

**MODIFICATION 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"),

The City of Somersworth

is authorized to discharge from the Water Pollution Control Facility
located at

**99 Buffumsville Road
Somersworth, New Hampshire 03878**

to receiving water named

**Salmon Falls River
(Hydrologic Code; 01060003)**

in accordance with effluent limitations, monitoring requirements and
other conditions set forth in the Permit issued on
September 29, 2000, except as set forth herein and listed as follows:

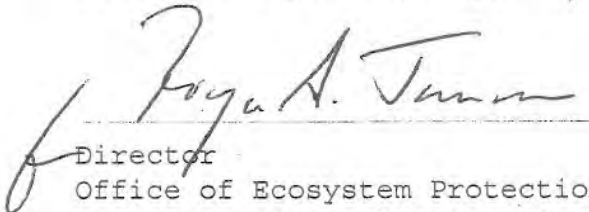
Page 1. Added language to indicate this is Modification No. 1 of the permit.

Page 6. Changed Total Phosphorous concentration limit to 0.75 mg/l.

This modified permit shall become effective on date of signature.

This Permit modification and the authorization to discharge expires at
midnight, October 29, 2005. -

Signed this 20th day of April, 2004


Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency (EPA)
New England Region
Boston, Massachusetts

PART I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS FOR THE ANNUAL PERIOD JUNE 1ST - SEPTEMBER 30TH

1.a. During the period beginning on the effective date of the permit and lasting through September 29, 2005, the permittee is authorized to discharge treated sanitary waste waters from outfall Serial Number 001 (Somersworth Water Pollution Control Facility) into Salmon Falls River. During the annual period June 1st - September 30th such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	Discharge Limitations						Monitoring Requirement		
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type	
Flow, MGD	—	—	—	Report	—	Report	Continuous	Recorder ¹	
BOD ₅	600 lbs/day	901	1001 lbs/day	30 mg/l	45 mg/l	50 mg/l	2/Week ³	24-Hour Composite	
TSS	600 lbs/day	901 lbs/day ²	1001 lbs/day	30 mg/l	45 mg/l	50 mg/l	2/Week ³	24-Hour Composite	
Total Phosphorus ⁴ (May 1 st -September 30 th)	20 lbs/day	—	—	1.0 mg/l	—	—	2/Week	24-Hour Composite	
Ammonia Nitrogen as N	—	Report lbs/day	—	—	—	—	2/Week	Grab	
pH ²	6.5-8.0 (See PART I.E.1.a.)						1/Day	Grab	
<u>Escherichia coli</u> ^{2,5} (Colonies per 100 ml)				126			406	3/Week	Grab
Total Residual Chlorine ⁶				0.08 mg/l			0.14 mg/l	1/Day	Grab

Continued on next page

PART I.A.1.a (Continued)

Effluent Characteristic	Discharge Limitations	Monitoring Requirement	
		Measurement Frequency	Sample Type
Whole Effluent Toxicity			
LC50 ^{7,8,9} ; in percent	100	2/Year	24-Hour Composite
C-NOEC ^{8,9,10,11} ; in percent	≥13.6	2/Year	24-Hour Composite
Ammonia Nitrogen as Nitrogen; mg/l ¹²	Report	2/Year	24-Hour Composite
Hardness; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Aluminum; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Cadmium; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Chromium; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Copper; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Nickel; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Lead; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Zinc; mg/l ¹²	Report	2/Year	24-Hour Composite

(Note: See page 10 and 11 for explanation of superscripts.)

PART I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS FOR THE ANNUAL PERIOD OCTOBER 1ST - MAY 31ST

1.b. During the period beginning on the effective date of the permit and lasting through September 29, 2005, the permittee is authorized to discharge treated sanitary waste waters from outfall Serial Number 001 (Somersworth Water Pollution Control Facility) into Salmon Falls River. During the annual period October 1st - May 31st such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	Discharge Limitations						Monitoring Requirement		
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type	
Flow, MGD	—	—	—	Report	—	Report	Continuous	Recorder ¹	
BOD ₅	600 lbs/day	901	1001 lbs/day	30 mg/l	45 mg/l	50 mg/l	2/Week ³	24-Hour Composite	
TSS	600 lbs/day	901 lbs/day ²	1001 lbs/day	30 mg/l	45 mg/l	50 mg/l	2/Week ³	24-Hour Composite	
Ammonia Nitrogen as N	—	Report lbs/day	—	Report mg/l	—	—	2/Week	Grab	
pH ²	6.5-8.0 (See PART I.E.1.a.)						1/Day	Grab	
<u>Escherichia coli</u> ^{2,5} (Colonies per 100 ml)				126			406	3/Week	Grab
Total Residual Chlorine ⁶				0.08 mg/l			0.14 mg/l	1/Day	Grab

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PART I.A.1.b (Continued)

Effluent Characteristic	Discharge Limitations	Monitoring Requirement	
		Measurement Frequency	Sample Type
Whole Effluent Toxicity			
LC50 ^{7,8,9} ; in percent	100	2/Year	24-Hour Composite
C-NOEC ^{8,9,10,11} ; in percent	≥13.6	2/Year	24-Hour Composite
Ammonia Nitrogen as Nitrogen; mg/l ¹²	Report	2/Year	24-Hour Composite
Hardness; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Aluminum; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Cadmium; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Chromium; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Copper; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Nickel; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Lead; mg/l ¹²	Report	2/Year	24-Hour Composite
Total Recoverable Zinc; mg/l ¹²	Report	2/Year	24-Hour Composite

(Note: See page 10 and 11 for explanation of superscripts.)

PART I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS FOR THE ANNUAL PERIOD JUNE 1ST - SEPTEMBER 30TH
 1.c. During the period beginning on September 30, 2005, and lasting through the expiration date, the permittee is authorized to discharge treated sanitary waste waters from outfall Serial Number 001 (Somersworth Water Pollution Control Facility) into Salmon Falls River. During the annual period June 1st - September 30th such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	Discharge Limitations						Monitoring Requirement		
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type	
Flow, MGD	—	—	—	Report	—	Report	Continuous	Recorder ¹	
BOD ₅	190 lbs/day	285 lbs/day ²	317 lbs/day	10 mg/l	15 mg/l	17 mg/l	2/Week ³	24-Hour Composite	
TSS	190 lbs/day	285 lbs/day ²	317 lbs/day	10 mg/l	15 mg/l	17 mg/l	2/Week ³	24-Hour Composite	
Total Phosphorus ⁴ (May 1 st -September 30 th)	9.5 lb/day	—	—	0.75 mg/l	—	—	2/Week	24-Hour Composite	
Ammonia Nitrogen as N	—	143 lbs/day	—	—	—	—	2/Week	Grab	
pH ²	6.5-8.0 (See PART I.E.1.a.)						1/Day	Grab	
<u>Escherichia coli</u> ² (Colonies per 100)				126			406	3/Week	Grab
Total Residual Chlorine				0.08 mg/l			0.14 mg/l	1/Day	Grab
Dissolved Oxygen						≥6.5 mg/l (Min Daily)	Continuous	Recorder	

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PART I.A.1.c. (Continued)

Effluent Characteristic	Discharge Limitations	Monitoring Requirement	
		Measurement Frequency	Sample Type
Whole Effluent Toxicity			
LC50 ^{7,8,9} ; in percent	100	2/Year	24-Hour Composite
C-NOEC ^{8,9,10,11} ; in percent	≥13.6	2/Year	24-Hour Composite
Ammonia Nitrogen as Nitrogen ¹² ; mg/l	Report	2/Year	24-Hour Composite
Hardness ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Aluminum ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Cadmium ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Chromium ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Copper ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Nickel ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Lead ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Zinc ¹² ; mg/l	Report	2/Year	24-Hour Composite

(Note: See page 10 and, 11 for explanation of superscripts.)

PART I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS FOR THE ANNUAL PERIOD OCTOBER 1ST - MAY 31ST

1.d. During the period beginning on September 30, 2005, and lasting through the expiration date, the permittee is authorized to discharge treated sanitary waste waters from outfall Serial Number 001 (Somersworth Water Pollution Control Facility) into Salmon Falls River. During the annual period October 1st - May 31st such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	Discharge Limitations						Monitoring Requirement		
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type	
Flow, MGD	—	—	—	Report	—	Report	Continuous	Recorder ¹	
BOD ₅	600 lbs/day	901 lbs/day ²	1001 lbs/day	30 mg/l	45 mg/l	50 mg/l	2/Week ³	24-Hour Composite	
TSS	600 lbs/day	901 lbs/day ²	1001 lbs/day	30 mg/l	45 mg/l	50 mg/l	2/Week ³	24-Hour Composite	
Ammonia Nitrogen as N	264 lbs/day	—	—	13 mg/l	—	—	2/Week	Grab	
pH ²	6.5-8.0 (See PART I.E.1.a.)						1/Day	Grab	
<u>Escherichia coli</u> ² (Colonies per 100 ml)				126			406	3/Week	Grab
Total Residual Chlorine				0.08 mg/l			0.14 mg/l	1/Day	Grab

Continued on next pages

PART I.A.1.d (Continued)

Effluent Characteristic	Discharge Limitations	Monitoring Requirement	
		Measurement Frequency	Sample Type
Whole Effluent Toxicity			
LC50 ^{7,8,9} ; in percent	100	2/Year	24-Hour Composite
C-NOEC ^{8,9,10,11} ; in percent	≥13.6	2/Year	24-Hour Composite
Ammonia Nitrogen as Nitrogen ¹² ; mg/l	Report	2/Year	24-Hour Composite
Hardness ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Aluminum ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Cadmium ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Chromium ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Copper ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Nickel ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Lead ¹² ; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Zinc ¹² ; mg/l	Report	2/Year	24-Hour Composite

(Note: See page 10 and 11 for explanation of superscripts.)

EXPLANATION OF SUPERSCRIPTS TO PART I.A.1.a-d ON PAGES 2-9

- (1) The effluent flow shall be continuously measured and recorded using a flow meter and totalizer.
- (2) State Certification requirement.
- (3) The influent concentrations of both BOD₅ and TSS shall be monitored twice per month (2/Month) using a 24-Hour Composite sample and the results reported as average monthly values.
- (4) For the period, October 1st - May 31st, Total Phosphorous shall be limited and monitored for only the month of May. For the period, June 1st - September 30th, Total Phosphorous shall be limited and monitored according to Effluent Limitations and Monitoring Requirements Sections A.1.a. and A.1.c.

During the period beginning on the effective date of the Permit and lasting through September 29, 2005, the Permittee will use chemical addition and modification of the wastewater treatment facility's biological process to meet the Total Phosphorous Average Monthly limit found in Part I.A.1.a of this Permit.

- (5) The average monthly value for Escherichia coli shall be determined by calculating the geometric mean and the result reported. Escherichia coli shall be tested using test method 1103.1. found in *Test Methods for Escherichia coli in Water by Membrane Filter Procedure*, EPA-600/4-85/076 as amended by test method 9213 D.3. found in *Standard Methods for the Examination of Water and Wastewater*, 19th or subsequent Edition(s) as approved in 40 CFR Part 136.
- (6) Total Residual Chlorine shall be measured using Amperometric Titration or the DPD Spectrophotometric methods. The EPA approved methods are found in *Standard Methods for the Examination of Water and Wastewater*, 18th or subsequent Edition(s) as approved in 40 CFR Part 136; Method 4500-Cl E and Method 4500-Cl G; or EPA *Manual of Methods of Analysis of Waters and Wastes*, Method 330.5.
- (7) LC50 is the concentration of wastewater (effluent) causing mortality to 50 percent (%) of the test organisms. The "100% limit" is defined as a sample which is composed of 100% effluent (See A.1(a), (b), (c) and (d) on Pages 3, 5, 7, and 9 of Part I and Attachment A of Part I). Therefore, a 100% or greater limit means that a sample of 100% shall cause no greater than a 50% mortality rate in that effluent sample. The limit is considered to be a maximum daily limit.

- (8) The Permittee shall conduct chronic (and modified acute) survival and reproduction WET tests on effluent samples using two species, Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas) following the protocol listed in Attachment A (Freshwater Chronic and Modified Acute Toxicity Test Procedure and Protocol dated December 1995). Toxicity test samples shall be collected and tests completed two (2) times per year during the calendar quarters ending June 30th and September 30th. Toxicity test results are to be submitted by the 15th day of the month following the end of the quarter tested.
- (9) This Permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the WET tests indicate the discharge exceeds any State of New Hampshire water quality criterion. Results from these toxicity tests are considered "New Information" and the Permit may be modified as provided in 40 CFR Section 122.62(a)(2).
- (10) C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results (growth, survival, and/or reproduction) exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, report the lowest concentration where there is no observable effect. See ATTACHMENT A (VII. TOXICITY TEST DATA ANALYSIS) on page A-9 for additional clarification.
- (11) The C-NOEC limits of "equal to or greater than 13.6" is defined as a sample which is composed of 13.6 % (or greater) effluent, the remainder being dilution water. This is the minimum percentage of effluent at which no chronic effects will be observed. The limit is considered to be a maximum daily limit.
- (12) For each WET test the Permittee shall report on the appropriate Discharge Monitoring Report (DMR) the concentrations of Ammonia Nitrogen as Nitrogen, Hardness, and Total Recoverable Aluminum, Cadmium, Chromium, Copper, Lead, Nickel and Zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the Minimum Quantification Level (MLs) shown in Attachment A on page A-8, or as amended. The Permittee should also note that all chemical parameter results must still be reported in the appropriate WET test toxicity report.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

2. The discharge shall not cause a violation of the water-quality standards of the receiving water.
3. The Permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts.
4. The discharge shall be adequately treated to insure that the the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. It shall be adequately treated to insure that the surface waters remain free from pollutants which produce odor, color, taste or turbidity in the receiving waters which is not naturally occurring and would render it unsuitable for its designated uses.
5. The Permittee's treatment facility shall maintain a minimum of 85 percent removal of both BOD₅ and TSS. The percent removal shall be based on a comparison of average monthly influent versus effluent concentrations.
6. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the 2.4 MGD design flow or 1.92 MGD, the Permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow will be reached, or whenever treatment necessary to achieve Permit limits cannot be assured, the Permittee may be required to submit plans for facility improvements.
7. All POTWs must provide adequate notice to both EPA and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) of the following:
 - a. Any new introduction of pollutants into the POTW from an indirect discharger in a primary industry category (see 40 CFR §122 Appendix A as amended) discharging process water; 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.
8. Limitations for Industrial Users:
- 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.
 - b. The Permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary 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 180 days of the effective date of this Permit, the Permittee shall prepare and submit a written technical report to EPA analyzing local limits. As part of this analysis, the Permittee shall sample and assess the impacts of toxic pollutants on its effluent, sludge and receiving waters. The Permittee shall carry out the local limits analysis in accordance with EPA *Guidance Manual for the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program* (December, 1987).
9. The Permittee shall submit to EPA and NHDES-WD the name of any Industrial User (IU) who commences discharge to the POTW after the effective date of this Permit:
- a. That are subject to Categorical Pretreatment Standards pursuant to 40 CFR §403.6 and established in 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended).

