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 Department 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 **(See ** below)**

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 General Conditions and Definitions, 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 day of

_____	_____
Director Office of Ecosystem Protection Environmental Protection Agency Boston, MA	Director Massachusetts Wastewater Management Program Department of Environmental Protection Commonwealth of Massachusetts Boston, MA

**** This permit will become effective on the date of signature if no comments are received during public notice. If comments are received during public notice, this permit will be made effective no sooner than 30 days after signature.

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.

EFFLUENT CHARACTERISTIC	**EFFLUENT LIMITS**						**MONITORING REQUIREMENTS [3]**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE[3] TYPE**
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] *(April 1- October 31)*	*********	*********	*********	1 mg/l	*********	1 mg/l	2/DAY	GRAB
WHOLE EFFLUENT TOXICITY [8, 10, 11]	*Ceriodaphnia dubia:* $LC_{50} \geq 50\%$						2/YEAR	24-HOUR COMPOSITE[5]
WHOLE EFFLUENT TOXICITY [9, 10, 11]	*Salvelinus fontinalis:* Report LC_{50}						2/YEAR FOR TWO YEARS	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.

EFFLUENT CHARACTERISTIC	**EFFLUENT LIMITS**						**MONITORING REQUIREMENTS [3]**	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE[3] TYPE**
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).

   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. For effluent limitations less than 20 ug/l, compliance/non-compliance will be determined based on the ML. Sample results of 20 ug/l or less shall be reported as zero on the discharge monitoring report.

   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. 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.

9. The permittee shall conduct acute toxicity tests on the brook trout, Salvelinus fontinalis, *two* times per year for the first two years of the permit term. If brook trout are not available for testing at a prescribed time, testing may be conducted on the rainbow trout, Oncorhynchus mykiss for that testing period. Toxicity test samples shall be collected concurrently with the samples for acute toxicity tests on the daphnid, during 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 July 31st and October 31st, respectively. The tests must be performed in accordance with test procedures and protocols specified in 40 CFR Part 136, method 2019 and EPA, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (2002), with the following test condition specifications (see *id*. at 57, Table 15):

Test type:	static renewal
Test duration:	48 hours
Test temperature:	12^{o}C +/- 1^{o}C
Number of replicate chambers per concentration:	4

Test Dates Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**
June September	July 31 October 31	Ceriodaphnia dubia (daphnid)	≥ 50%
June September	July 31 October 31	Salvelinus fontinalis (Brook trout)	Report

10. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

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 perrmittees. 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 793 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

The permittee and co-permittees is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall(s) listed in Part I A.1.of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit 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 DEP 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 C.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 C.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 C.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 works[1] 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.

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

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

- 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.

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:

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

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 MA DEP 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 Report (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, 2nd Floor Worcester, MA 01608
Whole Effluent Toxicity Test Report (Part I.A.1. Footnotes 8 and 11)	By July 31st, October 31st of each year	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, 2nd Floor Worcester, MA 01608

Required Report	Date Due	Submitted by:	Submitted to:
Flow Plan (Part I.A.1.h)	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.	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, 2nd Floor Worcester, MA 01608
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, 2nd Floor Worcester, MA 01608

Required Report	Date Due	Submitted by:	Submitted to:
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, 2nd Floor Worcester, MA 01608
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

Required Report	Date Due	Submitted by:	Submitted to:
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
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

Required Report	Date Due	Submitted by:	Submitted to:
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
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 October 1st	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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TABLE OF CONTENTS

FIGURES

TABLES

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:

Outfall	Description of Discharge	Receiving Water
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 capacity[1].

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, 2007[2]. 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 conditions[3]:

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 unknown[4].

The MassDEP's Connecticut River Watershed, 2003 Water Quality Assessment Report[5] 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 impaired[6].

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 estimates[7].

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.

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[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 (BOD_5)

The draft permit proposes the same BOD_5 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 BOD_5 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 BOD_5 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 BOD_5 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 BOD_5 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 BOD_5 are based on the following equation:

L = C x DF x 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 x DF x 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%) BOD_5 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 BOD_5 and TSS be not less than 85%. This requirement was included in the previous permit.

A review of DMR data shows that BOD_5 and TSS removal percentages average 89% and 95%, respectively. As previously noted, there have been five (5) violations of the 85% removal requirement for BOD_5 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 control[8]. 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 of 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 River[9]. 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 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 Loading[10] (lbs/day)**	**TMDL Target[11] (lbs/day)**	**Current Loading[12] (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 (NO_2), and total nitrate nitrogen (NO_3) 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 (NO_2), and total nitrate nitrogen (NO_3) at a sampling frequency of once per week in the effluent. This is 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 (LC_{50} =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 ≥ 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 literature[15] and information obtained from Dr. Tara Duffy[16], 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 professionals[17] 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

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[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 conditions[18].

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 infiltration[19] (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.

