
Temperature (Winter (Feb. 2010))	50°	48°	Fahrenheit	28
Temperature (Summer (Aug 2010))	72°	69°	Fahrenheit	31
BOD	66	19.30	mg/l	104
Fecal Coliform Bacteria	4000	175	cfu/100 mg	62
Total Suspended Solids	204	9	mg/l	104
Ammonia	16.6	8.7	mg/l	3
Total Residual Chlorine	1.9	0.60	mg/l	217
Dissolved Oxygen	9.40	7.10	mg/l	95
Total Kjeldahl Nitrogen	20.7	11.6	mg/l	13
Nitrate Nitrogen	9.5	5.3	mg/l	13
Oil and Grease	1.0	1.0	mg/l	5
Phosphorus (Total)	0.68	0.64	mg/l	5
Total Dissolved Solids	395	368	mg/l	5
TS	783	410	mg/l	13
COD	208	56	mg/l	11

**EPA AND MASSDEP JOINT RESPONSE TO PUBLIC COMMENTS
SOUTH HADLEY WASTEWATER TREATMENT PLANT
NPDES PERMIT NO. MA0100455**

From March 2, 2012 to March 31, 2012, Region 1 of the United States Environmental Protection Agency (“EPA”) and the Massachusetts Department of Environmental Protection (“MassDEP”) (together, the “Agencies”) solicited public comments on a draft National Pollutant Discharge Elimination System (“NPDES”) permit, developed pursuant to an application from the Town of South Hadley, Massachusetts (“Permittee”) for the reissuance of its permit to discharge treated wastewater from the South Hadley Wastewater Treatment Plant (WWTP) to the designated receiving water, the Connecticut River.

The table of contents below lists each party’s comments on the draft permit (essentially reproduced verbatim) and the page on which its comments begin. Each comment is followed by the Agencies’ response.

A)	Melissa A. Labonte, WPC Compliance Manager, Town of South Hadley	p. 2
B)	Andrea Donlon, Connecticut River Watershed Council	p. 12
C)	Massachusetts Department of Environmental Protection Section 401 Certification Statement	p.16

After considering the comments received on the draft permit, EPA has made a final decision to issue the permit authorizing the discharge. In accordance with the provisions of 40 CFR § 124.17, this document briefly describes and responds to the comments received on the draft permit, and explains any provision of the final permit that have been changed from the draft as well as the reasoning supporting those changes. Any clarifications that EPA considers necessary are also included in this document. A copy of the final permit may be obtained by writing or calling Michele Cobban Barden, United States Environmental Protection Agency, 5 Post Office Square, Suite 100, Mail Code: OEP06-1, Boston, Massachusetts, 02109-3912; Telephone (617) 918-1539. Copies of the final permit and the response to comments may also be obtained from the EPA Region 1 website at <http://www.epa.gov/region1/npdes/index.html>.

A) Comments received from Melissa A. Labonte, WPC Compliance Manager, Town of South Hadley, dated March 29, 2012

Draft NPDES Permit No. MA0100455

Comment A.1:

Total Residual Chlorine (TRC): The Town acknowledges that there have been difficulties maintaining chlorine residual in the past, and the Town has tried to be proactive in addressing the issues. However, there are other factors which affect disinfection of the final effluent. In 2004, as part of the plant upgrade, the facility switched from chlorine gas to sodium hypochlorite, a less effective but safer disinfectant. The disinfection process itself is affected by flow, pH and the presence of other compounds, such as Nitrifying Bacteria, which can create a chlorine demand and affect chlorine residual.

Response A.1:

EPA recognizes that the facility continues to struggle with total residual chlorine control. DMR data submitted by South Hadley indicate that exceedances of chlorine and bacteria limits have occurred throughout the term of the previous permit. Since the last permit was issued in June 2006, the permittee violated the maximum daily limit for TRC during 19 of the 41 months the limit was in effect and also exceeded bacteria limits during 11 of the 41 months.

	Total Residual Chlorine		Fecal Coliform Bacteria	
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Effluent Limit	1 mg/l	1 mg/l	200 cfu/100 ml	400 cfu/100 ml
June 2006	.58	.85	80.8	373
July 2006	.61	.98	27.3	85
August 2006	.59	1	27.7	330
September 2006	.63	.9	14	21
October 2006	.67	1	17.3	224
April 2007	.6	1	130.6	560
May 2007	.65	1.28	22.1	120
June 2007	.66	1.4	29.1	65
July 2007	.59	.92	27.8	110
August 2007	.7	.9	11.7	28
September 2007	.61	.98	18.3	148
October 2007	.69	1.1	36.4	164
April 2008	.62	.93	38.3	132
May 2008	.65	.99	17.9	37
June 2008	.58	.86		
July 2008	.6	1.1	1149.5	10400
August 2008	.55	1.14	265.6	800
September 2008	.65	.93	343.6	1000
October 2008	.72	1.49	88.3	600
April 2009	.8	3.76	7.2	68