- b. That discharges an average of 25,000 gallons per day or more of process wastewater into the POTW (excluding sanitary, non-contact cooling and boiler blow-down wastewater).
- c. That contribute a process wastewater which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW.
- d. That is designated as an IU by the Control Authority as defined in 40 CFR §403.12(a) on the basis that the industrial user has a reasonable potential to adversely affect the waste water treatment facility's operation, or violate any pretreatment standard or requirement in accordance with 40 CFR §403.8(f)(6).

B. 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 and with the Clean Water Act (CWA) Section 405(d) technical standards.
2. The Permittee shall comply with the more stringent of either State or Federal requirements.
3. The technical standards (Part 503 regulations) apply to facilities which perform one or more of the following 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. Placement of sludge in a municipal solid waste landfill.
 - d. Fired in a sewage sludge incinerator.
4. The 40 CFR 503 conditions do not apply to facilities which place sewage sludge within a solid waste landfill. These conditions, also, these conditions do not apply to facilities which do not dispose of sewage sludge during the life of the Permit, but rather treat the sludge (lagoons-reed beds), or are otherwise excluded under 40 CFR Part 503.6.

5. The Permittee shall use and comply with the attached Sludge Compliance Guidance document to determine appropriate conditions. Appropriate conditions contain the following elements:
 - a. General requirements
 - b. Pollutant limitations
 - c. Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
 - d. Management practices
 - e. Record keeping
 - f. Monitoring
 - g. Reporting

Depending upon the quality of material produced by a facility all conditions may not apply to the facility.

6. The Permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year.
 - a. less than 290.....1/Year
 - b. 290 to less than 1,500.....1/Quarter
 - c. 1,500 to less than 15,000...6/Year
 - d. 15,000 plus.....1/Month
7. The Permittee shall sample the sewage sludge using the procedures detailed in 40 CFR Part 503.8.
8. The Permittee shall submit an annual report containing the information specified in the attached Sludge Compliance Guidance document. Reports are due annually by February 19th. Reports shall be submitted to both addresses (EPA and NHDES-WD) contained in the reporting section of the Permit.

C. INDUSTRIAL PRETREATMENT

1. 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 CFR 403. At a minimum, the

Permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):

- a. 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.
 - b. 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.
 - c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.
 - d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
2. The Permittee shall provide the EPA and NHDES with an annual report describing the Permittee's pretreatment program activities for the pretreatment program's reporting year with 40 CFR §403.12(i). The annual period is defined as July 1st - June 30th. The annual report shall be consistent with the format described in Attachment B of this Permit and shall be submitted no later than September 1st of each year.
 3. The Permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR 403.18(c).
 4. 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 CFR 405 et. seq.
 5. 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 this Permit's effective date 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; and (3) slug control evaluations. The Permittee will implement these proposed changes pending EPA New England's approval under 40 CFR 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.A.8.b. of this Permit

D. MONITORING AND REPORTING

Monitoring results shall be summarized for each calendar month and reported on separate Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period.

Signed and Dated original DMRs and all other reports required herein, shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114-8127

Duplicate signed copies of all reports required herein shall be submitted to the State at:

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

E. STATE PERMIT CONDITIONS

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

- a. The pH range of 6.5-8.0 Standard Units (S.U.) must be achieved in the final effluent unless the Permittee can demonstrate to NHDES-WD: (1) that the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring receiving water pH is not significantly altered by the Permittee's discharge. The scope of any demonstration project must receive prior approval from NHDES-WD. In no case, shall the above procedure result in pH limits outside of the range of 6.0 to 9.0 S.U., which is the federal effluent limitation guideline regulation for pH for secondary treatment and is found in 40 CFR §133.102(c).

- b. Pursuant to State Law NH RSA 485-A:13 and the New Hampshire Code of Administrative Rules, Env-Ws 706.08(b) and Env-Ws 904.08, submissions shall be made to the NHDES-WD by a municipality proposing to accept into its POTW (including sewers and interceptors):
 - (1) A "Sewer Connection Permit" request form for:
 - a. Any proposed sewerage, whether public or private;
 - b. Any proposed wastewater connection or other discharge in excess of 5,000 gallons per day;
 - c. Any proposed wastewater connection or other discharge to a wastewater treatment facility operating in excess of 80% of design flow capacity; and
 - d. Any proposed wastewater connection or other discharge of industrial wastewater, regardless of quantity or quality.
 - (2) An "Industrial Discharge Permit Application" form for any new or increased loadings of industrial waste, as defined in RSA 485-A:2, VI.s

- c. The Permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving

water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).

- d. Any modifications of the Permittee's Sewer-Use Ordinance, including local limitations on pollutant concentrations, shall be submitted to the NHDES-WD for approval prior to adoption by the Permittee.
 - e. Within 90 days of the effective date of this Permit, the Permittee shall submit to NHDES-WD a copy of its current sewer-use ordinance and a copy of any other document granting legal authority to issue permits to industries discharging industrial waste to the municipal wastewater treatment plant.
 - f. Within 120 days of the effective date of this Permit, the Permittee shall submit to NHDES-WD a current list of all industries discharging industrial waste to the municipal wastewater treatment plant. At a minimum, the list shall indicate the name and address of each industry, along with the following information: telephone number, contact person, facility description, production quantity, products manufactured, industrial processes used, chemicals used in processes, existing level of pretreatment, and list of existing discharge permits. Submittal shall include a blank typical permit for each classification and a description of the classification system.
2. This NPDES Discharge Permit is issued by the EPA under Federal and State law. Upon final issuance by the EPA, the NHDES-WD may adopt this Permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13.

Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of the Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation.

F. SPECIAL CONDITION

1. Both the Whole Effluent Toxicity Test Frequency Adjustment and pH Limit Adjustment may not be applied for until after all upgrades of the Somersworth Pollution Control Facility are deemed complete and operational by the EPA and-NHDES-WD.

- a. Whole Effluent Toxicity Test Frequency Adjustment

The Permittee may submit a written request to the EPA requesting reduction in the frequency of the required toxicity testing. The request can be made after the completion of a minimum of four (4) successful, consecutive toxicity tests of effluent, all of which must be valid tests and demonstrate compliance with the Permit limits for Whole Effluent Toxicity. The number of tests per year, though, can not be less than once per year. Until written notice is received by certified mail from the EPA indicating the Whole Effluent Toxicity testing requirements have changed, the Permittee is required to continue testing at the frequency specified in the Permit.

- b. pH Limit Adjustment

The Permittee may submit a written request to the EPA requesting a change in the permitted pH limit range to be not less restrictive than 6.0 to 9.0 Standard Units found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for this facility. The Permittee's written request must include the State's letter containing an original signature (no copies). The State's approval letter shall state that the Permittee has demonstrated to the State's satisfaction that as long as discharges to the receiving water from a specific outfall are within a specific numeric pH range the naturally occurring receiving water pH will be unaltered. That letter must specify for each outfall the associated numeric pH limit range. Until written notice is received by certified mail from the EPA indicating the pH limit range has been changed, the Permittee is required to meet the permitted pH limit range in the respective Permit.

2. Salmon Falls River Monitoring Program

- a. The Permittee shall participate in an annual summer period Salmon Falls River Monitoring Program. The Program will

consist of periodic collection and analysis of River water samples, during the period of June 1st to September 30th, which will help the NHDES and MEDEP evaluate whether water quality standards are being achieved. The Permittee shall follow the study plan, including quality assurance provisions, provided by NHDES and MEDEP. MEDEP and/or NHDES will provide initial training in ambient monitoring protocols. The ambient monitoring requirements are contained in Attachment C and Attachment D.

- b. The Monitoring Program is anticipated to start upon completion of the treatment plant upgrades of all the permittees involved. At the appropriate time, the Permittee will be notified to start the Monitoring Program; either on a voluntary basis, or as a requirement of Section 308 or under a requirement in the reissuance of this NPDES Permit

3. Facility Upgrade Compliance Schedule

- a. On November 22, 1999, in accordance with Section 303(d) of the Clean Water Act and 40 CFR Part 130, EPA approved a Total Maximum Daily Load (TMDL) for the Salmon Falls River. In order to comply with the limitations contained in this TMDL the Somersworth Pollution Control Facility shall comply with the schedule contained in Attachment E. This schedule sets milestones for the upgrade of the Somersworth Pollution Control Facility to be in compliance with the Salmon Falls River TMDLs by September 30, 2005.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
ONE CONGRESS STREET
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

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

NAME AND ADDRESS OF APPLICANT:

City of Somersworth
157 Main Street
Somersworth, New Hampshire 03878-3192

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Somersworth Water Pollution Control Facility
99 Buffumsville Road
Somersworth, New Hampshire 03878-3192

RECEIVING WATER: Salmon Falls River (Hydrologic Unit Code:01060003)

CLASSIFICATION: Maine Class C/New Hampshire Class B

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

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for reissue of its NPDES permit to discharge treated effluent into the designated receiving water (Salmon Falls River). The facility collects and treats domestic, commercial and industrial wastewater from the City of Somersworth. Additionally, the facility does accept septage.

The existing permit was issued on September 28, 1990, and modified on May 11, 1992 and September 9, 1994. The permit expired on September 28, 1995. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed a complete application for permit reissuance as per 40 Code of Federal Regulations (CFR) §122.6. The existing permit authorizes discharge from Outfall 001 (Treatment Plant).

The Somersworth Water Pollution Control Facility is designed as a 2.4 million gallon per day (MGD) wastewater treatment facility using activated sludge aeration as the plant's treatment process. The influent, after passing through grinders and a grit collector, is split between two aeration basins. In the aeration basins activated sludge from the secondary clarifiers is mixed with the wastewater. After leaving the two aeration basins the wastewater flows to either of two secondary clarifiers. Sludge in the secondary clarifiers is either used as activated sludge or is sent to a belt press. The effluent streams from the two secondary clarifiers are combined before entering a Parshall flume; followed by the chlorine contact tanks where sodium hypochlorite is added. After dechlorination using sodium bisulfite the effluent discharges into the Salmon Falls River via Outfall 001. The effluent from the facility, though, does not discharge directly to a designated beach area. Sludge from the facility is dewatered by a belt filter press; then hauled offsite and disposed in a land fill.

Map location of the treatment plant and its effluent discharge point is contained in Attachment A.

II. Description of Existing Effluent Discharge and Receiving Water

A. Description of Existing Effluent Discharge

A quantitative description of the treatment plant's discharge in terms of recent effluent-monitoring data from January 1994 through November 1999 is shown in Attachment B. The data was compiled from Discharge Monitoring Reports (DMR) submitted to the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) and EPA.

B. Uses of the Salmon Falls River

The Salmon Falls River forms the boundary between Maine and New Hampshire for its entire length of more than 40 miles. In the tidal estuary, its name changes to the Piscataqua and similarly forms the state boundary for more than 10 miles. From its headwaters at Milton Pond the entire River is highly regulated. There are four dams in the first five Riverine Miles (RM), beginning at the River's confluence with the Piscataqua, which include South Berwick, ME (RM 0.0), Rollinsford, NH (RM 1.1), Lower Great Falls (RM 3.4) and Somersworth (RM 4.9). Both

Berwick, Maine's and Somersworth's treatment plant effluents discharge to the Rollinsford impoundment and Rollinsford's effluent discharges to the South Berwick impoundment. South Berwick's effluent discharges just below the South Berwick dam at head of tide. The town of Milton discharges to the river just below Spaulding Pond at about 20 miles above head of tide (Extracted from *Phased TMDL for the Salmon Falls River Watershed and Use Attainability Analysis for the Lower Salmon Falls River*, May 1999). Further, in the impoundment above the Somersworth wastewater treatment facility's discharge the towns of Somersworth and Berwick withdraw water from the river for their municipal water supply.

III. Limitations and Conditions.

Effluent limitations, monitoring requirements, and a compliance schedule are found in PART I of the draft NPDES permit. Specifically, the draft permit contains limitations for Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), Ammonia Nitrogen as N, Escherichia coli (E. coli), Total Residual Chlorine (TRC), pH, Total Phosphorous (TP), Dissolved Oxygen (DO) and Whole Effluent Toxicity (WET). There are both summer season and winter season effluent limits for BOD₅, TSS and Ammonia. The limits for TP and DO are for only the summer season. The basis for each limit and condition is discussed in sections IV.C. through IV.I. of this Fact Sheet.

IV. Permit Basis and Explanation of Effluent Limitations Derivation.

A. General Regulatory Background

The Clean Water Act (ACT) 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 ACT. The NPDES permit is the mechanism used to implement technology and water-quality based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the ACT and any applicable State administrative rules. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

EPA is required to consider technology and water-quality based requirements as well as those requirements and limitations included in the existing permit when developing the revised permit's effluent limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the ACT. Secondary treatment technology guidelines, i.e. effluent limitations, for POTWs can be found at 40 CFR §133.