<u>South Hadley</u>

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 though 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 procedures[20]. 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 run[21]. 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 were 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:

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[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 letter[22] 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 invertebrates[23]. 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.

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[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 l990s 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 sis thought to be the primary spawning site for shortnose sturgeon in the Connecticut River.

Although shortnose sturgeon early-life stages (ELSs) 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 m^3 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 m^3 of water sampled) and 4 eggs in 2006 (106,689 m^3 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 m^3 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 l993). 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 l993). 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 as 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 lavae. 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 BOD_5 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 BOD_5 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 ≥ 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 professionals[25] 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 conditions[26].

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 approve 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: barden.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

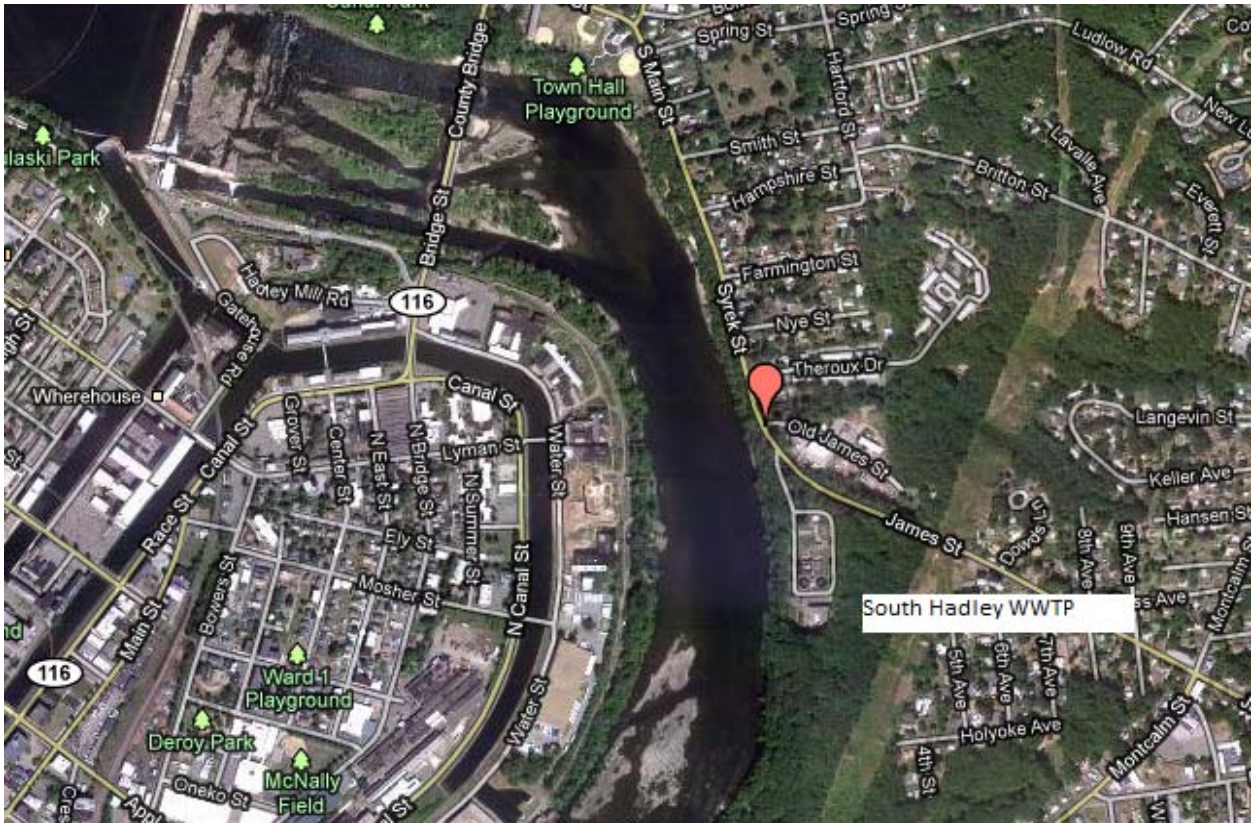

Figure 2: Flow Diagram

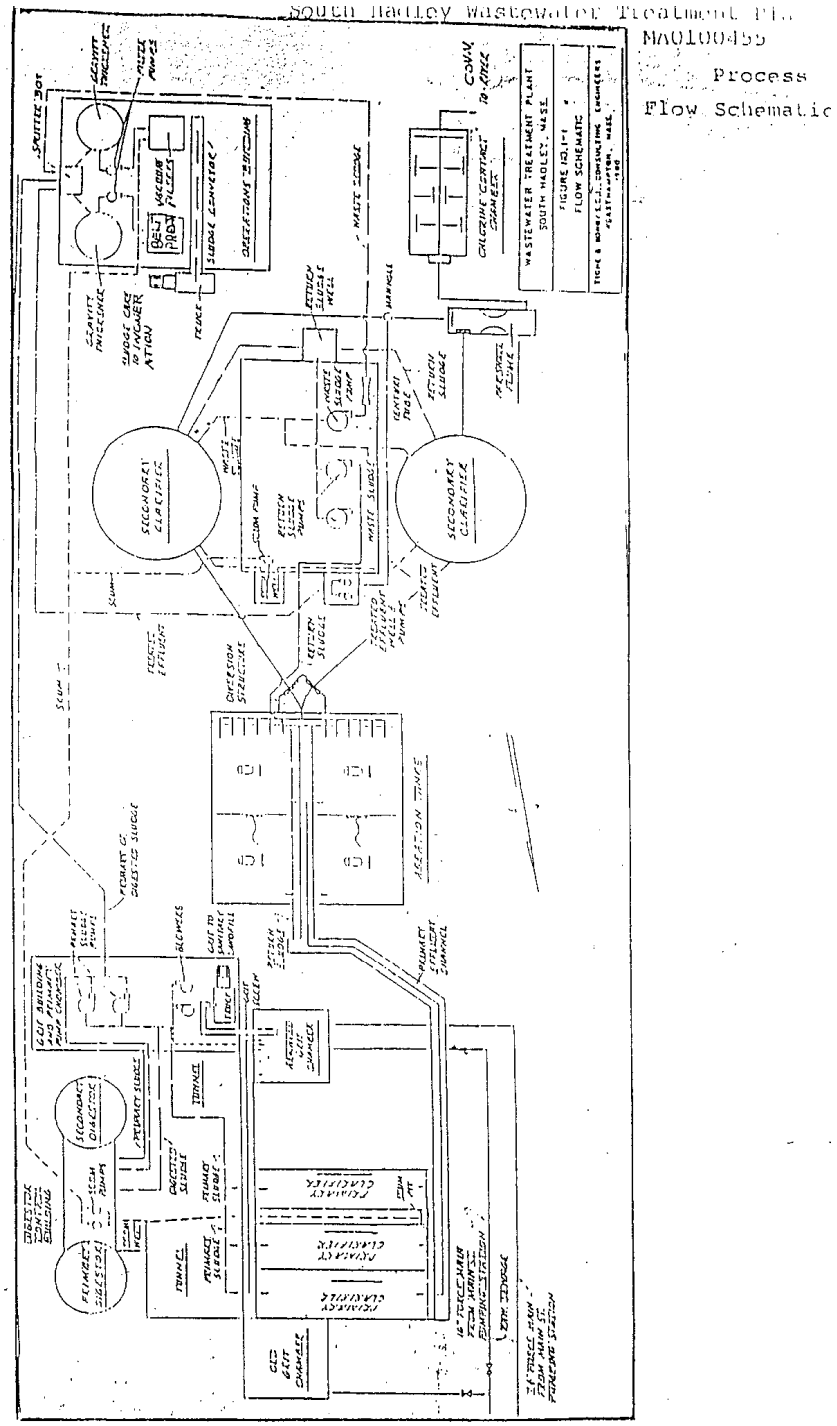

Table 1: Summary of Effluent Characteristics at Outfall 001

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) *Ceriodaphnia dubia*	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

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