	Total Residual Chlorine		Fecal Coliform Bacteria	
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Effluent Limit	1 mg/l	1 mg/l	200 cfu/100 ml	400 cfu/100 ml
May 2009	.7	.96	4.7	172
June 2009	.55	.98		20
July 2009	.57	.85	7.7	308
August 2009	.65	1	16.2	74
September 2009	.66	1.2	8.6	102
October 2009	.6	.9	21.4	540
April 2010	.7	1.9	10.3	250
May 2010	.6	1	7.02	56
June 2010	.6	1.1	7	131
July 2010	.5	1	8.8	46
August 2010	.6	1.3	11.7	320
September 2010	.6	2.1	5.8	82
October 2010	.7	1.39	369	4000
April 2011	.6	1.4	6.6	50
May 2011	.6	.98	25.1	10800
June 2011	.6	1.07	15.3	550
July 2011	.6	1.1	3.7	22
August 2011	.7	1.5	63.9	4000
September 2011	.61	1.6	9.4	140
October 2011	.6	1.2	14.2	66
May 2012	.38	1	15.5	1350

Based on the history of this problem and the above data, EPA has included a permit condition requiring the permittee to complete a chlorination/dechlorination system study. Within 6 months of the effective date of the permit, the permittee shall submit a report evaluating the effectiveness of the chlorination and dechlorination systems. The study may take into account the dechlorination effect provided by the cascade. The report will specifically address how flow variability and chlorine demand variability affect compliance with the TRC and E. coli limits. Sampling data shall be provided to support conclusions on how hourly and daily flow and chlorine demand variability affect permit compliance. The report will include a description of the chlorination and dechlorination systems and the methods for dosage control. The report will identify all changes necessary to ensure compliance with the TRC and E. coli limits at all times, including equipment modifications and upgrades (including assessing the need for chemical dechlorination), operational procedures (including calibration procedures and alarm/response procedures), and sampling protocols. The report will include a schedule for implementing all of the necessary changes. An annual report shall be submitted on November 30th of each year summarizing all exceedances of the TRC and E. coli effluent limits during the previous year, the estimated or measured E. coli and chlorine discharge levels during the exceedance, and measures taken to fix the problem(s) and to prevent future occurrences.

Comment A.2:

- a. *Section 1, Footnote 7 for TRC has a part that pertains to analytical methods. It reads “The minimum level (ML) for total residual chlorine is defined as 20 ug/L. This value is the minimum level for chlorine using EPA approved methods found in the most currently approved version of Standard Methods for the Examination of Water and Wastewater, Method 4500 CL-E and G. One of these methods must be used to determine total residual chlorine.” It is unclear if, in this footnote, EPA is restricting the facility to monitoring using only these 2 methods rather than any method approved under 40 CFR 136, as specified in Footnote number 3, which is standard.*

Response A.2:

EPA Region 1 requires that permittees with Total Residual Chlorine limits of 20 ug/l or less use these methods, which have a minimum level of 20 ug/l. The TRC limit for the South Hadley WWTP is 1 mg/l so the permittee may use any of the methods for TRC listed in Part 136. EPA has removed this portion of the footnote to eliminate any confusion.

Comment A.3:

- b. *The draft permit has a requirement, under Section 1, footnote 7, for adding an alarm for interruptions or malfunctions of the chlorination system. The facility has had few mechanical issues related to this system, and has proactively addressed issues and upgraded this system. There were no mechanical failures in 2009 or 2010. In early 2011, the Plant replaced the original diaphragm pumps with peristaltic pumps, and tied this in to the facility SCADA system and flow signal. The system, which had undergone only minimal testing at this point, had to be started almost a month early due to excessive rain and snowmelt creating high flow conditions at the plant for all of March. Six of the eight mechanical violations reported in 2011 were due to a programming error which was identified, and corrected in early April; the other two were related to tubing issues on the new pumps, also addressed.*

The staff inspects the chlorination system every morning during plant rounds, and is diligent with both routine and preventative maintenance. This past month, the facility replaced all of the original polyvinyl chloride (PVC) piping for this system with chlorinated polyvinyl chloride (CPVC) to eliminate potential problems associated with corrosion. As previously mentioned to EPA, there was some suspicion that there was a communication error in the system. Electrical contractors were hired to go over the entire system, and did find a short in the signal cable that will sometimes affect the speed of both pumps, regardless of the actual signal. Parts have been ordered and this will be resolved next week. This is not a malfunction or interruption

an alarm would pick up. In point of fact, the alarm would only have been of use for one violation, and would most likely not have prevented it. Based on the above, and the history of compliance pertaining to mechanical issues (outside the installation of the new system), there appears to be little benefit in installing the alarm.

Response A.3:

EPA Region 1 has been requiring the installation of alarm systems in all NPDES permits issued to POTWs in Massachusetts that use chlorination for disinfection of their effluent, regardless of their compliance history and the age of the system(s). The intent of this requirement is to ensure that facilities with chlorination systems have an alarm system installed solely for the purpose of alerting WWTP personnel in the event of a malfunction and/or interruption of the chemical dosing systems (i.e., for detecting a failure of the chemical delivery system) which could potentially affect the amount of chlorination chemicals added to the effluent. This requirement shall remain in the final permit.

To the extent that the Town believes the actions described in this comment have reduced or remedied the historic disinfection problems it may describe these in the disinfection system study described in Response A.1. We do note, however, that the data submitted on the May 2012 DMR (submitted after the comment) shows an exceedance of the maximum daily limit for fecal coliform bacteria, indicating that the actions described by the Town may not have been sufficient to remedy the disinfection problems.