In the absence of published technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1)(B) of the Act to establish effluent limitations on a case-by-case basis using Best Professional Judgement (BPJ).

In general, all statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the ACT have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is, effectively, from the date the revised permit is issued (See 40 CFR §125.3(a)(1)). Compliance schedules and deadlines not in accordance with the statutory provisions of the Act can not be authorized by a NPDES permit.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal water-quality standards (See Section 301(b)(1)(C) of the ACT). A water-quality standard consists of three elements: (1) beneficial designated use or uses for a water body or a segment of a water body; (2) a numeric or narrative water-quality criteria sufficient to protect the assigned designated use(s); and (3) an antidegradation requirement to ensure that once a use is attained it will not be eroded.

B. Introduction

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water-quality criterion. An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit's reissuance application, Monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls*, EPA/505/2-90-001, March 1991 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire statutes and administrative rules [Env-Ws 1705.01 and 1705.02], available dilution is based on a known or estimated value of the lowest average annual flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations per Env-Ws 1705.01.

The permit may not be renewed, reissued or modified with less stringent limitations or conditions than those conditions in the previous permit unless in compliance with the anti-backsliding requirement of the ACT (See Sections 402(o) and 303(d)(4) of the ACT and 40 CFR §122.44(1)(1 and 2). EPA's anti-backsliding provisions found in 40 CFR §122.44(1) prohibit the relaxation of permit limits, standards, and conditions unless certain conditions are met. Therefore, unless those conditions are met the limits in the reissued permit must be at least as stringent as those in the previous permit.

The Act requires that EPA obtain state certification which certifies that all state water-quality standards, in this case New Hampshire, will be satisfied. The permit must conform to the conditions established pursuant to a State Certification under Section 401 of the ACT (40 CFR §124.53 and §124.55). EPA regulations pertaining to permit limits based upon water-quality standards and state requirements are contained in 40 CFR §122.44(d).

The conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards. To protect the existing quality of the State's receiving waters, the New Hampshire Department of Environmental Services, Water

Division (NHDES-WD) adopted anti-degradation requirements in their December 3, 1999, Wastewater Engineering Bureau Regulations (Env-Ws 1708.01 through 1708.12). Hereinafter, New Hampshire's Wastewater Engineering Bureau Regulations are referred to as the NH Standards.

Receiving stream requirements, not limited by the Total Daily Maximum Load explained in the next section, are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water-quality standards to develop permit limits both the acute and chronic aquatic-life criteria, expressed in terms of maximum allowable in-stream pollutant concentration, are used. Acute aquatic-life criteria are considered applicable to daily time periods (maximum daily limit) and chronic aquatic-life criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 CFR §122.44(d)(1) and are implemented under 40 CFR §122.45(d).

C. Total Maximum Daily Load (TMDL)

TMDL Development

"In the mid to late 1980's, and through the 1990's a dissolved oxygen problem became evident on the lower portion of the Salmon Falls River, since sampling always indicated some non-attainment of Maine's dissolved oxygen standards. A water quality model was developed in 1994 to determine the source of the problem and possible solutions to correct the problem". The water quality model and sampling of the river concluded sections of the Salmon Falls River were not meeting Maine's minimum class B (Fresh) and SB (Marine) dissolved oxygen standards of 85% of saturation, and in some cases the lower class C and SC standards. Dissolved oxygen levels as low as 35% of saturation have been measured. These low levels also violated New Hampshire's class B standard of 75% of saturation. Algae blooms at Rollinsford, NH and South Berwick, ME were caused by elevated "chlorophyll a" levels. The increased chlorophyll levels were caused by discharges of phosphorous from point sources into the river. An ammonia toxicity problem also occurred in the vicinity of Berwick, ME and Somersworth, NH.

A Waste Load Allocation Study was developed in 1994 by the Maine Department of Environmental Protection (MEDEP) to determine the source of the problem (dissolved oxygen violations) and possible

solutions to correct this problem. A 1994 modeling effort concluded that meeting Maine's class B and SB dissolved oxygen standards for five of the riverine and two of the estuaries miles would be difficult.

As a result of recommendations of the Waste Load Allocation, additional field work was undertaken in 1995 with the intention of fine tuning the model's results for an eventual TMDL for the lower Salmon Falls River (A TMDL is the calculation of the maximum allowable pollutant loads for a water body that will result in water quality standards being maintained. A TMDL includes waste load allocation for point sources, load allocation for non-point sources, background inputs or loading capacity, a margin of safety (MOS) to compensate for the uncertainty in calculations and an accounting for seasonal variations). It was determined for the basis of the TMDL that the more stringent limitations of Maine's Class C and New Hampshire's Class B dissolved oxygen standard were to be met. The advantages of meeting these dissolved oxygen standards were all designated uses specified for the current classification were maintained; plus, the fishable, swimmable goals specified by the Clean Water Act were preserved.

This standard would require daily minimum dissolved oxygen levels of 5 parts per million (ppm) and 60% of saturation, a daily average dissolved oxygen of 75% of saturation and a monthly minimum dissolved oxygen level of greater than 6.5 ppm. The standard was adopted as the water quality goals for the 5.5 mile segment from the Route 9 bridge, at Berwick, ME, and Somersworth, NH, to the head of tide. Outside of the boundaries of this segment, it is believed the existing classifications for Maine and New Hampshire can be maintained, provided that the recommended TMDL is implemented as published.

TMDL Limits

On November 22, 1999, in accordance with § 303(d) of the Clean Water Act and 40 CFR Part 130, EPA approved the TMDL for the Salmon Falls River for ammonia, biological oxygen demand and total phosphorus as prepared by the Maine Department of Environmental Protection. As a result of that action, NPDES permits issued to wastewater treatment facilities in Milton, NH, Berwick ME, Somersworth, NH, Rollinsford, NH, and South Berwick ME must conform to the load allocations identified in the TMDLS, specifically TMDL's Table 12 (As Revised) and Table 13 (As Revised) which are presented in Attachment C.

Seasonal Limits

The TMDL specifies seasonal limits for the wastewater treatment facility permits and identifies the summer period as June 1st to September 30th; except for Total Phosphorous limits which are in effect from May 1st to September 30th.

Compliance Schedule

The draft permit requires much more stringent water quality based limits for Total Phosphorous, BOD₅ and Ammonia-Nitrogen than the existing permit. The draft permit allows until May 31, 2003 for the POTW to achieve the TMDL derived water quality based limits. That schedule provides about twenty-four months for the municipality to arrange for funding, develop final plans and construct the needed facilities to achieve compliance with the final water quality based summer limits.

C. Conventional Pollutants

Five-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS) and Dissolved Oxygen (DO)

Summer effluent limitations in the draft permit for Five-day Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS) for average monthly, average weekly and maximum daily concentrations and their respective allowable loads are based upon limits developed by the phased TMDL model. Based on the modeling analysis, wasteload allocation set pollution limits for the major point sources discharging to the Salmon River. The Somersworth POTW, as a major point source on the Salmon Falls River, received a wasteload allocation. The effluent limitation developed from the phased TMDL for BOD₅ and TSS are applied in the draft permit from June 1st to September 30th of each year. During these warmer weather months the river's dissolved oxygen concentration is more susceptible to depletion from increased microbial activity and algae blooms.

The Maine Class C/New Hampshire Class B classification requires an in instream DO level equal to or greater than 6.5 mg/l. This effluent DO level will help maintain the DO saturation level at 75% for the Salmon Falls River according to the TMDL model. The DO limit applies only during the summer period when DO levels are the most stressed.

During the remainder of the year, October 1st to May 31st, the effluent limitations in the draft permit for BOD₅ and TSS average monthly, average weekly and maximum daily concentrations and for both constituents corresponding average monthly and maximum daily allowable loads are based upon limits in the existing permit. Carry-over of these limits from the existing to the draft permit is in accordance with the antibacksliding requirements found in 40 CFR §122.44. In addition, the average monthly and weekly concentration-based limitations for BOD₅ and TSS are based on requirements under Section 301(b)(1)(B) of the ACT as defined in 40 CFR §133.102. Effluent limitations in the draft permit for BOD₅ and TSS average weekly allowable loads during the colder months (October 1st to May 31st) are new and are based on State Certification requirements. See Attachment D for calculation of mass-based load limits for October 1st to May 31st.

Total Phosphorous

In the Salmon Falls River eutrophication is demonstrated by algae blooms. Both algae respiration and the decay of dead algae on the River's bottom has directly lead to the reduction of dissolved oxygen in the River. NHDES-WD Env-Ws 1703.14(c) states, "Existing discharges containing ... phosphorous ...which encourage eutrophication shall be treated to remove phosphorous...to ensure attainment and maintenance of water quality." Based on the TMDL model, the Somersworth POTW has been allocated a limit of 0.5 mg/l (9.5 lbs/day). EPA New England considers the TMDL developed numerical limits for Total Phosphorous sufficient to enforce the narrative limits contained in Env-Ws 1703.14(c).

In order to meet this 0.5 mg/l concentration limit, upgrades will be required of the Somersworth's POTW. The draft permit is conditioned to phase-in the 0.5 mg/l limit. From the effective date of the permit until May 31, 2003, the draft permit sets the average monthly Total Phosphorous limit at 20 lbs/day which is based on a concentration limit of 1.0 mg/l (Refer to Attachment D). During a demonstration study in 1995 the POTW was able to meet that limit (see Attachment D for the calculation). This interim limit will allow time for upgrades to the POTW to be completed in order to meet the TMDL's 0.5 mg/l limit which becomes effective on June 1, 2003.

The Total Phosphorous limitation applies from May 1st - September 30th when eutrophication is considered most detrimental to water quality goals. In non-summer months, the cooler water temperatures and reduced light intensity greatly diminish algae growth to a point where its effect on dissolved oxygen is marginal.

pH

The pH limits in the draft permit remain unchanged from the existing permit. Adhering to this limitation is in accordance with the antibacksliding requirements found in 40 CFR §122.44. Historically, the NHDES-WD, has required pH limits to be satisfied at end-of-pipe with no allowance for dilution.

Provisions have been added to the State Permit Conditions (PART I.D.1.a.) allowing for a change in pH limit(s) under certain conditions. A change would be considered if the applicant can demonstrate to the satisfaction of NHDES-WD that the in-stream pH standard will be protected when the discharge is outside the permitted range, then the applicant or NHDES-WD may request (in writing) that the permit limits be modified by EPA to incorporate the results of the demonstration.

Anticipating the situation where NHDES-WD grants a formal approval changing the pH limit(s) to outside the 6.5 to 8.0 Standard Units (S.U.), EPA has added a provision to this draft permit (See SPECIAL CONDITIONS section). That provision will allow EPA to modify the pH limit(s) using a certified letter approach. This change will be allowed as long as it can be demonstrated that the revised pH limit range does not alter the naturally occurring receiving water pH. Reference Part I.D.1.a. STATE PERMIT CONDITIONS in that permit. However, the pH limit range cannot be less restrictive than 6.0 - 9.0 S.U. found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for the facility.

If the State approves results from a pH demonstration study, this permit's pH limit range can be relaxed in accordance with 40 CFR §122.44(1)(2)(i)(B) because it will be based on new information not available at the time of this permit's issuance. This new information includes results from the pH demonstration study that justifies the application of a less stringent effluent limitation. EPA anticipates that the limit determined from the demonstration study as approved by the NHDES-WD will satisfy all effluent requirements for this discharge category and will comply with NH Standards adopted on December 3, 1999.

Escherichia coli

Effluent limitations in the draft permit for Escherichia coli bacteria are based upon limits in the existing permit. Adhering to this limitation is in accordance with the antibacksliding requirements found in 40 CFR §122.44. Historically, the NHDES-WD,

has required bacteria limits to be satisfied at end-of-pipe with no allowance for dilution. Therefore, the average monthly and maximum daily limits for Escherichia coli bacteria are based upon State Certification Requirements. Calculation for compliance with the Average Monthly limit for Escherichia coli shall be determined by using the geometric mean. These limits are for Class B waters not designated as beach area. The original basis for this limitation is found in New Hampshire's State statutes (N.H. RSA 485-A:8) and State certification requirements for POTWs under section 401(d) of the CWA, 40 CFR §§124.53 and 124.55).

D. Non-Conventional and Toxic Pollutants

Water-quality based limits for specific toxic pollutants such as chlorine, ammonia, etc. are determined from numeric chemical specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in *Quality Criteria for Water*, 1986, EPA 440/5-86-001 as amended, commonly known as the federal "Gold Book". Each criteria consists of two values; an acute aquatic-life criteria to protect against short-term effects, such as death, and a chronic aquatic-life criteria to protect against long-term effects, such as poor reproduction or impaired growth. New Hampshire adopted these "Gold Book" criteria, with certain exceptions and included them as part of the State's Water Quality Regulations adopted on December 3, 1999. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit. Available dilution is discussed in the next subheading.

Available Dilution

The available dilution (also referred to as the dilution factor) in the receiving water was determined to be 7.38. This calculation is based on using the plant's design flow of 2.4 MGD (3.7 cubic feet per second (cfs)); a 7Q10 low flow value of 28.7 cfs and a State of New Hampshire prescribed minimum 10% set aside or reserve. The existing permit used a 7Q10 value of 51.4 cfs based on the 7Q10 flow at the U.S. Geological Survey Milton, New Hampshire, gaging station and an incremental drainage adjustment factor. The 1995 data from the Salmon Falls TMDL study showed the incremental drainage adjustment factor in-between Milton and Somersworth was too high and the newly corrected 28.7 cfs was derived. The State has reserved 10 percent of the Assimilative Capacity of the receiving water for future uses pursuant to RSA 485-A:13, I. (a) and Env-Ws 1705.02. See Attachment C for calculations of dilution factor.

Total Residual Chlorine

Chlorine and chlorine compounds, such as "organo-chlorines", produced by the chlorination of wastewater can be extremely toxic to aquatic life. Section 101(a)(3) of the CWA and State of New Hampshire Surface Water Quality Regulations, PART Env-Ws 1703.21 prohibits the discharge of toxic pollutants in toxic amounts.

