

EXHIBIT I

FACT SHEET

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT NO. NH0100595**

NH0100595

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND REGION
ONE CONGRESS STREET
BOSTON, MASSACHUSETTS 02114-2023**

FACT SHEET

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

NPDES PERMIT NO.: NH0100595

NAME AND MAILING ADDRESS OF APPLICANT:

Town of Jaffrey
Public Works Department
23 Knight Street
Jaffrey, New Hampshire 03452

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Jaffrey Wastewater Treatment Plant
Old Sharon Road
Jaffrey, New Hampshire 03452

RECEIVING WATER: Contoocook River (Hydrologic Unit Code: 01070003)

CLASSIFICATION: B

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

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge treated effluent into the designated receiving water. The facility is involved in the collection and treatment of domestic, commercial, and industrial wastewaters. Secondary treatment is provided using an aerated/facultative lagoon system that utilizes ultraviolet light for disinfection. The facility has a design flow of 1.25 mgd and discharges the treated wastewater to the Contocook River.

The previous permit was issued on July 30, 2001 and expired on October 1, 2006. The expired permit ("existing permit") has been administratively extended because the applicant filed a complete application for permit reissuance pursuant to 40 Code of Federal Regulations (C.F.R.) Section 122.6.

The location of the facility, Outfall 001, and receiving water are shown in Attachment A.

II. Description of Discharge.

A quantitative description of significant effluent parameters based on Discharge Monitoring Reports (DMRs) is shown in Attachment B. The data are from January 2004 through April 2006.

III. Limitations and Conditions.

Effluent limitations and monitoring requirements are found in PART I of the draft NPDES permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation.**a. General Regulatory Background**

Congress enacted the Clean Water Act (CWA), "to restore and maintain the chemical physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into waters of the United States from any point source, except as authorized by specified permitting sections of the CWA, one of which is Section 402. See CWA §§ 301(a) and 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System (NPDES). Under this section of the CWA, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§

301, 303, 304(b); 40 C.F.R. Parts 122, 125, 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b). As a class, POTWs must meet performance based requirements based on available wastewater treatment technology. CWA § 301(b)(1)(B). The performance level for POTWs is referred to as “secondary treatment”. Secondary treatment is comprised of technology-based requirements expressed in terms of BOD₅, TSS, and pH. 40 C.F.R. Part 133.

Water quality-based effluent limits are designed to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of, “any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulation...” See 40 C.F.R. §§ 122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protect State water quality standards, “including State narrative criteria for water quality”)(emphasis added) and 122.45(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that States develop water quality standards for all water bodies within the State. CWA § 303. These standards have three parts: (1) one or more “designated uses” for each water body or water body segment in the state; (2) water quality “criteria” consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA § 303(c)(2)(a); 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

The applicable New Hampshire water quality standards can be found in Surface Water Quality Regulations, Chapter Env-Ws 1700 et seq. See generally, Title 50, Water Management and Protection, Chapter 485A, Water Pollution and Waste Disposal Section 485-A. Hereinafter, New Hampshire’s Surface Water Quality Regulations are referred to as the NH standards.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from a State’s water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits. When a State has not established a numeric water quality criterion for a specific pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a “calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable

narrative water quality criteria and fully protect the designated use”; on a “case-by-case basis” using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or in certain circumstances, based on an “indicator parameter”. 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

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

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 standard, including narrative water quality criteria. See 40 C.F.R. 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

A. Reasonable Potential

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 applications, monthly discharge monitoring reports, 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*, March 1991, EPA/505/2-90-001 in Section 3; and where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire Standards (RSA 485-A:8VI, Env-Ws 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, 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 Env-Ws 1705.01.