Comment A.4:

- c. The draft permit also increases TRC testing to twice per day, and requires the reporting of all individual results and operational modifications as a result of the tests. The plant has always completed and documented additional testing as needed to establish and maintain control. Although not required to individually report results, they were factored in to the submitted data, and the actual number of tests reported for the month. As I have mentioned in many cover letters for the Discharge Monitoring Reports (DMR's), the issues with TRC control are usually the result of significant changes overnight when staff are not present, either due to low flows, heavy rains increasing the flow, or, most often, changes in chlorine demand, probably due to incomplete nitrification. Since the signal is a percentage of the flow, there is a lag time between changes in dosing, and changes in demand can be determined only by testing. In addition, the previously mentioned short in the signal cable may have affected pump speeds during some of these instances. If testing in the morning indicates a problem, or there is a significant change during the day, plant personnel will continue to monitor and adjust until the system is in control. The plant also maintains a log sheet of all adjustments made to the system. It is the Town's opinion*

that increasing the test frequency during the day when the facility is staffed, and increasing the reporting burden, will not alleviate the problem.

Response A.4:

The TRC limit in the South Hadley permit is 1 mg/l, which is the maximum limit allowed under Massachusetts' toxicity policy¹. As previously mentioned, EPA Region 1 is concerned about the WWTP's difficulty in controlling total residual chlorine, a toxic chemical. The plant's difficulties with proper dosing of TRC have also led to exceedances of the bacterial limit which may impact the existing uses of primary and secondary contact recreation.

EPA believes the more frequent monitoring; along with the submittal of all monitoring information related to total residual chlorine will provide important information for understanding the plant's difficulties with chlorine control.

The Part II General Conditions, which are attached to every NPDES permit, require permittees *to retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation,...for a period of at least 3 years from the date of the sample, measurement, report or application.* Given that the permittee is already required to maintain this information, EPA does not believe the submittal of this information places an undue burden on the permittee. As previously mentioned, EPA is concerned that the plant is having a significant problem with chlorine control given that the injection of sodium hypochlorite is common technology, employed by many WWTP without similar issues.

Comment A.5:

The South Hadley treatment plant is unusual in that it has an open channel cascade for its discharge to the Connecticut River. The consulting firm which designed the plant indicated that its purpose was to dechlorinate the effluent prior to entering the Connecticut River. Due to accessibility issues, TRC has always been sampled from the end of the chlorine contact chambers (CCC's) prior to discharge to the cascade. The Town proposes that instead of additional testing and reporting for the CCC effluent, the facility will set up a safe access point, and will simultaneously monitor TRC levels in the cascade and river outfall for a chlorination season, and determine the level of dechlorination achieved. This would provide data that is reflective of what is actually entering the river, rather than a sample collected at the tail end of the treatment tank, and may even indicate that what actually enters the river is and always has been in compliance with the Permit. There is precedence for this, as many treatment plants

¹ MassDEP, 1990, "Massachusetts Water Quality Standards, Implementation Policy for the Control of Toxic Pollutants in Surface Waters", Part VI. D.

monitor for this parameter in the effluent pipe downstream of the facility prior to actual discharge to a waterbody.

Response A.5:

EPA understands that the facility was constructed to dechlorinate through the use of an open channel cascade. NPDES regulations require that *samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity*. [40 CFR§122.41(j)(1)]. If the permittee can establish a safe and accessible sampling point downstream of the cascade that will provide samples representative of the discharge entering the river, EPA would approve a change in the TRC monitoring location. Such a change in location would require a written request to EPA and MassDEP, and the change would become effective upon written approval by EPA/MassDEP. The permittee would still be required to report all TRC sampling results collected using EPA approved methods.

Comment A.6:

Section 1.A.1 (Toxicity Testing using trout): The draft Permit requires toxicity testing with trout twice per year for the first 2 years of the Permit. Based on the information provided in the fact sheet, there was little or no justification specific to South Hadley for requiring this test, for example pollutants of concern. The fact sheet states this requirement came about from the informal consultation with National Marine Fisheries Service (NMFS) for the City of Chicopee Water Pollution Control Facility. According to the fact sheet, NMFS further determined that there are adult and juvenile shortnose sturgeon in the vicinity of the Chicopee outfall (and therefore South Hadley), but most likely not ELF (early life stages). NMFS requested additional testing with a test species more representative of the shortnose sturgeon and EPA then determined that testing with trout would satisfy this request. The Town feels that this additional monitoring is unwarranted, and objects to this requirement for the following reasons:

Response A.6:

EPA has re-evaluated this requirement and has decided to remove the requirement for whole effluent toxicity testing using *Salvelinus fontinalis* (Brook trout). The primary factors affecting this decision were the large dilution factor, 273:1 and the minimal industrial contributors. Specific responses to South Hadley's comments can be found below:

- *In section 13.3 of the Fact Sheet for South Hadley, EPA states that the Short Nose Sturgeon was the only endangered species that could be potentially influenced by the discharge, and also states that it was their "preliminary determination that the operation of this facility, as governed by the permit action, is not likely to adversely affect the species of concern" (shortnose sturgeon).*

Response A.6.a:

It is correct that as part of the informal Section 7 consultation with the National Marine Fisheries Service (NMFS), EPA made a preliminary determination that the operation of this facility, as governed by the permit action, is not likely to adversely affect shortnose sturgeon. The determination was made after reviewing a number of environmental factors as well as the expected effluent characteristics of the outfall. The outfall related factors were strongly influenced by the past history of operation of the facility, the expected future performance of the facility, and importantly, the monitoring and other requirements placed in the draft permit to verify compliance and support the basis of the preliminary determination. The permit requirement for a limited number of WET tests using Brook trout was part of this determination, rather than added after the determination as seems to be implied by the commenter. However, as described in Response A.6, EPA has removed the Brook trout WET testing after considering environmental factors. EPA received a concurrence letter from NMFS, dated August 14, 2012, which concluded that the reissuance of the South Hadley permit is not likely to adversely affect Short-nosed Sturgeon or Atlantic sturgeon.