Limits for Total Residual Chlorine (TRC) in the draft permit; therefore, have been changed. The change reflects the revised available dilution of 7.38. Further, the TRC also reflects the use of acute and chronic water-quality based criteria found in the State's Surface Water Quality Regulations (adopted December 3, 1999). Those acute and chronic aquatic-life criteria are 0.019 mg/l and 0.011 mg/l, respectively. Recently, EPA New England changed its chlorine policy to no longer allow the chronic criterion to be used to calculate the maximum daily limits as in the existing permit. Instead the chronic criteria is now used to calculate the appropriate average monthly limit. Consequently, in the draft permit, the calculated chronic value of 0.08 mg/l is shown as an average monthly limit and the calculated acute value is shown as a maximum daily limit. Refer to Attachment C for the equation and calculations used for determining TRC using the State's water quality criteria.

Ammonia

"Another important issue when considering the TMDL, is ammonia's effect on dissolved oxygen depletion through nitrification to nitrate (nitrogenous BOD decay)" (Refer to *Phased TMDL for the Salmon Falls River Watershed and Use Attainability Analysis for the Lower Salmon Falls River*, May 1999). After considering ammonia nitrification to nitrate the TMDL model indicated summer limits for ammonia more stringent than chronic aquatic life criteria based limits would be required to meet water quality standards. The TMDL model also indicated limits were required for only the Somersworth, NH and Berwick, ME discharges. The average weekly summer limit for ammonia, expressed as ammonia as nitrogen ($\text{NH}_3\text{-N}$), is 17 mg/l (143 lb/day). This limit, applied June 1st - September 30th, is necessary to meet the dissolved oxygen standards adopted by both NHDES and MEDEP for the Lower Salmon Falls River.

The TMDL winter ammonia limit, applied October 1st - May 31st, is based on the most stringent state standard now in effect. This means the ammonia limit for the Salmon Falls is based on an ammonia water quality criteria of 2.7 mg/l at a pH of 7 and a temperature of 10°C. The winter ammonia limit is expressed as ammonia as nitrogen ($\text{NH}_3\text{-N}$) to remain consistent with the summer limits. In order to convert ammonia (NH_3) concentrations or mass

to NH₃-N a conversion factor of 0.822 is applied. The monthly winter limit is 13 mg/l (264 lbs/day) expressed as ammonia as nitrogen

Cadmium, Copper and Lead

Review of the DMR data for the metals Cadmium and Lead for the last five years demonstrates these metals' concentrations are approximately one tenth the prescribed EPA limits for those metals (See Attachment B). Similarly, the Copper average monthly limit is well below EPA's chronic limit for Copper of 19.9 mg/l (See Attachment B). Since the concentration for each of these metals is so low and has remained low for over five years, no demonstrated environmental threat is posed from these metals. Accordingly, testing for these metals is eliminated from the draft permit. It should be noted testing for these metals is still required as part of the twice per year WET testing requirement.

E. Whole Effluent Toxicity

EPA's Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. Pollutant specific approaches, as those in the Gold Book and State regulations, address individual chemicals. A Whole Effluent Toxicity (WET) approach, alternatively, evaluate interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. WET testing measures the "Additive" and/or "Antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not. WET testing also provides the best means to discover the presence of an unknown toxic pollutant. An integrated strategy, consisting of both specific pollutant and WET testing, is required to protect aquatic life and human health.

New Hampshire law states that, "...all waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. Surface Water Quality Regulations, PART Env-Ws 1703.21(a)). The federal NPDES regulations, 40 CFR §122.44(d)(1)(v), require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the

State's narrative criterion for toxicity. Not only does the existing permit requires WET testing; but the Salmon Falls TMDL study demonstrated the river is impaired. There remains a reasonable potential for the Somersworth POTW's discharge to have an excursion. The draft permit's WET limit remains the same as those in the existing permit. This is in accordance with the antibacksliding requirements found in 40 CFR §122.44.

EPA New England's current policy requires toxicity testing in all municipal permits. The type of whole effluent toxicity (WET) test, acute and/or chronic and effluent limitations (LC50 and/or C-NOEC), are based on available dilution (See Attachment E). The calculated dilution factor of 7.38 requires both four 7-day chronic and four modified acute WET tests per year. As noted in the Available Dilution section, the 7Q10 flow used to calculate the existing permit's dilution factor was greater than the 7Q10 flow used for the draft permit. The existing permit's calculated dilution factor is 13.3. When issued on September 28, 1990, the existing permit required four WET tests per year. On September 9, 1994, the permittee received a reduction in WET testing to twice a year from four times a year. The reduction was granted because "...the permittee has demonstrated satisfactory toxicity test results and has been in compliance with the WET permit limit including the...(Receiving Water Concentration)...RWC equal to or greater than the ...(Chronic-No Observed Effect Concentration)... C-NOEC value had EPA established said limits" (The RWC for a dilution factor of 13.3 would be equal to or greater than 7.52 percent).

A dilution factor of 7.38 would dictate that four 7-day chronic and four modified acute WET tests are required per year (Refer to Attachment E). The WET toxicity tests are conducted using two (2) species; Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas). The modified acute test contains an LC50 limit of 100% effluent concentration. LC50 is defined as the concentration of toxicant, or in this draft permit, the percentage of effluent lethal to 50% of the test organisms during a specific length of time; which for this specific test is 48 hours. In other words, 50% or more of the test organisms must live in an environment consisting of 100% effluent for the test's duration. The C-NOEC permit limit is equal to the RWC. The RWC is defined as the reciprocal of the dilution factor expressed as a percentage by multiplying it by 100. The RWC for the draft permit is calculated as equal or greater than 13.6%. This means, during the chronic test, the test organisms must show no adverse effects while living or reproducing in an environment made-up of 13.6% or more of the POTW's effluent.

The draft permit is conditioned to require the permittee to perform only two 7-day chronic and two modified acute WET tests per year. As previously noted, the calculated dilution factor would usually dictate four WET tests per year. It was considered appropriate to hold the WET testing at twice per year because the POTW would still pass the more stringent WET test limits dictated by the recalculated dilution factor. All Somersworth POTW's WET test data since January 1994 was reviewed (Refer to Attachment B). The data clearly shows the POTW passed for each WET test a LC50 limit of 100% and C-NOEC greater than or equal to 13.6%. The EPA submits, since the Somersworth's POTW has demonstrate it can already meet the more stringent WET test limits, there is no need to increase the POTW's WET testing frequency. Accordingly, the WET testing requirement remains at twice per year.

The draft permit has been modified to require WET testing in the second and third quarters of the year. The existing permit requires WET testing in the first and third quarters of the year. The reason the testing periods were changed is the Salmon Falls River is under its greatest stress during the warm weather months. The TMDL study conclusively demonstrated the River suffers from very low dissolved oxygen levels and high ammonia levels during the warmer months. WET testing done during this period will better reflect how well the POTW is removing toxins from its effluent. Results for the second quarter are to be submitted to the EPA and the NHDES-WD with the DMR report for June, and for the third quarter with the DMR in September.

As a special condition of this draft permit, the frequency of testing may be reduced by a certified letter from the EPA. This permit provision anticipates that the permittee may wish to request a reduction in WET testing. After completion of a minimum of four consecutive WET tests, all of which must be valid tests and must demonstrate compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a review of the toxicity test results. The EPA will review the test results and other pertinent information to make a determination that such a reduction is justified. The frequency of toxicity testing may be reduced to as little as one test per year. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

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

This draft permit requires the reporting of selected parameters determined from the chemical analysis of the WET tests effluent samples. Specifically, parameters for the constituents of aluminum, ammonia nitrogen as nitrogen, hardness, and total recoverable aluminum cadmium, copper, chromium, lead, nickel, and zinc are to be reported on the appropriate Discharge Monitoring Reports for entry into the EPA's Permit Compliance Systems Data Base. EPA New England does not consider reporting these requirements an unnecessary burden as the reporting of these constituents is required with the submission of each toxicity report (See Draft Permit, Attachment A, page A-8).

F. Sludge

Section 405(d) of the ACT requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on March 22, 1993. Domestic sludges which are land applied; disposed of in a surface disposal unit; or fired in a sewage sludge incinerator are subject to Part 503 technical and to State Env-Ws 800 standards. Part 503 regulations have a self-implementing provision, however, the ACT requires implementation through permits. Domestic sludges which are disposed of in municipal solid waste landfills are in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 CFR Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA New England has included with the draft permit a 72-page Sludge Compliance Guidance document for use by the permittee in determining their appropriate sludge conditions for their chosen method of sludge disposal.

The permittee is also required to submit to EPA and to NHDES-WD annually, on February 19th, an annual report containing the information specified in the Sludge Compliance Guidance Document for the permittee's chosen method of sludge disposal once that happens.

G. Industrial Users (Pretreatment Program)

The permittee is required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR §403 and Section 307 of the ACT. The Somersworth Water Pollution Control Facility pretreatment program received EPA approval on November 1, 1984, as a result, appropriate pretreatment program requirements were incorporated into previous permits commensurate with that approval and Federal Pretreatment Regulations in effect when the permit was issued.

In October 1988 and July 1990, the Federal Pretreatment Regulations at 40 CFR §403 were amended. Those amendments established new requirements for implementation of pretreatment programs. By reissuing this NPDES permit, the permittee is obligated to modify, if necessary, and implement its pretreatment program to be consistent with current Federal Regulations. Those activities that the permittee must address include, but are not limited to, the following: (1) Develop and enforce specific effluent limits (technically-based local limits); (2) revise its local sewer-use ordinance, 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 significant industrial user. These requirements are necessary to ensure continued compliance with the POTW's NPDES permit and its sludge use or disposal practices.

In addition to the requirements described above, the draft permit requires the permittee to provide EPA in writing within 180 days of the permit's effective date a technical report analyzing the adequacy of existing local limits and the need for additional local limits. Lastly, the permittee must continue to submit, annually on September 1st, a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

H. Essential Fish Habitat and Endangered Species

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established a new requirement to describe and identify (designate) "essential fish habitat" (EFH) in each federal fishery management plan. Only species managed under a federal fishery management plan are covered. Fishery Management Councils determine which areas will be designated as EFH. The Councils have prepared written descriptions and maps of EFH, and include them in fishery management plans or their amendments. EFH designations for New England were approved by the Secretary of Commerce on March 3, 1999.

The Magnuson-Stevens Act requires all federal agencies to consult with NMFS on all actions, proposed actions, permitted, funded, undertaken by the agency, that "may adversely affect any essential fish habitat." The Salmon Falls River is not designated an essential fish habitat; therefore, the EPA does not have to enter into a consultation with NMFS.

Endangered Species

The Endangered Species Act (16 USC 1451 et seq) requires the EPA ensure that any action authorized by the EPA is not likely to jeopardize the continue existence of any endangered or threaten species or adversely affect its critical habitat. Further, 40 CFR 122.49(c) requires the EPA to consult with the U.S. Fish and Wildlife Service (USFWS) to determine particular permit conditions when the regulations of the Endangered Species Act may apply.

There are no endangered species resident in the Salmon Falls River. The EPA, therefore, does not have to consult with the USFWS.

I. Additional Requirements and Conditions

Effluent Monitoring

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(i) and 122.48. Compliance monitoring frequencies for Flow, BOD₅, TSS, Ammonia, Total Residual Chlorine, pH and Escherichia coli in the draft permit have been established in accordance with the EPA/NHDES-WD Effluent Monitoring Guidance mutually agreed upon and implemented in July 19, 1999. The draft permit's monitoring frequency for Total Residual Chlorine has been decrease in accordance with the revised EPA/NHDES-WD Effluent Monitoring Guidance.

The monitoring frequency for Total Phosphorous is not covered by the EPA/NHDES-WD Effluent Monitoring Guidance. Monitoring frequency of two per week was mutually agreed on by EPA and NHDES-WD. One of the major findings of the Salmon Falls River TMDL study was that phosphorous in the Somersworth POTW's effluent needed to be reduced. In order to insure the wastewater treatment processes are removing sufficient quantities of phosphorous, close monitoring of the POTW's effluent is needed.

WET test monitoring requirements have been set according to EPA New England's Municipal Toxicity Policy. As explained in the Whole Effluent Toxicity section, section IV.E., the twice per year WET testing frequency is maintained from the existing permit. It's the intent of EPA and NHDES-WD to establish minimum monitoring frequencies in all NPDES permits at permit modification and/or reissuance in accordance with this Effluent Monitoring Guidance.

The permittee will note additional parameters have been added to the draft permit. Further, sampling frequency parameters in the draft permit have changed from those in the existing permit.

Parameter	Existing Permit		Draft Permit	
	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	Continuous	Recorder	Continuous	Recorder
BOD ₅	2/Week	24-hr Composite	2/Week	24-hr Composite
TSS	2/Week	24-hr Composite	2/Week	24-hr Composite
Dissolved Oxygen	—	—	Continuous	Recorder
Ammonia	—	—	2/Week	Grab
Total Residual Chlorine	2/Day	Grab	1/Day	Grab
pH	1/Day	Grab	1/Day	Grab
Total Phosphorus	—	—	2/Week	24-hr Composite
Metals Cadmium Copper Lead	1/Quarter	Grab	—	—
<u>Escherichia coli</u>	1/Week	Grab	3/Week	Grab
WET ¹	2/Year	24-hr Composite	2/Year	24-hr Composite

1. The existing permit, issued on September 28, 1990, and as modified on May 11, 1992, required four WET tests per year. A September 9, 1994, modification of the permit decreased the WET testing monitoring to twice per year.

The remaining conditions of the permit are based on the NPDES regulations 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

Ambient River Monitoring

The draft permit has been conditioned to require the permittee to participate in ambient monitoring of the Salmon Falls River. This requirement will become effective during the summer period beginning June 1, 2003. The permittee, though, will be encouraged to voluntarily begin monitoring as soon as the reissued permit becomes effective.