B. Anti-backsliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. Unless certain limited exceptions are met, “backsliding” from effluent limitations contained in previously issued permits is prohibited. EPA has also promulgated anti-

backsliding regulations which are found at 40 C.F.R. § 122.44(l). Unless applicable anti-backsliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

C. State Certification

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

However, when EPA reasonably believes that a State water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA §301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that under CWA § 401, EPA’s duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements, limitations, or conditions imposed by State law. Therefore, “[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition.” 40 C.F.R. § 124.55(c). In such an instance, the regulations provide that, “The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification.” Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4(d) and 40 C.F.R. § 122.44(d).

c. **Development of Water Quality-Based Effluent Limitations for Impaired Waters**

The State of New Hampshire’s 2004 303(d) list of impaired waters identifies surface waters which do not currently meet State water quality standards (NHDES, 2004). Segments of the Contoocook River below the discharge from the Jaffrey Wastewater Treatment Plant are impaired because they do not support the designated uses for aquatic life and primary contact recreation. Aquatic life uses are threatened for dissolved oxygen saturation, dissolved oxygen, and total phosphorus. Primary contact recreation uses are threatened due to chlorophyll *a*, *Escherichia coli* bacteria, and total phosphorus. States are required to prepare total maximum daily load (TMDL) analyses for receiving waters listed on the 303(d) list. A TMDL is a scientific analysis which identifies the amount of a pollutant from point, nonpoint, and background sources that may be discharged to a water quality-limited receiving water. Any

pollutant loading above the TMDL will result in a violation of the applicable water quality standards. The State of New Hampshire completed a draft TMDL in May, 2006 for a 9.5 mile stretch of the Contoocook River from the outlet of Cheshire Pond in Jaffrey to just downstream of the North Village Dam in Peterborough. The TMDL specifically addresses impairments caused by dissolved oxygen, phosphorus, and chlorophyll *a*. The public comment period on the draft TMDL ended on June 30, 2006. At present, the TMDL has not been finalized. For this reason, EPA believes that it is reasonable to move forward with the draft permit.

In the absence of a TMDL, EPA is required to use available information to establish water quality limits when issuing NPDES permits to impaired waters. See generally 40 C.F.R. § 122.44(d). EPA has used the data collected by NHDES for the TMDL and has established water-quality based limits for total phosphorus using this data, applicable narrative State water quality standards, Federal water quality criteria guidance, and other relevant information discussed in the “Phosphorus” and “CBOD₅, TSS, Ammonia Nitrogen, and Dissolved Oxygen” sections below.

Based on available evidence, including the draft TMDL, EPA believes that the limits in the draft permit represent the minimum levels of control necessary to meet water quality standards. An approved TMDL may ultimately require that more stringent limits are necessary but there is no realistic likelihood that water quality standards could be met with less stringent limits than those proposed in the draft permit.

While the permit will be issued for the normal five (5) year term, it can be reopened and modified during its term under certain circumstances. A permit may be modified or revoked and reissued in accordance with 40 C.F.R. § 122.62(a)(causes for modification) or (b)(causes for modification or revocation and reissuance). One basis for reopening and modifying the permit during its term is the receipt of information that was not available at the time of permit issuance and that would have justified application of different permit conditions (“new information”). See 40 C.F.R. § 122.62(a)(2). New information may include, but is not limited to, an applicable final TMDL; other relevant water quality data or studies provided by any party; and the results of ESA Section 7 consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service. In addition to constituting new information, the outcome of the ESA Section 7 consultation may also satisfy the requirements of 40 C.F.R. § 122.62(b)(1). A reopener provision reflecting the foregoing has been added to the permit.

Any modified permit resulting from the reopener must be consistent with applicable anti-backsliding provisions. See e.g. CWA §§ 402(o)(1); 303(d)(4)(A)(i); 402(o)(2)(B) (and final paragraph); 40 C.F.R. § 122.44(1).

d. Flow

The Jaffrey Wastewater Treatment Plant has a design flow rate of 1.25 mgd. This flow rate is used to calculate mass limits for Carbonaceous Biochemical Oxygen Demand (CBOD₅), Total Suspended Solids, and available dilution as discussed below. If the effluent flow rate exceeds 80 percent of the 1.25 mgd design flow (1.0 mgd) for a period of three (3) consecutive months then the permittee must notify EPA and the NHDES-WD and implement a program to maintain satisfactory treatment levels.

e. Conventional Pollutants**A. CBOD₅, TSS, Ammonia Nitrogen, and Dissolved Oxygen**

The limits in the draft permit for CBOD₅, TSS, ammonia nitrogen (NH₃-N), and dissolved oxygen (DO) were derived by modeling performed by the NHDES in the summer of 2000. With a minor adjustment, these limits have been carried forward to the draft permit. At the request of the Town, the summer CBOD₅ limit has been raised to 10 mg/l and the summer limit for ammonia nitrogen has been reduced to 5.3 mg/l. The adjustment of these limits was done so that the total oxygen demand remains the same.