- *The test itself is conducted on an Early Life Stage, which is not expected to be in the vicinity of the discharge, and may have different sensitivities than the stages expected to be present.*

Response A.6.b:

First, as a point of clarification, this comment is not technically correct. The WET test itself is not conducted on an early life stage (ELS; egg or larva) of brook trout. The EPA WET Testing Protocol specifies brook trout fry to be used.

Setting that technicality aside, the comment shows a lack of understanding of the rationale used to select an appropriate WET Test species. A test species is not selected on the basis of matching life stages with a species in the receiving water. The species selected by EPA for effluent toxicity tests in the NPDES program represent a “performance standard” or indicator of sensitivity to toxicity for a given phylogenetic category. The test species in the EPA-approved WET methods were chosen because they span the sensitivity range of the species of the ecosystem studies, the species test with a known level of precision (the test species as a whole respond in a consistent manner when a WET test is repeated), they are readily cultured or maintained in the laboratory and they are available throughout the year from commercial sources in sufficient quantity and quality for testing purposes.

While the adult and juvenile life stages of shortnose sturgeon may be found in the vicinity of the facility, the life stage of the protected species alone does not dictate the appropriate surrogate WET Test species that is used.

- *The testing will cost \$2100 dollars per test. This test also requires fresh sample and diluent for renewal to be picked up and delivered to the test lab in Manchester, CT on the second day, which will be an additional expense. This is \$4200 plus per year. To put this in perspective, this is about one third of the treatment plant's current annual budget for analytical, which is used for both the treatment plant compliance testing and the testing for the industrial pretreatment program. This is also in addition to the \$1300 in annual costs for the Ceriodaphnia toxicity testing and associated chemical testing.*

Response A.6.c:

EPA recognizes that including trout as a secondary test species for WET testing would be a significant expense to the Town of South Hadley. See response A.6.

- *For the past 6 years (or the life of the current Permit) the facility has completed toxicity testing on the effluent 14 times. The results are almost always greater than 100% effluent, with two exceptions. The first was in June 2006, when the LC50 was 70.7 %, still well above the permit limit. The facility retested the following month with a result of >100% effluent. The second was during a reported plant upset in August 2010, and again the LC50 was >70.7 % effluent.*

Response A.6.d:

EPA concurs with the permittee that the WET test results submitted during the life of the current permit (June 2006 to present) have been in compliance with the permit. To be clear however, this alone does not prove that similar results would be obtained using brook trout.

Date	LC50 Permit Limit = 50% (Ceriodaphnia dubia)
6/2006	>100%
9/2006	70.7%
6/2007	>100%
9/2007	>100%
6/2008	>100%
9/2008	>100%
6/2009	>100%
9/2009	>100%
6/2010	>100%
9/2010	>100%
6/2011	>100%
9/2011	>100%

- *The treatment plant initiated annual toxicity testing of the influent in 2010. The facility has completed this test on the influent 3 times, and each time the LC50 was greater than 100% influent.*

Response A.6.e:

WET testing of the influent is not required by the NPDES permit. However, WET tests on influent with LC50 results of greater than 100% suggests that the effluent should not be toxic for the tested species.

- *The plant continuously struggles with nitrifying bacteria, and sent samples to a microbiologist for examination. He stated that despite the difficulties nitrifiers can cause in the process, on a positive note, due to their sensitivity they were indicative of little or no toxicity in the plant.*

Response A.6.f:

EPA acknowledges the comment.

- *This WWTP is essentially a domestic sewage treatment facility, with industry only accounting for approximately 125,000 gallons of the average 3.2 million gallons per day flow at the treatment plant.*

Response A.6.g:

As described in Response A.6., this information contributed to EPA's decision to eliminate the brook trout testing. The facility receives wastewater from only 3 industrial contributors and that contribution is less than 4% of annual average flow.

Comment A.7.

Section 1.B (Nitrogen): The Town has no objections to the additional monitoring and parameters required for total nitrogen, or the annual allowable discharge loading. However, there is some concern regarding the Nitrogen Optimization Plan and its requirements. The Town would like to point out that nitrification and denitrification, and even use of anoxic zones, can be problematic at smaller plants like South Hadley that are easily influenced by fluctuations in BOD, flow and heavy rains. In addition, this can create additional problems with chlorine demand and maintaining an adequate residual. Although it is understood that the required Nitrogen Optimization Plan is standard language in Connecticut Watershed Permits, this may create an additional operational and compliance burden on a smaller facility like South Hadley.

Response A.7:

Part I.C. (Special Conditions) of the draft permit requires the permittee to conduct an evaluation which identifies any aspects of the treatment process at the existing facility that can be modified to maintain and/or enhance nitrogen removal rates. The permit requires that the facility implement optimization methods in order to maintain current loadings of nitrogen. The permittee should not implement optimization that is not necessary to maintain nitrogen loads less than its baseline loadings if it will jeopardize attainment of other effluent limits. Each year subsequent to the first year in which the reissued permit is effect, the permittee shall report to EPA and MassDEP the annual nitrogen load discharged from the facility and shall summarize any optimization measures employed at the facility over the past year to enhance or maintain nitrogen removal rates.