This monitoring is required by the approved TMDL. The sampling will be conducted during the summer period; June 1st - September 30th above the Rollinsford Dam. The permittee will also sample, on alternate months, in conjunction with Berwick in the vicinity of the highway bridge directly above the POTW. The parameters to be sampled in the Rollinsford Dam impoundment are dissolved oxygen, temperature, total phosphorous, phosphate-phosphorous (PO₄-P) and chlorophyll a. The parameters to be monitored in the vicinity of the bridge are dissolved oxygen and temperature.

This periodic collection and analysis of river samples will help the NHDES and MEDEP evaluate whether water quality standards are being achieved. The permittee shall follow the study plan, including quality assurance provisions, provided by the MEDEP and NHDES. MEDEP and/or NHDES will provide initial training in ambient monitoring protocols. The permittee is to submit an annual report of the results of the ambient monitoring conducted during the summer period by December 1st to EPA, MEDEP and NHDES. The sampling requirements are presented in Attachment F and a map of the approximate sampling locations for the discharges is found in Attachment G. Somersworth's sampling points are SF 11 and SF 15.

V. Antidegradation

This draft permit is being reissued with an allowable wasteload identical to the existing permit, with identical parameter coverage and no change in the outfall location. Since the State of New Hampshire has indicated there will be no lowering of water quality and no loss of existing uses, no additional antidegradation review is warranted.

VI. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution

Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate NH Standards or waives its right to certify as set forth in 40 CFR §124.53.

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

The NHDES-WD, Wastewater Engineering Bureau is the certifying authority. EPA has discussed this draft permit with the Staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act, Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issue, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition. These less stringent condition may be established by EPA during the permit issuance process based on information received following the public noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. **The only exception to this is the sludge conditions/requirements implementing Section 405(d) of the CWA are not subject to the Section 401 State Certification requirements.**

Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 CFR Part 124.

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

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

**Mr. John F. Hackler, Chief
Maine/New Hampshire State NPDES Permit Unit
U.S. Environmental Protection Agency
1 Congress Street
Suite 1100 (Mailcode CPE)
Boston, Massachusetts 02114-2023.**

Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issue proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on 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 comments period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the final permit decision, any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearing must satisfy the requirement of 40 CFR §124.74.

VIII. EPA Contact.

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:

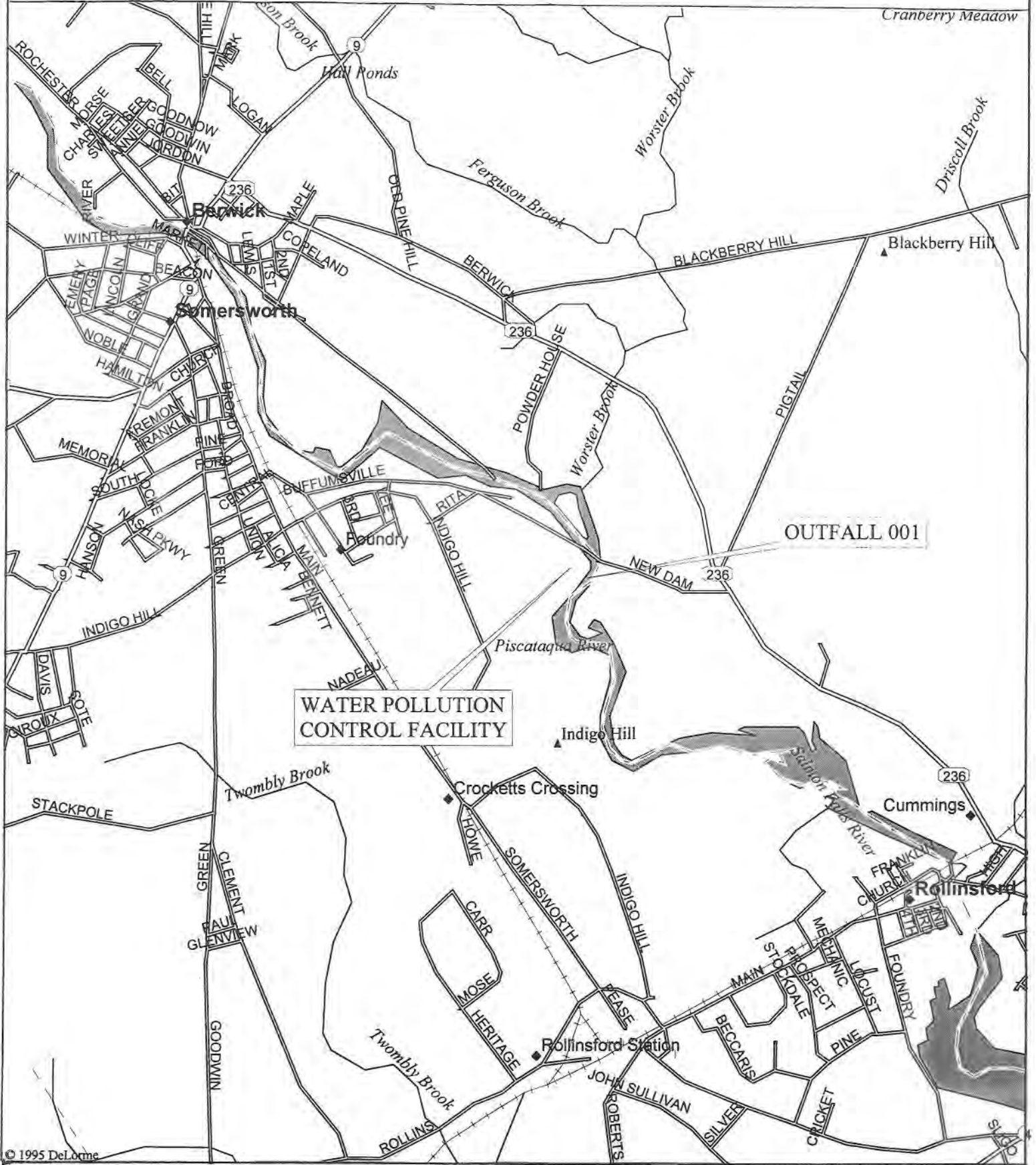
Mr. John Paul King, Environmental Scientist
U.S. Environmental Protection Agency
1 Congress Street
Suite 1100 (Mailcode CPE)
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1295
FAX No.: (617) 918-1505

8 MAY 2000
Date

Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

ATTACHMENT A

Map Location Of Somersworth Water Pollution Control Facility
and
Outfall 001



ATTACHMENT B

TABLE I

EFFLUENT CHARACTERISTICS AT OUTFALL 001

The following effluent characteristics were derived from analysis of discharge monitoring data collected from Outfall 001 during the 59-month period, January 1994 through November 1999. This data was extracted from the monthly Discharge Monitoring Reports submitted by the Somersworth Water Pollution Control Facility. These effluent values characterize the treated sanitary waste waters discharged from this facility.

Effluent Characteristic	Average of Average Monthly	Maximum of Maximum Daily ¹
Flow (MGD)	1.32	6.39, 4.86, 4.69
pH (Standard Units)	--	6.3 to 7.9 ²
Cadmium (mg/L)	0.0012	0.0038, 0.003, 0.002
Copper (mg/L)	0.0124	0.06, 0.25, 0.01
Lead (mg/L)	0.005	0.005, 0.005, 0.005
<u>Escherichia coli</u> (Colonies/100 ml)	43.7	2820, 1600, 1600
Total Residual Chlorine (mg/L)	0.12	0.77, 0.76, 0.48
TSS (lbs/day)	96.9	852, 475, 359
TSS (mg/L)	8.42	95, 66, 56
TSS (Percent Removal)	93.4	82 ³ , 87 ³ , 87 ³
BOD ₅ (lbs/day)	141.6	1743, 568, 460
BOD ₅ (mg/L)	10.3	45, 43, 38
BOD ₅ (Percent Removal)	93.7	86 ³ , 88 ³ , 89 ³

1. More than one number represents the second and third highest values, except for pH.
2. Numbers listed are minimum and maximum daily readings.
3. Minimums of the Average Monthly values.

ATTACHMENT B

TABLE II

Whole Effluent Toxicity Testing

Effluent Test	Minimums of Maximum Test Result		
	LC50 ¹ (Per Cent Effluent)		
<u>Ceriodaphnia dubia</u>	25 ²	>100	>100
<u>Pimephales promelas</u>	50 ²	>100	>100
	C-NOEC ³ (Per Cent Effluent)		
<u>Ceriodaphnia dubia</u>			
Survival	25	50	100
Reproduction	25	25	100
<u>Pimephales promelas</u>			
Survival	50	50	100
Growth	25	50	50

1. This test involves preparing a series of effluent concentrations by diluting the effluent with control water. Groups of test animals, i.e. Ceriodaphnia dubia and Pimephales promelas, are exposed to each effluent concentration and a control for a specific period. The mortality data for each concentration can be used to calculate (by regression) the medium lethal concentration or LC-50. LC-50 is defined as the concentration which kills half the test animals. Samples with a high LC-50 value are less likely to cause environmental impact.
2. There are indications these results are not valid.

ATTACHMENT B

3. This test measures the sublethal effects by exposing test organisms to effluent samples during a sensitive period in their life cycle. Chronic minnow (*Pimephales promelas*) tests measure survival and growth (weight) during the first seven days of post hatch; chronic daphnid (*Ceriodaphnia dubia*) tests measure survival and juvenile production. Using Analysis of Variance techniques to evaluate data, it is possible to determine the highest concentration of effluent where no effect (C-NOEC) was observed.

ATTACHMENT C

TMDL Table 12 & Table 13

Table 12. Revised: Phased TMDL for the Salmon Falls River - Applies in Summer					
Phase 1 of TMDL	Design Flow (mgd)	NH ₃ (lb/day)	Ultimate CBOD (lb/day)	BOD ₅ (lb/day)	Total Phosphorus (TP) (lb/day)
Natural Background NPS (upstream of Milton)	16.4	3	424	N/A	1.2
Milton, NH	0.1	See note a.	See note a.	See note a.	2 ^(b)
Tributary NPS (from Milton to Lower Great Falls dam)	2.1	0.2	56	N/A	0.4
Allowable Loads at Lower Great Falls (LGF) Dam ^{(c), (d)}	18.6	3.2	480		3
Berwick, ME	1.1	65	429	131	4.4
Somersworth, NH	2.4	143	225	285	9.5
Rollinsford, NH	0.15	18	38	24	1.2
Tributary NPS (Lower Great Falls Dam to the S. Berwick Dam)	0.3	0.1	1	N/A	0.1
South Berwick, ME	0.6	71	228	95	4.8
Great Works River	9.8	N/A	N/A	N/A	2.4
Reserve Capacity (~ 5% of Point Source Loads)		16	50	28	1.3
Total = TMDL ^(d)		316	1451		26.7

ATTACHMENT CFootnotes:

- a) Milton loadings for NH₃ and Ultimate CBOD (UCBOD) are not shown because data suggest that Milton's impact for these pollutants at the LGF dam is relatively insignificant. This is due to the high dilution at Milton (165:1), its distance from the LGF dam (over 15 miles) and the assimilation of NH₃ and UCBOD, which are non-conservative substances.
- b) The TP loading for Milton is primarily based on holding current loadings to prevent possible localized excursions of DO water quality standards just downstream of the WWTF. Including a future reserve of 0.2 lb/day, the total TP load at this location is approximately 2.2 lb/day.
- c) Loadings are based on the average of measured values in the LGF impoundment. To prevent possible excursions of DO downstream of the LGF dam (which was the primary focus of modeling efforts for this study) it is important to maintain loadings at or below those shown during summer low flow conditions. For NH₃ and UCBOD, measured concentrations were fairly consistent from upstream of Milton to the LGF dam and are believed to be primarily due to natural sources. For reasons stated in note a) however, the river can actually handle higher loadings of NH₃ and UCBOD than shown in the upper portions of the river as long as they do not cause violations of local DO standards or significantly impact the loadings shown at the LGF impoundment. The loading shown for TP accounts for losses of upstream TP due to uptake and settling.
- d) The primary focus of modeling for this study was from the LGF dam downstream. Consequently the TMDL shown is equal to the sum of the allowable loads at the LGF dam (which does not include upstream loads which do not reach the LGF dam due to assimilation or settlement) and all loads downstream of the dam. If the upstream assimilated or settled loads were included, the TMDL would be higher.

Other Recommendations

1. Include performance based TSS in point source limits. Require effluent DO limits of no less than 6.5 ppm for the Berwick and Somersworth WWTFs.
2. Non-Point sources - Implement BMPs on Great Works River Watershed as a priority. Implement BMPs throughout Salmon Falls Watershed, where feasible.
3. Implement simultaneous top and bottom releases from dams, where

ATTACHMENT C

feasible, during low flow periods to minimize stratification of the bottom layers with emphasis on the Lower Great Falls, Rollinsford, and South Berwick Dams.

4. Ensure dams are operated at run-of-river during low flow periods.
5. Where possible, minimize water withdrawals during low flow conditions.
6. Re-evaluate TMDL after five years. If non-compliance of water quality standards continues to occur, modify the TMDL.