B. pH

The pH limit range of 6.5 – 8.0 S.U. in the draft permit remain unchanged from the existing permit. Language under State Permit Conditions (PART I.D.1.a.) allows for a change in the pH limit under certain conditions. A change would be considered if the applicant can demonstrate to the satisfaction of NHDES-WD that the pH standard of the receiving water 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 to outside 6.5 to 8.0 Standard Units (S.U.), EPA has added a provision to the draft permit (see SPECIAL CONDITIONS section). That provision will allow EPA to modify the pH limit using a certified letter approach. This change will be allowed only if it is demonstrated that the revised pH limit range does not alter the naturally occurring receiving water pH. However, the pH limit range cannot be less restrictive than 6.0 to 9.0 S.U. found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 C.F.R. Part 133) for the facility.

C. Escherichia coli

The average monthly and maximum daily limitations for Escherichia coli bacteria are based upon limitations in the existing permit in accordance with Class B water quality standards established

by the State of New Hampshire in RSA 485-A:8.II and the anti-backsliding requirements mentioned above. The average monthly discharge of *Escherichia coli* is determined by calculating the geometric mean.

f. Non-Conventional and Toxic Pollutants

Water quality based limits for specific toxic pollutants were 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, EPA440/5-86-001 as amended, commonly known as the federal "Gold Book". Each pollutant generally includes 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 Surface Water Quality Regulations adopted on December 10, 1999. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a pollutant specific draft permit limit.

A. 7Q10 Flow and Available Dilution

The available dilution of the receiving water is determined by using the facility's design flow of 1.25 mgd and the annual 7-day mean low flow at the 10 year recurrence interval (7Q10) in the receiving water just above the treatment plant's outfall. The available dilution is reduced by 10 percent to account for the State's assimilative capacity reserve rule.

The existing permit used a dilution factor of 2.45. This is based upon a 7Q10 flow in the Contoocook just above the outfall of 3.33 cfs. This 7Q10 flow is found in a June 10, 1992 report by T.P. Ballesterio, Evaluation of Waste Load Allocation Strategies for Jaffrey, New Hampshire. To obtain the 7Q10 flow at Jaffrey, 31 years of downstream daily flow records on the Contoocook River at Peterborough (USGS Gaging Station 01082000) were used to derive a 7Q10 in Peterborough. The 7Q10 at Jaffrey was determined by using the 7Q10 in Peterborough and an aerial weighting factor.

For the current draft permit a revised 7Q10 flow was calculated by the NHDES using the Dingman equation. This equation estimated 7Q10 flow in ungaged, unregulated streams based upon watershed (basin) area, mean basin elevation, and the percent of the basin underlain by coarse-grained stratified drift in contact with streams. Estimates of 7Q10 values for points upstream from the Peterborough gage (including Jaffrey) were estimated by multiplying the 7Q10 at the Peterborough gage (8.11 cfs) by the ratio of the Dingman 7Q10 at the point of interest to the Dingman 7Q10 at the Peterborough gage. Hence, the 7Q10 for the Contoocook River at the Jaffrey WWTF outfall was estimated by multiplying the Peterborough gage 7Q10 (8.11 cfs) by the ratio of the Dingman 7Q10 at the Jaffrey WWTF to the Dingman 7Q10 at the

Peterborough gage (0.4716), resulting in an estimated 7Q10 downstream of the Jaffrey WWTF

of 3.82. The 7Q10 just above the outfall is calculated by subtracting the plant design flow of 1.25 mgd (1.93 cfs) from the 7Q10 downstream of the outfall which resulting in a 7Q10 of 1.89 cfs (3.82 cfs – 1.93 cfs).

Using the 7Q10 of 1.89 cfs and accounting for the State's reserve capacity of 10 percent yields a dilution factor of 1.78. The calculation of this dilution factor can be found in Attachment C.