The requirements of Part I.C. of the draft permit are being included in all NPDES discharge permits issued to POTWs which discharge to receiving waters that are tributaries to Long Island Sound. The intent of these requirements is to ensure that loadings of total nitrogen from out-of-basin point sources discharging to the Connecticut, Thames, and Housatonic River watersheds remain at or below the required aggregate 25% reduction from the baseline total nitrogen loading required by the Waste Load Allocation included in the TMDL for Long Island Sound. The requirements of Part I.C. of the draft permit shall remain unchanged in the final permit.

Comment A.8:

Section G.1.A (Report Submittals): The Draft Permit specifies that DMR's and copies of all other reports for EPA are to be submitted using NetDMR, which South Hadley currently does. However, it further states that the Permittee should continue to send hard copies of all reports other than DMR's to the State. During the training for NetDMR, a representative of DEP said the hard copies were not required. South Hadley has been submitting all reports for EPA and MA DEP electronically for a couple of years now, and questions the need to go back to paper reporting for State submittals.

Response A.8:

MassDEP currently requires that permittees submit hard copies of all reports. MassDEP anticipates that at some future date it will not require submittal of hard copies and will notify permittees when this requirement ends.

B.) Comments received from Andrea F. Donlon, River Steward, Connecticut River Watershed Council, dated March 28, 2012

Comment B.1:

I am submitting comments on the draft National Pollutant Discharge Elimination System (NPDES) permit for the South Hadley Wastewater Treatment Plant (WWTP) on behalf the Connecticut River Watershed Council (CRWC). The Connecticut River, an American Heritage River, is a regional resource that merits the highest level of protection. The Connecticut River downstream of the Holyoke dam is listed as an impaired water body due to priority organics (PCBs), pathogens, and total suspended solids. CRWC is particularly interested in improving water quality in the Connecticut River so that it can support a high quality fishery as well as existing primary and secondary contact uses, even during wet weather.

Response B.1,:

EPA acknowledges the comment.

Comment B.2:

The protection of existing uses is required under 40 CFR 131.12(a)(1). Below is our understanding of existing uses on the Connecticut River in the vicinity of the outfall, which is located downstream of the Holyoke dam, just over the South Hadley/Chicopee town line in Chicopee.

- The Perjovski state ramp is a small state-owned boat launch just upstream of the outfall pipe. This spot is used mostly by boaters and anglers.*
- A boat launch owned and operated by the City of Holyoke is located directly across the river from Chicopee's Jones Ferry CSO Treatment Facility, a little over three miles downstream of the outfall. This site, the Jones Ferry River Access Center, has a newly built meeting room and picnic area, and is the launching point for a group called Holyoke Rows (<http://www.holykerows.org/>), which offers rowing, kayaking, and canoeing programs for children and adults. The general public uses this site as a launching point, mainly for canoes and kayaks. In addition, anglers use the wooden docks at this access point as a fishing spot.*
- A state-owned boat ramp (Medina Street) is located in Chicopee about 4½ miles downstream of the outfall. This boat ramp is extremely busy with motor boat launching on most weekend days in the spring, summer, and fall. This is especially true during the height of the spring fish migration period.*

Response B.2:

The final permit includes effluent limits that protecting the existing and designated uses of the Connecticut River in the vicinity of the discharge.

Comment B.3:

We commend the town of South Hadley for eliminating their CSOs in 2007. This was a significant investment by the town and has been a boon to the river.

Response B.3:

EPA concurs with the commenter.

Comment B.4:

*We are very supportive of the addition of brook trout (*Salvelinus fontinalis*) for whole effluent toxicity testing. It is re-assuring to see a species added that is a closer reflection of the types of fish present in the Connecticut River and that matches the restoration goals for the entire watershed.*

Response B.4:

Upon further considerations, EPA has removed the brook trout toxicity testing in the permit. Please see the response to Comment A.6 for details regarding this decision.

Comment B.5:

We support the increased testing frequency for total phosphorus and nitrogen compounds.

Response B.5:

EPA acknowledges the comment.

Comment B.6:

Page 10 of the Fact Sheet describes the 7Q10 and dilution calculation for the Connecticut River at the outfall pipe. It would be nice to verify this 7Q10 because the outfall pipe is located across from the Holyoke canals, and though there are several discharges from the canal upstream of this point, the full river flow is probably not present at this spot. The new location for the USGS gage downstream of the Holyoke dam has been in place for 10 years and there should be a reasonable 7Q10 by now. Perhaps the old USGS gage would produce a more representative flow because that location was upstream of the canal discharge.

Response B.6:

As discussed in the Fact Sheet, the 7Q10 used in developing this permit was from the 1998 Water Quality Assessment Report for the Connecticut River, Appendix C, Table C1. The 7Q10 value was calculated using data from USGS streamflow gage, 01172003, which was operated from December 1983 through September 2002 and was located just below the power dam at Holyoke. This location is downstream of the canal diversion and upstream of the South Hadley WWTF discharge and the canal discharge. The new USGS streamflow gage, 01172010, is located at the I-391 Bridge which is downstream of both the discharge from the Holyoke canals and the South Hadley WWTF. It has been operated from October 2002 until present and replaced gage 01172003. The use of the 7Q10 calculated for the gage 01172003 is more protective as the canal flows have already been diverted.