ATTACHMENT C

Table 13. Revised: Recommended Permit Limits for Phase 1 of TMDL

A. Mass Limits							
Summer						Winter	
	Total Phosphorus (lb/day) Mo. Ave.	BOD5 / TSS (lb/day) Mo. Ave.	BOD5 / TSS (lb/day) Wk. Ave.	BOD5 / TSS (lb/day) Daily Max	Ammonia (lb/day) Wk. Ave.	Ammonia (lb/day) Mo. Ave.	
Milton, NH	2.0	25	37.6	41.7	none	none	
Berwick, ME	4.4	87	131	146	65	147**	
Somersworth, NH	9.5	190	285	317	143	321**	
Rollinsford, NH	1.2	16	24	27	none	none	
S. Berwick, ME	4.8	63	95	106	none	none	
Limits Apply	5/1 - 9/30	6/1 - 9/30				10/1 - 5/31	
B. Concentration Limits							
Summer						Winter	
	Total Phosphorus (ppm) Mo. Ave.	DO (ppm) Daily Min.	BOD5 / TSS (ppm) Mo. Ave.	BOD5 / TSS (ppm) Wk. Ave.	BOD5 / TSS (ppm) Daily Max	Ammonia (ppm) Mo. Ave.	
Milton, NH	none	none	30	45	50	none	
Berwick, ME	0.5	≥ 6.5	10	15	17	16	
Somersworth, NH	0.5	≥ 6.5	10	15	17	16	
Rollinsford, NH	1.0	none	14	20	22	none	
S. Berwick, ME	1.0	none	14	20	22	none	
Limits Apply	5/1 - 9/30	6/1 - 9/30				10/1 - 5/31	

ATTACHMENT D

MAXIMUM ALLOWABLE LOADS

Equation used to calculate non-TMDL mass limits for BOD₅ (or CBOD₅), TSS and TP.

$$L = C \times Q_{PDF} \times 8.345$$

Where:

- L = Maximum allowable load, in lb/day
- C = Maximum allowable effluent concentration for reporting period, in mg/l. Reporting periods are average monthly, average weekly and maximum daily (except for TP, which only average monthly limits are calculated).
- Q_{PDF} = Treatment plant's design flow, in MGD.
- 8.345 = Factor to convert effluent concentration, in mg/l, and plant's design flow, in MGD, to lbs/day.

AVAILABLE DILUTION FACTOR

Equation used to calculate available dilution factor at Outfall 001.

$$\text{Dilution Factor} = \frac{(Q_{001}) + (Q_{PDF} \times 1.547) - (Q_{PWS} \times 1.547)}{Q_{PDF} \times 1.547} \times 0.9$$

where:

- Q₀₀₁ = Equivalent 7Q10 flow at Outfall 001, in CFS. Q₀₀₁ = 28.7 CFS
- Q_{PDF} = Treatment plant's design flow, in MGD.
Q_{PDF} = 2.4 MGD
- Q_{PWS} = Municipal water supply drawn by Somersworth, NH and Berwick, ME, respectively. Q_{PWS} = 1.085 MGD, 0.2 MGD
- 1.547 = Factor to convert MGD to CFS.
- 0.9 = Factor to reserve of 10 % of river's assimilative capacity.

ATTACHMENT D

WATER QUALITY CRITERIA BASED LIMIT

Equation used to calculate average monthly and maximum daily Total Residual Chlorine limits.

$$\text{Chlorine Limit} = \text{Dilution Factor} \times \text{Water Quality Criterion}$$

where Water Quality Criteria for chlorine:

0.011 = Chronic Criterion (mg/l) to Protect Aquatic-Life

0.019 = Acute Criterion (mg/l) to Protect Aquatic-Life

ATTACHMENT E

Toxicity Strategy for Municipal Permits

HIGH RISK MED-HIGH RISK MED-LOW RISK LOW RISK

DILUTION FACTOR	<10:1	10.1-20:1	20.1-100:1	>100:1
SAMPLING EVENTS PER YEAR	4 (1/3 MONTHS)	4 (1/3 MONTHS)	4 (1/3 MONTHS)	2 (1/6 MONTHS)
TOXICITY TESTS:				
FRESH WATER	CHRONIC ¹	CHRONIC ¹	ACUTE	ACUTE
MARINE WATER	CHRONIC & ACUTE	CHRONIC & ACUTE	ACUTE	ACUTE
NUMBER OF SPECIES:				
FRESH WATER	2	2	2	2
MARINE WATER	3	3	2	2
PERMIT LIMITS	LC50=100% C-NOEC ² >=RWC ³	LC50=100%	LC50=100%	LC50>=50%
TEST SPECIES:				
FRESH WATER	DAPHNID ¹ (<i>Ceriodaphnia dubia</i> or <i>Daphnia pulex</i>) FATHEAD MINNOW ¹ (<i>Pimephales promelas</i>)	DAPHNID (<i>Ceriodaphnia dubia</i> or <i>Daphnia pulex</i>) FATHEAD MINNOW (<i>Pimephales promelas</i>)	DAPHNID (<i>Ceriodaphnia dubia</i> or <i>Daphnia pulex</i>) FATHEAD MINNOW (<i>Pimephales promelas</i>)	DAPHNID (<i>Ceriodaphnia dubia</i> or <i>Daphnia pulex</i>) FATHEAD MINNOW (<i>Pimephales promelas</i>)
MARINE WATER	INLAND SILVERSIDE ¹ (<i>Menidia beryllina</i>) MYSID SHRIMP (<i>Mysidopsis bahia</i>) SEA URCHIN (<i>Arbacia punctulata</i>)	INLAND SILVERSIDE ¹ (<i>Menidia beryllina</i>) MYSID SHRIMP (<i>Mysidopsis bahia</i>) SEA URCHIN (<i>Arbacia punctulata</i>)	INLAND SILVERSIDE (<i>Menidia beryllina</i>) MYSID SHRIMP (<i>Mysidopsis bahia</i>)	INLAND SILVERSIDE (<i>Menidia beryllina</i>) MYSID SHRIMP (<i>Mysidopsis bahia</i>)

¹ 7-DAY CHRONIC/MODIFIED ACUTE.

² C-NOEC IS CHRONIC NO OBSERVED EFFECT CONCENTRATION.

³ RWC IS RECEIVING WATER CONCENTRATION, IN PERCENT, AS DETERMINED FROM DIVIDING ONE BY THE DILUTION FACTOR ALL TIMES 100.

ATTACHMENT F

AMBIENT RIVER MONITORING

Beginning June 1, 2003, during the period June 1st - September 30th each year, the permittee shall monitor as indicated for the Somersworth WPCF (or an equivalent amount of sampling at a different location, as specified in the study plan; additional sampling may be necessary):

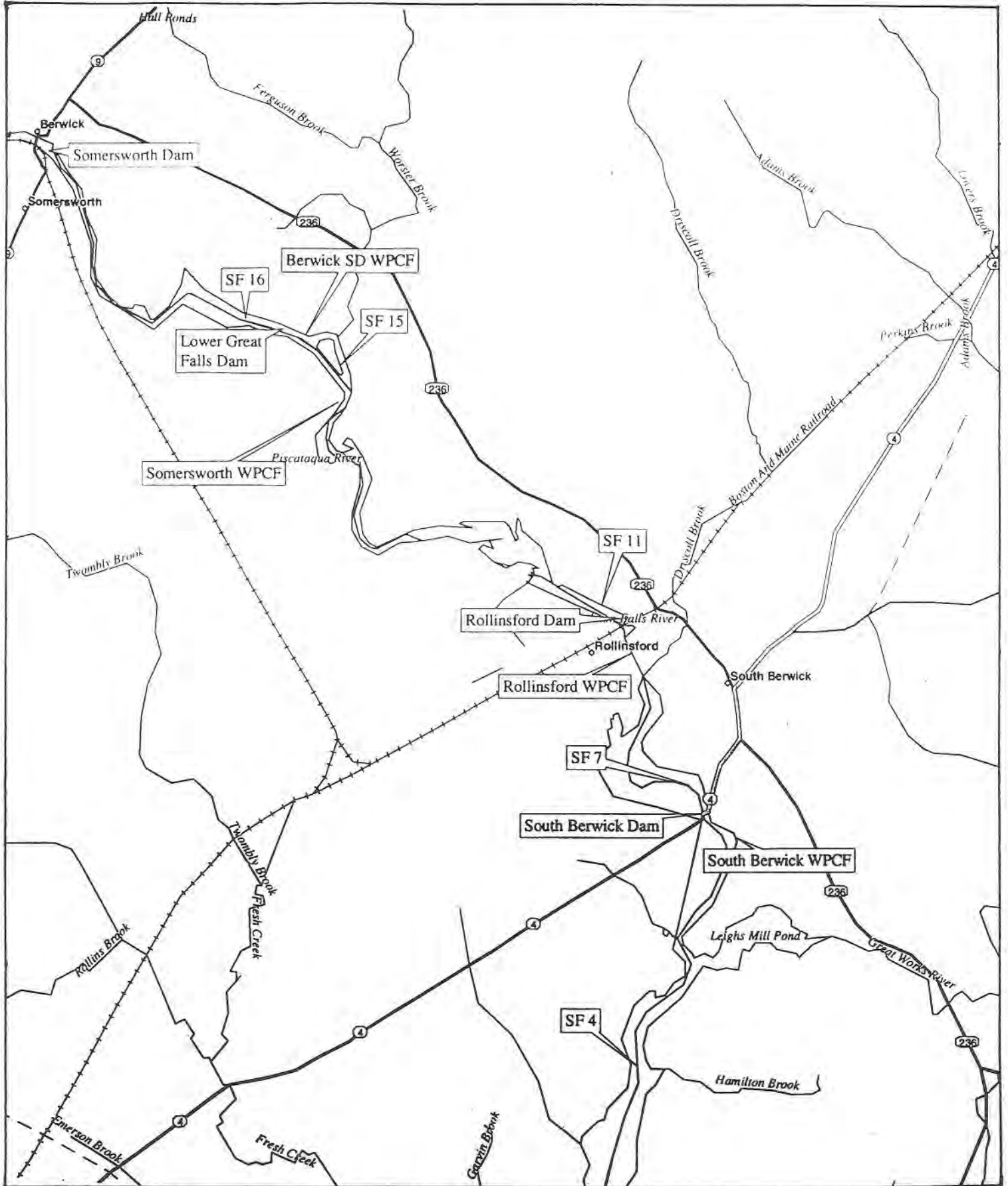
Permittee	RM ¹	Location	Parameter	Frequency
Berwick SD	3.3	SF16; Above Lower Great Falls Dam	Dissolved Oxygen ² Temperature ² Chlorophyll a ³ TP, PO ₄ -P ⁴	2/Month
Berwick SD & Somersworth WPCF	3.0	SF15; Bridge above Somersworth WPCF	Dissolved Oxygen ² Temperature ²	2/Month; Both permittees shall alternate the monthly sampling
Somersworth WPCF	1.1	SF11; Above Rollinsford Dam	Dissolved Oxygen ² Temperature ² Chlorophyll a ³ TP, PO ₄ -P ⁴	2/Month
Rollinsford WWTP	0.1	SF7; Above South Berwick Dam	Dissolved Oxygen ² Temperature ² Chlorophyll a ³ TP, PO ₄ -P ⁴	2/Month
South Berwick SD	0.1	SF4; Hamilton House Site	Dissolved Oxygen ² Temperature ² Chlorophyll a ³ TP, PO ₄ -P ⁴ Salinity	2/Month

Footnotes:

1. RM is the abbreviation for River Mile. A River Mile is the distance to a location measured from the head of tide point.
2. Dissolved Oxygen (DO) and Temperature readings will be taken as one meter profiles from the river surface to the bottom in the early morning.
3. Chlorophyll a will be sampled as a two meter integrated core sample.
4. Total Phosphorous (TP), Phosphorous as Phosphate (PO₄-P)

ATTACHMENT G

Salmon Falls River Monitoring Stations



September 29, 2000

RESPONSE TO COMMENTS

REISSUANCE OF NPDES PERMIT NO. NH0100277

CITY OF SOMERSWORTH

SOMERSWORTH, NEW HAMPSHIRE

The U.S. Environmental Protection Agency (USEPA) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) solicited public comments originally from May 19, 2000, through June 17, 2000 on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the City of Somersworth, New Hampshire. The public comment period was extended to July 14, 2000 at the request of the City of Somersworth. Additionally, at the request of the City a Public Hearing was held in the City of Somersworth on August 31, 2000. This permit is for the discharge of treated wastewater to Salmon Falls River from the Publicly Operated Treatment Works (POTW) located in Somersworth.

These responses and associated comments are complementary to the FACT SHEET and Draft Permit. For the reader to fully understand them, he or she should be familiar with the Draft Permit, the associated FACT SHEET, applicable federal National Pollutant Discharge Elimination System (NPDES) permit regulations, the Salmon Falls River Total Maximum Daily Loads (TMDLs) studies and the State of New Hampshire's Water Quality Statutes and Administrative Rules.

Comments from the City of Somersworth.

Comment No. 1 (Refer: Draft Permit Page 2 of 21)

Part I A.1.a. Effluent Limitations and Monitoring Requirements

“It is our understanding that the new water quality limits were developed on a mass basis. Therefore, all concentration limits are unnecessary and place an additional compliance burden on the City. If concentration limits are required, we request that they are not tied to the mass limits and design flow of the plant as was done in Berwick ME (NPDES Permit No. ME-0101397).”

Response No. 1

On November 22, 1999, the EPA approved the NHDES-WD request to approve the Salmon Falls TMDLs. Once the TMDLs were approved by the EPA, they became The State of New Hampshire's water quality-based limits for the section of the Salmon Falls River into which the Somersworth Water Pollution Control Facility (WPCF) discharges. NHDES-WD has consistently required concentration limits for BOD₅, TSS, toxic pollutants; such as, chlorine, and other chemicals, when appropriate, in the NPDES Permits issued to the State's wastewater

treatment facilities. Concentration limits were contained in Somersworth's previous NPDES Permit and are contained, as consistent with NHDES-WD policy, in the City's newly issued NPDES Permit.

It is recognized the summer period concentration limits for BOD₅ and TSS are more restrictive than those in the previous Permit. The concentration limits associated with the TMDLs for BOD/TSS, ammonia (only in the winter period), and total phosphorus are in direct relationship with mass limits. By substituting each mass limits from the TMDLs in the following equation, the associated effluent concentration limit (after rounding) can be determined .

$$C = L / (Q_{PDF} \times 8.345)$$

Where:

- C = Maximum allowable effluent concentration for reporting period, in mg/l.
- L = Maximum allowable load, in lb/day
- Q_{PDF} = Treatment plant's design flow, in MGD.
Q_{PDF} = 2.4MGD
- 8.345 = Factor to convert effluent concentration, in mg/l, and plant's design flow, in MGD, to lbs/day.