B. Copper

The existing permit contains acute and chronic total recoverable copper limits of 9.3 and 6.9 ug/l, respectively. These are water quality-based limits that were derived using the copper criteria found in the New Hampshire water quality standards. Due the revised 7Q10 calculation the resulting lower dilution factor of 1.78, the acute and chronic copper limits have been recalculated to 6.7 and 5.0 ug/l, respectively. Copper limits have been included in the current draft permit due to the fact that there is reasonable potential for copper to cause or contribute to a violation of water quality standards. For the period June 30, 2004 through April 30, 2006 the effluent exceeded the proposed chronic water quality-based limit of 5.0 ug/l 22 times (23 total samples). The proposed acute water quality-based limit of 6.7 ug/l was exceeded 21 times. The calculations for the copper limits can be found in Attachment D.

C. Lead

A monthly average limit of 1.3 ug/l for total recoverable lead is contained in the existing permit. Additionally, the permit requires reporting for maximum daily total recoverable lead levels in the effluent. Because the existing permit limit of 1.3 ug/l is below the minimum level (ML) of detection of applicable lead testing protocols the basis for compliance/noncompliance determinations was set at the ML of 5 ug/l. An analysis of DMR data from January 2004 through April 2006 shows that the total recoverable lead ML was exceeded on four occasions (11/30/04 – 5 ug/l; 3/31/05 – 5 ug/l; 9/30/05 – 7.4 ug/l; 3/31/06 – 6 ug/l) which demonstrates reasonable potential and thus the need to limit lead in the current draft permit. For this reason, a monthly average permit limit has been included in the draft permit. Because of the revised dilution the monthly average permit limit has been reduced to 1.0 ug/l. This is a water quality-based limit derived using lead criteria found in the New Hampshire water quality standards. Additionally, the monitoring requirement for maximum daily total recoverable lead levels has also been carried forward to the current draft permit. The calculations for the lead limit can be found in Attachment D.

D. Silver

The exiting permit contains a water quality based limit for total recoverable silver of 0.92 ug/l. This limit is a maximum daily limit and is based upon acute silver criteria found in New Hampshire water quality standards. There are no chronic silver criteria to establish a monthly average limit. Because the existing permit limit of 0.92 ug/l is below the ML of applicable silver testing protocols, the basis for compliance/noncompliance determinations was set at the ML of 1

ug/l. During the period January 2004 through April 2006 the ML for total recoverable silver ML was exceeded on 5 occasions (5/31/04 – 2.8 ug/l; 10/31/04 – 1.2 ug/l; 1/31/05 – 2 ug/l; 12/31/05 – 25.2 ug/l; 3/31/06 – 1.5 ug/l). Therefore, the maximum daily total recoverable silver limit has been included in the current draft permit. Because the dilution factor has been reduced to 1.78, the proposed maximum daily total recoverable silver limit has been reduced to 0.6 ug/l. The calculations for the silver limit can be found in Attachment D.

E. Zinc

Monthly average and daily maximum limits of 83.6 and 90.0 ug/l, respectively, for total recoverable zinc are contained in the existing permit. Because of the revised dilution, both the proposed monthly average and daily maximum limits have been reduced to 65.9 ug/l. Since issuance of the existing permit, the proposed daily maximum limits zinc has been exceeded four times (02/28/02 – 80 ug/l; 03/31/02 – 70 ug/l; 11/30/03 – 100 ug/l; 02/29/04 – 70 ug/l) and the proposed monthly average limit has been exceeded once (11/30/03 - 70 ug/l). The monitoring frequency has been reduced to once per quarter. The calculations for the zinc limits can be found in Attachment D.

F. Aluminum

The existing permit required monitoring of the facility's effluent and the Contoocook River upstream of the outfall two times a month for aluminum. This monitoring was required for two reasons. First, the monitoring data was needed to determine whether the facility has a reasonable potential to exceed the instream water quality criteria for aluminum. Second, the instream monitoring would provide data concerning whether or not the Contoocook River exceeded instream water quality criteria for aluminum on its own. A summary of the aluminum monitoring data from 2001 through 2005 is provided in the table below.