In addition, EPA has determined that the the flow data from the new gage, 01172010, should not be used to calculate a 7Q10 for the new gage station because there is insufficient data in the current period of record. The Dflow Technical Guidance Manual states that 20 to 30 years of record is a reasonable minimum requirement for extreme value analysis at a 10-year return period.

Comment B.7:

The Fact Sheet at page 13 explains that five bacteria violations over the past 24 months were due to mechanical failure of the chlorine pump, which has been replaced. This would lead us to believe that not enough chlorine was used to kill the bacteria, but the fact sheet at page 14 indicates that there have been 11 exceedances of the maximum daily total residual chlorine (TRC) limit in the last 24 months. The Fact Sheet explains the permittee's difficulty with TRC control, saying pumps were replaced, but that plant staff have also been unable to pinpoint a cause for communication errors in the SCADA system. Until this problem is fixed, it seems to us that TRC and bacteria will continue to be a problem.

Response B.7:

The final permit requires the permittee to install an alarm system that will notify WWTP staff in the event of a malfunction and/or interruption of the chemical dosing systems (i.e., for detecting a failure of the chemical delivery system) that could potentially affect the amount of chlorination chemicals added to the effluent. EPA has also required the permittee to complete a study of the chlorination/dechlorination system. This requirement will require the permittee to address chlorination system issues immediately and will provide additional insight into the chlorine control issues at the WWTP. Please see the response to Comments A.1, A.2 and A. 3 for further information.

Comment B.8:

The Fact Sheet on page 23 says that the Town of South Hadley estimates an average of 770,000 gallons of infiltration and inflow (I/I) per day that flows into the treatment plant. That is a high amount of I/I. The Fact Sheet also gives detailed information on the I/I Control Plan and past studies. However, what is missing is the amount of progress on I/I reductions over the years, since the Town first surveyed I/I 20 years ago. Their plan was developed approximately 5 years ago – has the plan helped them reduce volumes at all?

Response B.8:

As previously noted by the commenter, the Town of South Hadley has eliminated all CSOs. In some cases, the method of eliminating the CSO included the transport of increased flows to the WWTP for treatment. The new Operation and Maintenance section of the permit requires the permittee and co-permittees to have an ongoing preventative maintenance program, prepare a sewer collection system map, prepare and implement a collection system operation and maintenance plan, and submit annual reports summarizing all activities related to implementation of the operation and maintenance plan. The Town of South Hadley is focused on I/I removal now that all the CSOs have been eliminated.

Comment B.9:

*Section B of the permit stipulates special conditions for nitrogen, requiring the permittee to complete an evaluation of alternative methods for operating the facility to optimize the removal of nitrogen. The permit expects the facility to discharge less than the “existing” annual average discharge load of 793 lbs/day. This number is based on 2004-2005 data, and many NPDES permit fact sheets include a table showing all municipal NPDES permits in MA, NH, and VT with average total nitrogen concentrations, average flow amounts, and the loading values. This table (not provided in this Fact Sheet, but we referred back to Chicopee’s Fact Sheet), indicated that in 2004-2005, South Hadley had the 9th largest discharge volume of wastewater treatment plants in the Massachusetts part of the Connecticut River watershed, but was 4th highest in terms of nitrogen load. In fact, the average concentration of nitrogen was the second highest in the MA part of the watershed. Because the current permit has been in place for five years and has required monthly nitrogen sampling, CRWC took a look at more current data available for the facility as provided in the EPA ECHO database. To get monthly average concentrations for total nitrogen, we added TKN and nitrate+nitrite together. We then calculated a monthly loading value by taking the monthly average total nitrogen concentration, multiplying it by the monthly average effluent flow, and using conversion factors to get the units right. We then averaged those numbers over a calendar year for 2009 and 2010, the two most recent years that have data for the entire year available online. We calculated an annual average discharge load of **304 lbs/day in 2009 and 397 lbs/day in***

2010. *If our calculations are correct, then we question whether using 2004-2005 as a baseline in this permit is the most appropriate, for two major reasons:*

- *The 793 lbs/day limit proposed in this permit is so much higher than what seems to be the actual current loading range for this plant, that the limit and the required nitrogen reduction loading plan is immediately rendered meaningless.*
- *We all know Long Island Sound is impaired and additional nitrogen reductions are needed. Why not take credit for reductions that have already taken place, and work to get meaningful reductions in the most cost-effective ways possible? If towns like South Hadley have already reduced nitrogen inputs and could do more relatively easily, won't this be less costly for taxpayers and ratepayers in general than trying to identify and implement a variety of other projects like stormwater BMPs in the watershed?*

Response B.9:

In consideration of this comment, EPA re-calculated the baseline loading for the South Hadley WWTP and found that an error had been made in our calculations. Based on the years of 2004-2005, the baseline loading is actually 682 lbs/day of total nitrogen. This value has been included in the final permit as the baseline total nitrogen loading limit for the South Hadley WWTP (see attached table).

As described in the fact sheet, using 2004-2005 effluent data and estimates, it was shown that the nitrogen loads from POTWs in Massachusetts, New Hampshire, and Vermont tributary to Long Island Sound were attaining the wasteload required by the Long Island Sound TMDL². EPA has no grounds at this time for requiring further reductions from individual treatment plants.

Additionally, EPA notes that the Town has attributed some operational difficulties at the plant to problems controlling the nitrification/denitrification process. This gives us further caution against requiring more stringent levels of control of nitrogen in the permit (also see the response to Comment A.7).