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

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTIONS 301 AND 402 OF THE CLEAN WATER ACT, AS AMENDED, AND UNDER SECTIONS 27 AND 43 OF THE MASSACHUSETTS CLEAN WATERS ACT, AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE CLEAN WATER ACT.

DATE OF NOTICE: March 2, 2012

PERMIT NUMBER: **MA0100455**

PUBLIC NOTICE NUMBER: MA-009-12

NAME AND MAILING ADDRESS OF APPLICANT:

Paul Beecher, Town Administrator
Town of South Hadley Selectboard
116 Main Street
South Hadley, MA 01075

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

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

RECEIVING WATER: Connecticut River

RECEIVING WATER CLASSIFICATION: Class B

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) have cooperated in the development of a permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure compliance with the Clean Water Act, 33 U.S.C. sections 1251 et seq.,, the Massachusetts Clean Waters Act, G.L. c. 21, §§ 26-53, 314 CMR 3.00 and State Surface Water Quality Standards at 314 CMR 4.00. EPA has formally requested that the State certify this draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be

certified. However, sludge conditions in the draft permit are not subject to State certification requirements.

INFORMATION ABOUT THE DRAFT PERMIT:

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

Michele Cobban Barden
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1539

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

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of this draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **March 31, 2012**, to the U.S. EPA, 5 Post Office Square, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency for a public hearing to consider this draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this draft permit, the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION:

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

DAVID FERRIS, DIRECTOR
MASSACHUSETTS WASTEWATER
MANAGEMENT PROGRAM
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION

STEPHEN S. PERKINS, DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
ENVIRONMENTAL PROTECTION
AGENCY – REGION 1