Aluminum Monitoring Data (mg/l)														
2001	Eff.	C.R. ¹	2002	Eff.	C.R.	2003	Eff.	C.R.	2004	Eff.	C.R.	2005	Eff.	C.R.
10/11	0.10	0.06	1/03	0.08	0.12	1/08	0.08	0.27	1/08	0.12	1.60	1/04	0.07	0.104
10/18	0.08	0.10	1/17	0.07	0.08	1/16	0.08	0.12	1/14	0.11	0.32	1/11	0.01	0.096
11/14	0.11	0.04	2/07	0.07	0.06	2/06	0.11	0.11	2/05	0.06	0.12	2/01	0.03	0.100
11/20	0.10	0.08	2/14	0.09	0.10	2/20	0.09	0.12	2/16	0.06	0.13	2/08	0.07	0.086
12/06	0.07	0.07	3/07	0.12	0.09	3/13	0.10	0.13	3/04	0.09	0.14	3/08	0.06	0.0104
12/13	0.06	0.14	3/14	0.10	0.10	3/20	0.12	0.14	3/11	0.11	0.11	3/15	0.05	0.095
			4/04	0.06	0.08	4/03	0.13	0.16	4/01	0.02	0.17	4/07	0.03	0.114
Ave	0.087	0.082	4/11	0.09	0.11	4/10	0.08	0.20	4/15	0.06	0.10	4/21	0.01	0.089
Max	0.11	0.14	5/02	0.04	0.09	5/08	0.15	0.13	5/06	0.05	0.08	5/05	0.01	0.067
Min	0.06	0.04	5/09	0.05	0.08	6/05	0.14	0.16	5/25	0.07	0.33	5/19	0.12	0.061
			6/05	0.28	0.11	6/12	0.04	0.11	6/03	0.05	0.09	6/02	0.06	0.082
			6/13	0.10	0.13	7/02	0.07	0.12	6/17	0.07	0.07	6/16	0.05	0.050
			7/02	0.23	0.10	7/17	0.05	0.10	7/08	0.14	0.05	7/07	0.07	0.091
			7/11	0.32	0.08	8/07	0.10	0.15	7/15	0.07	0.07	7/21	0.06	0.074
			8/01	0.07	0.13	8/14	0.06	0.11	8/17	0.08	0.06	8/04	0.03	0.054
			8/08	0.09	0.21	9/11	0.11	0.09	9/07	0.11	0.06	8/18	0.02	0.089
			9/05	0.10	0.05	9/25	0.12	0.13	9/16	0.12	0.08	9/01	0.05	0.078
			9/12	0.90	0.40	10/23	0.11	0.08	10/05	0.11	0.08	9/15	0.04	0.050
			10/03	0.12	0.70	13/30	0.06	0.15	10/12	0.08	0.05	10/06	0.02	0.050
			10/09	0.10	0.70	11/06	0.08	0.15	11/02	0.14	0.15	10/20	0.02	0.159
			11/07	0.12	0.70	11/13	0.08	0.16	11/09	0.27	0.07	11/03	0.02	0.229
			11/27	N.D.	0.10	12/04	0.07	0.12	12/07	0.07	0.10	11/17	0.03	0.171
			12/05	0.27	0.11	12/17	0.08	0.21	12/14	0.07	0.11	12/01	0.03	0.110
			12/12	0.10	0.22							12/15	0.002	0.093
			Ave	0.155	0.194	Ave	0.092	0.140	Ave	0.093	0.18	Ave	0.040	0.092
			Max	0.90	0.70	Max	0.15	0.27	Max	0.27	1.60	Max	0.12	0.229
			Min	0.04	0.05	Min	0.04	0.08	Min	0.02	0.05	Min	0.01	0.050

¹ C.R. = Contoocook River samples taken 400 feet above the outfall.

The acute and chronic water instream water quality criteria for aluminum are 0.750 and 0.087 mg/l, respectively. The sampling data from 2001 through 2005 shows that the chronic instream water quality criteria for aluminum in the Contoocook River upstream of the outfall was exceeded 68% of the time (68 out of 100 samples). The results that are above the chronic criteria of 0.087 mg/l are highlighted above.

New Hampshire Surface Water Quality Regulations Env-Ws 1703.01(b) states "All surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface water." Further, Env-Ws 1703.03(b) states, "The presence of pollutants in the surface waters shall not justify further introduction of pollutants from point and/or nonpoint sources." Because sampling data indicates that the Contoocook River upstream of Jaffrey's outfall exceeds the instream chronic criteria for aluminum the majority of the time, any aluminum within the effluent from the Jaffrey WWTP must be at least at the instream chronic criteria of 0.087 mg/l to ensure that the discharge does not cause or contribute to a violation of New Hampshire's Water Quality Standards. Also, Env-Ws 1705.01 requires that not less than 10% of the assimilative capacity of the surface

water shall be held in reserve for future needs. Therefore, the aluminum limit in the draft permit is 0.078 mg/l (0.087 x 0.9). This limit is a monthly average limit and shall be sampled twice per month.