C.) Section 401 Certification

In its Section 401 certification of the permit, the Massachusetts Department of Environmental Protection (MassDEP) included the following statement:

The Department recognizes that the permit condition at Part I, Section C.4 is a new requirement and the 30 month compliance schedule in which to complete all collection system mapping may not be sufficient in all cases. Technical knowledge

² NYDEC and CTDEP, 2000, "A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound", pp. 73.

and capacity to perform this work may need to be supported initially to accomplish these goals, and some permittees may want to coordinate this work with separately required stormwater collection system mapping requirement expected during the permit term. Initial feedback from a variety of permittees indicated that 48 months may be needed to accomplish this task, aligning the results with the permit compliance evaluation cycle. The Department supports a deadline of 48 months to reasonably accomplish this task. However, if at any time before the current schedule has expired, the permittee determines compliance with the current schedule will not be met, the permittee may submit in writing a request to both agencies to change the deadline in accordance with the regulatory provisions of each agency through permit modification establishing an alternative schedule. Such request must include: a) specific reasons why the extension is necessary; b) documentation dating the progress made to date; c) a proposed alternative date for completing the work; and d) any other relevant information supporting the request for a modified schedule.

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency validating the permit's compliance with the pertinent federal and state water pollution control 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. 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)." 40 C.F.R. § 124.55(a). Section 124.53(e) 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, 40 C.F.R. § 124.53(e)(2), and shall include "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," *id.* § 124.53(e)(3). Under 40 C.F.R. § 124.55(c), "a State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition."

EPA's "duty under CWA section 401 to defer to considerations of State law is intended to prevent EPA from *relaxing* any requirements, limitations, or conditions imposed by the State law." *In re City of Jacksonville*, 4 E.A.D. 150, 157 (EAB 1992); *In re City of Moscow*, 10 E.A.D. 135, 151 (EAB 2001); *accord In re Ina Rd. Water Pollution Control Facility*, 2 E.A.D. 99, 100 (CJO 100). EPA believes that the 30 month schedule for completing the required mapping included in the draft permit is reasonable and notes that there were no comments regarding this schedule submitted during the public comment period. The 30 month schedule has been included in the final permit.

EPA acknowledges that EPA's recent draft NPDES municipal stormwater general permit for affected Massachusetts municipalities contains storm sewer mapping requirements as a component of the illicit discharge detection and elimination program, and that

municipalities may want to conduct storm sewer mapping in conjunction with sewer system mapping. Further, EPA generally agrees with MassDEP that if the permittee submits information showing that despite its best efforts it is unable to complete the required sewer system mapping within the specified period (e.g. if field work for both sewer system mapping and collection system mapping is longer than for mapping the sewer system alone), EPA may allow a reasonable extension of the schedule. However, EPA will not be inclined to grant extensions to municipalities that seek schedule extensions that are based on a delay in initiating collection system mapping because they were awaiting issuance of the municipal stormwater permit.

D.) Other Changes

Footnote 10 – EPA changed the language in Footnote 10 to read:

“The LC₅₀ is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 50% limit means that a sample of 50% effluent shall cause no more than a 50% mortality rate.”

This change was made to eliminate any confusion and does not change the limit.

Section C - EPA changed the language in the first paragraph in Section C, Unauthorized Discharges, to make it clear that the permittee and co-permittees may be authorized to discharge under other NPDES permits. EPA specifically recognizes that the City of Chicopee is authorized to discharge by NPDES permit No. MA0101508. The language now reads:

“This permit authorizes the permittee and co-permittees to discharge only from the outfall(s) listed in Part I A.1. of this permit and only in accordance with permit's terms and conditions. Unless authorized by another NPDES permit, discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized and shall be reported to EPA and MassDEP in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).”

South Hadley WWTF Total Nitrogen Load (2004-2012)

Date	TKN (mg/l)	Nitrate+Nitrite (mg/l)	Total Nitrogen (mg/l)	Flow (MGD)	Load (lbs/day)	Annual Average (lbs/day)	2004-2005 Average (lbs/day)
1/31/2004	19.1	12.1	31.2	2.294	595		
2/29/2004	28.9	11.7	40.6	2.59	875		
3/31/2004	22.5	18.6	41.1	2.535	867		
4/30/2004	6.5	5.3	11.8	3.776	371		
5/31/2004	7.42	10.5	17.92	3.149	469		
6/30/2004	15.8	3.1	18.9	2.861	450		
7/31/2004	39.5	4.9	44.4	2.312	854		
8/31/2004	41.6	7.7	49.3	2.193	900		
9/30/2004	29.9	9.1	39	2.417	784		
10/31/2004	16.8	5.8	22.6	2.481	467		
11/30/2004	33.7	4.5	38.2	2.398	762		
12/31/2004	26	13.1	39.1	2.84	924	693	
1/31/2005	20.2	11.2	31.4	3.403	889		
2/28/2005	38.1	9.5	47.6	3.469	1374		
3/31/2005	22.9	8.4	31.3	3.677	958		
4/30/2005	6.72	5.45	12.17	4.079	413		
5/31/2005	12	4.1	16.1	3.587	480		
6/30/2005	30.7	5	35.7	2.862	850		
7/31/2005	11.3	3.44	14.74	2.426	298		
8/31/2005	13.1	2.4	15.5	2.096	270		
9/30/2005	13.8	4.2	18	1.883	282		
10/31/2005	32.8	5.6	38.4	3.355	1072		
11/30/2005	6.7	10.1	16.8	3.698	517		
12/31/2005	9.5	10.2	19.7	3.747	614	668	682
1/31/2006	4.5	1.7	6.2	5.457	281		
2/28/2006	7.5	1.5	9	4.995	374		
3/31/2006	16.5	6.7	23.2	3.936	760		
4/30/2006	36.8	2.6	39.4	3.478	1140		
5/31/2006	22.1	2	24.1	3.945	791		
6/30/2006	14.8	4.6	19.4	4.094	661		
7/31/2006	25.1	5	30.1	3.47	869		
8/31/2006	29.2	3.1	32.3	2.928	787		
9/30/2006	30	3.28	33.28	1.86	515		
10/31/2006	17	1.7	18.7	2.52	392		
11/30/2006	7.1	0.082	7.182	3.35	200		
12/31/2006	5.4	2.9	8.3	2.41	166	578	
1/31/2007	3.5	7.8	11.3	2.61	245		
2/28/2007	4.1	7.1	11.2	1.63	152		
3/31/2007	5.2	10.5	15.7	3.31	432		
4/30/2007	5.3	4.3	9.6	4.29	343		
5/31/2007	13	3	16	2.69	358		
6/30/2007	17.8		17.8	2.3	341		