Additionally, EPA regulations require TMDLs' limits contain a Margin of Safety (MOS). The MOS takes into account factors such as the accuracy of the water quality model and variability of the receiving water chemistry. The MOS for the Salmon Falls TMDLs were based on conservative assumptions. The TMDLs calculated the Salmon Fall's assimilative capacity assuming both 7Q10 river flow conditions and treatment plant design flow. Using low river flow conditions and plant design flow, when the treatment plants normally operate at one-half of their design flow, results in a MOS in the TMDLs model's predictive runs for the BOD₅, TSS and ammonia limits.

The calculation of phosphorous limits is a more inexact process when compared to calculating BOD₅, TSS and ammonia limits. The MOS for phosphorous is based on concentration limits rather than mass limits. The predictive model uses the treatment plants' design flows. Since all the River's treatment plants are discharging at less than design flow, the use of concentration limits allows less phosphorous to be discharged. This conservative approach: therefore, establishes the MOS for phosphorous.

As a further note, the concentration limits for the Berwick, ME POTW were uncoupled somewhat from the mass limits because of a unique situation with a specific industrial discharger. The Berwick POTW must contend with a tannery waste component which represents 60% of the volume and 90% of the mass loading of the POTW. The tannery discharge to the POTW also contains BOD₅ and TSS concentrations that average 1000 mg/l during a normal operating day as compared to the domestic source concentrate of 259 mg/l.

Comment No. 2 (Refer: Draft Permit Page 6 of 21)

Part I.A.I.c. Effluent Limitations and Monitoring Requirements

“It is our understanding that the new water quality limits were developed on a mass basis. Therefore, all concentration limits are unnecessary and place an additional compliance burden on the City. If concentration limits are required, we request that they are not tied to the mass limits and design flow of the plant as was done in Berwick, ME. If concentration limits are required, we request the following limits:

- BOD₅ and TSS limits are 30 mg/L Average Monthly, 45 mg/L Average Weekly and 50 mg/L Maximum Daily.
- Change total phosphorus to report concentration only.
- Delete the concentration limit for total phosphorus.”

Response No. 2

Refer to Response No.1.

Further, on November 22, 1999 the EPA approved the NHDES-WD request that the Salmon Falls River TMDLs be accepted as the water quality standard for New Hampshire POTWs discharging to that River. Revising Part I.A.I.c. BOD₅/TSS concentration limits to 30 mg/L, 45 mg/L and 50 mg/L will immediately place the Somersworth WPCF in violation of the water quality regulations mass limits for the Salmon Falls River into which the Somersworth WPCF discharges. As previously illustrated, concentration and mass limits are directly related. Revise the concentration limits upwards; then the mass limits will need to be revised upwards.

The EPA and NHDES-WD have also revised the interim discharge limitation for Total Phosphorous in Part I.A.1.a. of the issued NPDES Permit. The Average Monthly concentration limitations has been changed to “1.0 mg/l” from a “Report mg/l”. The EPA considers this a non-significant change because the concentration limit of 1.0 mg/l directly relates to the Total Phosphorous Average Monthly limit of 20 lbs/day. Further, the Somersworth WPCF was able to achieve a lower than 1.0 mg/l concentration for Total Phosphorous during the 1995 Phosphorous Removal Pilot Study.

Comment No. 3 (Refer: Draft Permit Page 8 of 21)

Part I A. 1.d. Effluent Limitations and Monitoring Requirements

“Calculation of the winter ammonia limits in the NPDES Fact Sheet appears to be incorrect. At a pH of 7 and temperature of 10 degrees C, the EPA criteria is 5.89 mg/L as ammonia. The NHDES criteria is 3.08 mg/L as ammonia. We request that the EPA fresh water ammonia criteria be used to calculate our permit limit.”

Response No. 3

The TMDLs winter ammonia limit, which is applied October 1st - May 31st, is based on the most stringent state standard now in effect. The State of Maine winter ammonia limit is presently the most stringent. The State has not adopted the revised EPA ambient water quality standards for ammonia. This means the ammonia limit for the Salmon Falls remains based on the ammonia water quality criteria of 2.7 mg/l at a pH of 7 and a temperature of 10°C.

Comment No. 4 (Refer: Draft Permit Page 12 of 21)

Part I.A.5. Effluent Limitations and Monitoring Requirements

“Due to the high inflow and infiltration, violations in the 85% removal requirement may occur even though the other discharge limits are met. Please add to the end this sentence "unless influent concentrations are less than 200 mg/L" or provide other means to address this concern.”

Response No. 4

The secondary treatment levels contained in 40 CFR 133.102 require the treatment works to maintain a minimum of 85 percent (%) removal of BOD₅ and TSS. The City of Somersworth has requested the 85% be relaxed during periods when high Infiltration and Inflow, i.e. I/I, dilute the treatment facility's influent concentration below 200mg/l. The request to modify of the 85% removal requirement for BOD₅ and TSS can not be granted. Before such modification can be considered the City must demonstrate the less concentrated influent is not a result of excessive I/I. Excessive I/I is defined in 40 CFR §35.2005(b)(16). The City of Somersworth is invited to provide evidence to the EPA and NHDES-WD that excessive I/I to the treatment facility does not occur. Any evidence presented must detail I/I rates are lower than the criteria presented in 40 CFR §35.2005(b)(16). Only after the City has presented such evidence can the EPA and NHDES-WD consider modifying the 85% removal requirement for BOD₅ and TSS.

Comment No. 5 (Refer: Draft Permit Page 20 of 21)

Part I. F.2 Ambient River Monitoring

“Our copy of the approved TMDL (page 32) states monitoring is "recommended" not required. Please eliminate this provision from the NPDES permit. The City understands the importance of continued river monitoring and is committed to assisting the NHDES and EPA in the river monitoring on a voluntary basis. The permit requires the City coordinate with other permittees. The coordination of sampling between permittees is beyond the control of the City and therefore should not be a source of potential permit violation. EPA should also remove "additional sampling may be required" from the NPDES permit since it is vague....”

Response No. 5

EPA's authority to require ambient river monitoring is found under Section 308 of the Clean Water Act. Section 308 grants the EPA authority to request information to determine compliance

with the Act. The agencies have presented a modest ambient river monitoring sampling schedule. It is the EPA's belief ambient monitoring can be more efficiently and effectively accomplished by the dischargers.

The issued Permit has been modified to have ambient monitoring commence when the Permittee is appropriately notified. At that time the Permittee will start monitoring on a voluntary basis, or as a requirement under Section 308, or at reissuance of the present NPDES Permit.

Comment No. 6 (Refer: Draft Permit Page 21 of 21)

Part I. F.3.a. Facilities Upgrade Compliance Schedule

“The compliance schedule outlined in Attachment E is not realistic given the time needed to secure funding, select an engineer, evaluate the phosphorus removal options available, produce a preliminary design, produce a final design, bid the project and construct the plant upgrades. In addition, we may want to address other needs at the wastewater treatment facility to provide a comprehensive program for the voters to approve. We respectfully request that the schedule be modified to better reflect the step necessary to accomplish our plant upgrade to meet NPDES requirements.....

Information that we have learned since reviewing the first 14-day draft of the NPDES permit includes the following:

- A value engineering study must be performed on all projects that exceed \$10 M in value. We believe that this should be included in the proposed schedule.
- August 1st is too soon to hire an engineer, since the City Council needs a minimum of two meetings to go through the selection process.
- NHDES would require an engineering study of alternatives in order to fund the project. This will add several months to the process.

In light of these concerns, we are proposing the following schedule as shown in Attachment 1.”

Response No. 6

The Total Maximum Daily Load Compliance Schedule, Attachment E of the issued NPDES Permit, was modified. The modified compliance schedule reflects completion of upgrades of the Somersworth Water Pollution Control Facility by September 30, 2005. By that date the treatment facility must be in compliance with all the issued NPDES Permit's effluent limits.

Comment No. 7 (Refer: Fact Sheet Page 12 of 24)

“The ammonia winter fresh water criteria appears to be incorrect.”

Response No. 7

Please refer to Response No. 3, the most stringent State standard, which is the State of Maine's, is applied. The criteria used is correct.

Comments from the Michael John Micucci

Comment No. 1

“This draft permit addresses issues from two states, State of Maine and the State of NH. It seems that some of the parameters issued in this permit are directed more by the State of Maine than NH. It is my belief that 50% of the river is Maine’s’ and 50% New Hampshire’s. It seems illogical that keeping a Dissolved Oxygen level at the outfall to the Salmon Falls River and using Sodium Bisulfite for dechlorination is counter productive. Sodium Bisulfite is an "oxygen scavenger". This limit looks as though it is a Maine driven limit not a New Hampshire limit.”

Response No. 1

The Maine Department of Environmental Protection did develop the Salmon Falls River TMDLs. The basis of the TMDLs, though, was the more stringent limitations of Maine's Class C and New Hampshire's Class B dissolved oxygen standards were to be met. The advantages of meeting these dissolved oxygen standards were all designated uses specified for the Salmon Falls River current classification were maintained; plus, the fishable, swimmable goals specified by the Clean Water Act were preserved. The salient point is not which State contributed the majority of the dissolved oxygen standards; but that the combined standards preserve both States classification for the Salmon Falls River.

Somersworth’s WPCF effluent must meet dissolve oxygen limits at the end of the effluent pipe. This policy has been uniformly applied to all the State’s POTWs which use chlorination to disinfect their facility’s effluent. How a POTW disinfects its effluent and achieves dissolve oxygen standards is the responsibility of permittee.

Comment No. 2

“Toxicity

Wording on page 11 of 21 states: "This permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the WET tests indicate the discharge exceeds any State water quality criterion. " Does this mean California's limits? I don't think that was the intent and any should be changed to a specific water quality criterion.”

Response No. 2

Please note the “S” of the word State is capitalized. The capitalized letter “S” of the word State was attended to alert the reader that the State of New Hampshire and that State’s associated water quality standards were referred to. To eliminate any confusion, though, the words “of New Hampshire” will be added

Comment No. 3

“Local Limits

Wording on page 13 of 21, #8 Limitations for Industrial Users:

b. Within 180 days of the effective date of this permit, the permittee shall prepare and submit a written technical report to the EPA analyzing local limits. As part of this analysis, the permittee shall sample and assess the impacts of toxic pollutants on its effluent, sludge and receiving waters.

According to the EPA *Guidance Manual for the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program* (December 1987) the list should also include a headworks loading and industrial sampling along with a purely domestic source. The draft permit does not address the headworks loading, industrial sampling and a domestic source. These samplings are done on 5 consecutive days, by composite samples (where the parameters are method specific). The headworks loadings are performed by influent composite, detention time and then effluent composite. This will show percent removal of specific pollutants. These specific pollutants are not addressed in your draft permit. With four industries and two metal finishers a reference to 40 CFR 433 subpart A may be in order here.

All of this testing will take time to analyze and evaluate. No local limits are currently in place, so I am assuming that this is to establish local limits? How can you comment in 180 days on local limits that are not established, not EPA or State approved, not approved by the City Council as an ordinance and not codified? I request that this # 8 be changed to establish legally defensible local limits within six months, to also include EPA approval and established in the Sewer Use Ordinance within three months from EPA approval.”

Response No. 3

On August 15, 2000 the EPA New England approved a Sampling and Analysis for the City of Somersworth’s WPCF. The City is in the process of developing Local Limits for EPA review and approval. It is felt this addresses the concerns expressed in Comment No. 3. There is no need to extend to beyond 180 days the NPDES permit requirement for Somersworth to submit Local Limits to the EPA.

Concerning the comment that “specific (industrial) pollutants are not addressed in your draft permit”; it is not feasible for an NPDES Permit to limit the myriad of industrial chemical that could possible be discharge to the Somersworth WPCF. The Somersworth NPDES Permit controls the discharge of industrial pollutants by broad limits for industrial users and requiring the City establish an Industrial Pretreatment Program.

Section I.A.8.a. of the NPDES Permit prohibits any non-domestic discharge to the Somersworth WPCF which interfere with the operation or performance of the wastewater treatment works. Section I.A.9. of the Permit requires the WPCF identify any industrial user, including the metal finishers referenced in Comment No. 3. Additionally, Part I.C. requires the establishment of an EPA approved Industrial Pretreatment Program. This Program requires the elimination of pollutants from the previously identified industrial discharges.

Comment No. 4

“Total Phosphorus

Based on the EPA's TMDL model (Total Maximum Daily Load) the Somersworth POTW has been allocated a limit of 0.5 mg/L (9.5 lbs/day). The data that the EPA is using is 5 years old. No local limits were mandated at the time after testing (1996) and now the EPA wants to enforce 1995 limits? If the EPA had asked that the local limits be established when I asked EPA officials in 1996 then maybe the Total Phosphorus issues would be lessened or solved. On one hand the EPA wants to solve the "drinking water corrosion issue of copper and lead with a zinc phosphate" and on the other hand they want to prevent the phosphorus from entering the receiving stream. I think it would be wise to eliminate source pollution and address this with the point source at the water plant itself. This phosphorus issue should be re-evaluated as would local limits and a defensible number arrived at. I am sure that if the treatment plant were to use analyses from 1995 to establish local limits that this would not be very defensible. I further request that the phosphorus limit be addressed contingent upon development of local limits, which should include total phosphorus.”

Response No. 4

The TMDLs for the Salmon Falls/Piscataqua River were developed by ME DEP over a period of many years, after non-attainment for Dissolved Oxygen criteria was found in the late 1980's. The water quality model was originally developed in 1993 using monitoring data sets from 1991-1992, collected by ME DEP and EPA. The model was re-calibrated in 1996 using data from 1995. The two-dimensional hydrodynamic water quality model, WASP4, was used for the modeling analysis in this project. The modeling work was supported by extensive data collected during 1995; specifically, May through October bi-weekly surveys. Model documentation, including calibration and validation, sensitivity analyses, water quality data sets, model projections, basis for assumptions, etc. are documented in the 1994 Waste Load Allocation report, the April 1996 Data Report and the 1999 final TMDL Report. In-depth reviews by the State of New Hampshire, as well as technical input from an independent technical expert were provided during model development and implementation.

The 1998 monitoring data-set (some collected under actual 7Q10 conditions and when the dischargers were operating at much less than design capacity) was not used in model calibration due to laboratory problems with the chlorophyll a data. The 1998 data did confirm the continued existence of water quality problems in the Salmon Falls and Piscataqua Rivers apparent since the late 1980's. EPA approved the TMDLs based on the use of best available information on and assessment of water quality in the segment of the Salmon Falls/Piscataqua River that currently violates water quality standards of both Maine and New Hampshire.

Comments from the Somersworth NPDES Permit Application Public Hearing

The EPA and NHDES-WD conducted a Public Hearing on Thursday, August 31, 2000 concerning the City of Somersworth NPDES permit replication. Based on the request of the City, the Regional Administrator had determined, pursuant to 40 CFR §124.12, that a significant degree of public interest in the proposed permit existed.

The following eight individuals spoke at the Public Hearing; Douglas Elliot, City Manager; John Jackman, Director of Public Works and Utilities, City Councilor William Guilmette, City Councilor David Littlefield, City Councilor James Wiggin, City Councilor Michael Micucci, State Representative and City Councilor Roger Berube, and Steven Clifton, Consulting Engineer to the City of Somersworth.

Many of the comments made and questions presented by these individuals were similar. In an effort to be clear and effective in the EPA's Response to Comments, similar comments will be grouped. All the individuals who made similar comments will receive individual acknowledgment, though, for that comment. Any one wishing a copy of the Somersworth NPDES Permit Application Public Hearing transcript may request one by contacting:

Mr. John Paul King, Environmental Scientist
U.S. Environmental Protection Agency
1 Congress Street
Suite 1100 (Mailcode CPE)
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1295
FAX No.: (617) 918-1505

Comment No. 1

Compliance/Construction Schedule. Comments that specifically addressed the compliance/construction schedule were received from: Councilor Guilmette, Councilor Littlefield, Councilor Wiggin, Mr. Jackman and Mr. Clifton.

The nature of the comments were the compliance/construction scheduled contained in the Draft Permit is overly ambitious. There is not sufficient time allowed for the City to assess the best approach to meet the NPDES Permit's effluent limitations. Nor is there sufficient time to plan and complete the construction upgrade of Somersworth Water Pollution Control Facility (WPCF).

Response No. 1

The Total Maximum Daily Load Compliance Schedule, now Attachment C of the issued NPDES Permit, was modified. The modified compliance schedule reflects completion of upgrades of the Somersworth Water Pollution Control Facility by September 30, 2005. By that date the treatment facility must be in compliance of all the issued NPDES permit's effluent limits.

Comment No. 2

Salmon Falls River Flow. Comments which addressed restriction of the River flow and this restriction's effect on River pollution levels were made by Mr. Elliot and Councilor Berube.

The point was made, since there are several dams located on the River, these structures restrict river flow. The restricted river flow leads to the concentration of pollutants; such as, phosphorous. It was purposed, because the phosphorous becomes so concentrated in the dam impoundments, limiting the Total Phosphorous in Somersworth's WPCF still would not remove phosphorous pollution of the Salmon Falls River.

Response No. 2

The 1994 Salmon Falls Waste Allocation report recommended a steady run of the river's flow, since the store and release operation of the dams to generate hydroelectric power lead to water quality degradation. Recent Federal Energy Regulatory Commission (FERC) licensing of Salmon Falls dams has established a run of river flow condition. The following table summarizes flow requirements for all FERC license dams on the Salmon Falls River:

River Flow Regulation for Salmon Falls River Dams

<u>DAM</u>	<u>MINIMUM FLOW</u>
South Milton	58 cfs or Inflow
North Rochester	66 cfs or Inflow
Boston Felt	70 cfs or Inflow
Somersworth	110 cfs or Inflow
Lower Great Falls	Run of River
Rollinsford	Run of River
South Berwick	Run of River

Establishing run of river conditions aid in eliminating phosphorous pollution in the River, and will help improve dissolve oxygen levels in the impoundments. However, run of river conditions taken alone will not amend pollution of the Salmon Falls River. Limitation for Total Phosphorous, Ammonia, and Dissolved Oxygen must be placed on Somersworth WPCF effluent.

Comment No. 3

Salmon Falls River Existing Pollution. Comments addressing various aspects of Salmon Falls River existing pollution and means to eliminate that pollution were given by Mr. Elliot, Councilor Berube, Councilor Micucci and Councilor Wiggins.

The comments centered on whether the added effluent limits and the more stringent limits for the existing components of the Somersworth WPCF discharge would actually improve the Rivers water quality. A related comment question if all the discharges to the Salmon Falls River were going to be held to the same standards. Another comment expressed the concern pollution from the upper reaches of the river would overwhelm any measures Somersworth took to reduce pollutants in the WPCF's effluent. A similar comment voiced concern non-point source pollution would also negate any improvements to the WPCF's effluent.

Response No. 3

Salmon Falls River phosphorous loads were calculated based on flow and concentration data taken from all point sources and tributary sources during a five month period in the summer of 1995. Total phosphorous (TP) measurements were taken from the Salmon Falls River point sources (Milton, Berwick, Somersworth, Rollinsford and South Berwick). Non-point source TP samples were taken from the Little River, Worster Brook, Great Works River and Cocheco River. An analysis based on these flow and phosphorous measurements was accomplished to determine Total Phosphorous point source and non-point source loading in the River. The analysis showed the point source phosphorous account for 90% of the Total Phosphorous load to the Salmon Falls River. The following percentage contribution were determined: Milton and Rollinsford, 4%; Berwick, 38%; Somersworth, 35%, South Berwick, about 9% and non-point sources 10%.

Biologic Oxygen Demand (BOD) levels for point and non-point sources were measured during the same period phosphorous concentrations were sampled. Non-point BOD samples were taken from the River at Berwick, Worster Brook and Driscoll Brook. Point sources samples were obtained from the effluent of Milton's, Berwick's, Somersworth's and Rollinsford's wastewater treatment plants. Non-point source contribute about 14% of the Salmon Falls River BOD loading; with the point source BOD loading, then, at 86%. The percentage of BOD loading contributed to Somersworth is about 19%.

As summarized from the Phased TMDL (Total Maximum Daily Load) and Use Attainability Report published in May 1999, "...the calculation of BOD and phosphorous loads during the summer of 1995 during 7Q10 conditions indicate the point source at license loads account for nearly 90% of the pollutant load inputs of concern. Large point sources (Berwick and Somersworth) are the largest inputs in the river and collectively account for 70% to 80% of the total pollutant inputs of BOD and phosphorous. Small point sources (South Berwick, Rollinsford and Milton) collectively contribute 10% to 15% of the total pollutant load inputs of BOD and phosphorous and collectively are a significant source of pollution. It is deduced that all of these sources need to be controlled for an effective river cleanup."

Comment No. 4

Financial Impact. Concern was voiced of the considerable financial strain the sewer rate payers would have to bear for upgrades of the Somersworth WPCF. It was questioned if the upgrades of the WPCF would actually result in eliminating pollution in the Salmon Falls River. It was felt, if

the TMDL predictions were incorrect, then considerable funds would be wasted in the treatment plant's upgrade. These comments were presented by Mr. Elliot, Councilor Berube, Councilor Littlefield, Councilor Micucci and Mr. Clifton. In a related cost comment, Mr. Clifton asked, after the upgrades to the WPCF were accomplished, what would happen if ambient monitoring of the River demonstrated water quality standards were still not being met.

Response No. 4

It was demonstrated during the Salmon Falls River TMDLs' development that the River's dissolved oxygen levels were not meeting either Maine's or New Hampshire's water quality standards. Additionally, it was also demonstrated excessive phosphorous levels from point dischargers impaired the River's water quality by causing algae blooms. As discussed in Response No. 3, the Somersworth WPCF has been identified both as a major contributor of phosphorous to the River and a cause of low dissolve oxygen levels in the River.

The EPA and the NHDES-WD consider it essential the City of Somersworth accomplish upgrades on the City's WPCF. Upgrades of not only Somersworth's wastewater treatment plant; but those of Milton, Rollinsford, Berwick and South Berwick are required to improve the water quality of the Salmon Falls River and preserve the River for use by future generations.

Since the TMDLs are predictive tools, there still might be a concern some of the effluent limits allocated to the Somersworth WPCF will change in the future and become even more restrictive. EPA regulations require a Margin of Safety (MOS) when developing a TMDL. The MOS must take into account such factors as the accuracy of the water quality model, variability fo the receiving water chemistry and the process underlying assumptions. The Salmon Falls River TMDLs were based on conservative assumptions. The design treatment plant flows and 7Q10 river flows were used to calculate the River's assimilative capacity. Use of these parameters were conservative since the plants' average flows are lower than the design flow, and the River's flow is usually greater than the 7Q10 flow.

The City of Somersworth must realize, though, there is a possibility later TMDLs for the Salmon Falls River might require more stringent effluent limits; particularly for phosphorous. Somersworth will be the last wastewater treatment plant on the Salmon Falls River to complete their upgrades in the late Summer of 2005. Then there will be a period of several years during which the pollution levels of the Salmon Falls River are closely monitored. This monitoring will gauge the effectiveness of the present TMDLs. If pollution levels of the River remain above water quality limits, another TMDLs will need to be accomplished for the Salmon Falls River. There is a possibility at the end of this decade these new TMDLs will require more restrictive effluent limits for the Somersworth WPCF.

Comment No. 5

Local Limits; i.e., City of Somersworth Industrial Pretreatment Program. Councilor Micucci stated more time, than the 180 days given in the draft permit, were needed for the City to developed legally defensible local limits for the WPFC.

Response No. 5.

The comments presented by Councilor Micucci emphasized those comments he made in his letter in response to the Draft Permit's initial Public Notice. Please refer to Comment No. 3 of the Section exclusively devoted for the response to Councilor Micucci's letter.

Comment No. 6

The City of Somersworth Director of Public Works and Utilities, John Jackman, made the following specific comments:

- **Concentration Limits.** It was requested that concentration limitations be removed from the NPDES Permit. This was requested because flow and mass loadings were already limited in the Permit; making the concentration restrictions unnecessary.
- **85% Removal of TSS and BOD.** The Draft Permit's requirement for an 85% removal of TSS and BOD is based on comparing those component's influent concentrations to their effluent concentrations. Since the previous comment requested the concentration limits be removed; this would also eliminate the 85% removal of TSS and BOD.
- **10 Year NPDES Permit Cycle.** It was requested the WPCF be issued a ten year NPDES permit. The reasoning was the WPCF required a longer permit period to ensure the effluent limits for which the Facility's upgrade was designed for did not become more stringent after just five years.
- **TMDLs' 7Q10 Calculation.** The existing NPDES Permit calculated effluent limits based on a 7Q10 of 51.4 cfs. The draft NPDES Permit TMDL 7Q10 was 28.7 cfs. An explanation and justification for this changed was requested.

Response No. 6

- **Concentration Limits.** Removal of concentration limits from Somersworth's WPCF NPDES Permit can not be granted. Refer to Responses No. 1 and No. 2 for the City of Somersworth letter.
- **85% Removal of TSS and BOD.** In accordance with 40 CFR §130.102(a)(3) for BOD₅ and 40 CFR §130.102(b)(3) for TSS, the 30-day average percent removal for these components shall not be less than 85%.
- **10 Year NPDES Permit Cycle.** In accordance with 40 CFR §124.46(a), NPDES Permits shall be effective for a fix term not to exceed five years.
- **TMDLs' 7Q10 Calculation.** An explanation of the calculation of the 7Q10 used in the Draft NPDES Permit and TMDLs is quoted from TMDL and Use Attainability Report published in May 1999:

“A 7Q10 flow of 36.4 cfs at Berwick / Somersworth was used in the 1994 modeling study. This was derived by the 7Q10 flow at the Milton gage and an incremental drainage adjustment factor. The 1995 data showed that the incremental drainage adjustment factor in-between Milton and Berwick in this analysis was too high and the newly corrected value of 28.7 cfs should be used in all subsequent analysis. The newly derived 7Q10 at Berwick and Somersworth was derived using the Lamprey river gage to prorate unregulated incremental drainage between Milton and Berwick and then add this value to the 7Q10 flow at the USGS gage at Milton of 25.4 cfs (derived by New Hampshire USGS using a Log Pearson type three statistical distribution). This results in the following equation:

$$7Q10_{\text{Berwick}} = 7Q10_{\text{Milton}} + 7Q10_{\text{Lamprey}} \times (\text{incremental D.A. Milton to Berwick}) / \text{D.A. Lamprey}$$

$$7Q10_{\text{Berwick}} = 25.4 \text{ cfs} + 5.3 \text{ cfs} \times 113 \text{ mi}^2 / 183 \text{ mi}^2 = \underline{\underline{28.7 \text{ cfs}}}$$

The decision to use the Lamprey River gage for prorating intervening drainage between Milton and Berwick was based upon the need to use a gage with a long period of continuous record and a comparison of tributary and Salmon Falls River gaging data in the summer of 1995. The Lamprey River flow gage has a period of record of 60 years. USGS gages also are located on the Cocheco River at Dover and Rochester and a gage on the Great Works River is operated by the North Berwick Sanitary District but its rating curve (stage vs discharge) was derived by USGS. None of these gage have a long period of record (all < 10 years).

In addition to these gages, the Maine DEP made gaging measurements on Worster Brook, the Little River and the Salmon Falls River at Berwick twice per month in 1995. The Little River and Worster Brook are tributaries that are located in-between Milton and Berwick and together result in 54% of the intervening drainage. When this gaging data is compared to the other continuous gaging information, it can be seen that the Lamprey River gage compares most favorably to the Worster Brook and Little River pro-ration factors (CFSM or cubic feet per second per square mile of drainage) In addition the Salmon Falls River gaging data at Berwick confirms that there are not any more tributary inputs in-between Berwick and Milton with significant flow quantity and hence Worster Brook and the Little River are representative tributaries inputs in-between Milton and Berwick.”