Date	TKN (mg/l)	Nitrate+Nitrite (mg/l)	Total Nitrogen (mg/l)	Flow (MGD)	Load (lbs/day)	Annual Average (lbs/day)
7/31/2007	23.4	0.03	23.43	1.83	357	
8/31/2007	24	0.051	24.051	1.63	326	
9/30/2007	n/d	n/d	n/d	1.66	n/d	
10/31/2007	30	0.039	30.039	1.78	445	
11/30/2007	12	0.098	12.098	1.96	197	
12/31/2007	13.4	1.74	15.14	2.02	254	314
1/31/2008	19.7	0.15	19.85	2.9	479	
2/29/2008	0.98	3.3	4.28	5.54	197	
3/31/2008	3.4	4.8	8.2	5.3	362	
4/30/2008	8.4	2.7	11.1	4.05	374	
5/31/2008	8.9	5.1	14	3.11	362	
6/30/2008	7.1	9.48	16.58	2.4	331	
7/31/2008	7.8	6.1	13.9	2.86	331	
8/31/2008	3.1	0.9	4	4.14	138	
9/30/2008	4.5	2.4	6.9	4.9	281	
10/31/2008	7.6	0.28	7.88	4.1	269	
11/30/2008	4.2	1.5	5.7	4.4	209	
12/31/2008	10	2.3	12.3	5.8	594	327
1/31/2009	10.7	2.3	13	3.9	422	
2/28/2009	15.7	2.1	17.8	3.5	518	
3/31/2009	7.9	1.9	9.8	4.5	367	
4/30/2009	2.5	7.6	10.1	4	336	
5/31/2009	2.4	6.5	8.9	3.4	252	
6/30/2009	5.1	7.5	12.6	3.2	335	
7/31/2009	2.6	0.03	2.63	3.9	85	
8/31/2009	5	0.07	5.07	3.3	139	
9/30/2009	7.8	0.29	8.09	2.2	148	
10/31/2009	18	1.3	19.3	2.6	417	
11/30/2009	2.03	5.23	7.26	2.9	175	
12/31/2009	10.9	3.6	14.5	3.7	446	304
1/31/2010	20.7	9	29.7	3.2	791	
2/28/2010	15.4	4.8	20.2	3.1	521	
3/31/2010	3.6	2.3	5.9	4.52	222	
4/30/2010	10.6	3.1	13.7	3.7	422	
5/31/2010	12	5.5	17.5	2.5	364	
6/30/2010	5.5	8.2	13.7	2.3	262	
7/31/2010	4.5	5.9	10.4	2	173	
8/31/2010	13	1.6	14.6	2.1	255	
9/30/2010	9	5.3	14.3	2.1	250	
10/31/2010	15.7	3.5	19.2	2.9	463	
11/30/2010	12.5	9.5	22	2.9	531	
12/31/2010	10.4	7.6	18	3.3	494	396
1/31/2011	19	6.8	25.8	2.1	451	
2/28/2011	13.4	11.3	24.7	2.6	534	
3/31/2011	11.5	9.1	20.6	6.89	1181	
4/30/2011	15	2.4	17.4	4.6	666	

Date	TKN (mg/l)	Nitrate+Nitrite (mg/l)	Total Nitrogen (mg/l)	Flow (MGD)	Load (lbs/day)	Annual Average (lbs/day)	2004-2005 Average (lbs/day)
5/31/2011	20	1.5	21.5	3.8	680		
6/30/2011	2.3	13.2	15.5	2.89	373		
7/31/2011	13	3.3	16.3	2	271		
8/31/2011	13	13	26	2.8	606		
9/30/2011	1.2	11.3	12.5	4.1	426		
10/31/2011	12.2	5.1	17.3	4.1	590		
11/30/2011	4.3	10.2	14.5	3.8	458		
12/31/2011	1.3	11	12.3	4	409	554	
1/31/2012	8.5	8.7	17.2	2.9	415		
2/29/2012	11	5.6	16.6	2.4	331		
3/31/2012	16.7	3.9	20.6	2.7	463		
4/30/2012	23	7.5	30.5	2.2	558		
Average	13.8	5.3	19.1	3.2	479		