G. Cadmium, Chromium, and Nickel

The monitoring requirement for total recoverable cadmium, chromium, and nickel have been carried forward in the draft permit. EPA does not consider this a burden since the monitoring period is once per quarter and can be done in conjunction with WET testing where testing for these metals (and other constituents) is standard practice.

H. Bis(2-Ethylhexyl)Phthalate

In the NPDES permit renewal application the permittee is required to submit three (3) series of expanded effluent testing. The Town of Jaffrey performed this sampling on July 26, 2005, January 19, 2006, and February 2, 2006. While the test results for bis(2-ethylhexyl)phthalate on July 26, 2005 were below detection level, the results from January 19 and February 2, 2006 were 19 and 17 ug/l, respectively.

The New Hampshire water quality standards contain human health criteria for bis(2-ethylhexyl)phthalate of 1.8 ug/l for the ingestion of water and fish and 5.9 ug/l for the consumption of fish only. These criteria for the protection of human health are based upon carcinogenicity. New Hampshire water quality standards also have criteria for bis(2-ethylhexyl)phthalate as a phthalate ester. The chronic criteria for phthalate esters is 3 ug/l while the acute criteria is 940 ug/l. Env-Ws 1703.22(e) indicates that phthalate esters are a class of compounds that have 2 or more isomers and the sum of the concentrations of each isomer shall meet the acute and chronic aquatic life criteria.

Because only limited data exists for bis(2-ethylhexyl)phthalate EPA-New England has not proposed a limit in the draft permit. Rather, the draft permit contains a once per month monitoring requirement to compile data for the determination as to whether or not further action for this pollutant is warranted.

I. Phosphorus

Phosphorus and other nutrients (i.e. nitrogen) can promote the growth of nuisance algae and rooted aquatic plants. Typically, elevated levels of nutrients will cause excessive algal and/or plant growth resulting in reduced water clarity, poor aesthetic quality, and impaired aquatic habitat. Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce in-stream dissolved oxygen concentrations to levels that could negatively impact aquatic life and/or produce strong unpleasant odors.

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

reservoir.

In December 2000, EPA released "Ecoregional Nutrient Criteria" (USEPA 2000), which was established as part of an effort to reduce problems associated with excess nutrients in water bodies located within specific areas of the country. The published criteria represent conditions in waters within each specific ecoregion which are minimally impacted by human activities, and thus are representative of waters without cultural eutrophication. Jaffrey is within Ecoregion VIII, *Nutrient Poor Largely Glaciated Upper Midwest and Northeast*. Recommended criteria for this ecoregion is a total phosphorus criterion of 10 ug/l (0.010 mg/l) and chlorophyll *a* criteria of 0.63 ug/l (0.00063 mg/l). These recommended criteria are found in the *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII* (USEPA 2001).

More recently, Mitchell, Liebman, Ramseyer, and Card (in draft 2004), in conjunction with the New England states, developed potential nutrient criteria for rivers and streams in New England. Using several river examples representative of typical conditions for New England streams and rivers, they investigated several approaches for the development of river and stream nutrient criteria that would be dually protective of designated uses in both upstream reaches and downstream impoundments. Based on this investigation an instream total phosphorus concentration of 0.020 – 0.022 mg/l was identified as protective of designated uses for New England rivers and streams. The development of the New England-wide total phosphorus concentration was based on more recent data than the National Ecoregional nutrient criteria, and has been subject to quality assurance measures. Additionally, the development of the New England-wide concentration included reference conditions for waters presumed to be protective of designated uses.

The New Hampshire Surface Water Quality Regulations contain a narrative criterion which states that phosphorus contained in effluent shall not impair a water body's designated use. Specifically, Env-Ws 1703.14(b) states that, "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring." Env-WS 1703.14 further states that, "Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards." Cultural eutrophication is defined in Env-Ws 1702.15 as, "...the human-induced addition of wastes containing nutrients which results in excessive plant growth and/or decrease in dissolved oxygen." Although numeric nutrient criteria have not yet been developed in New Hampshire, a total phosphorus concentration of 0.05 mg/l is considered by the NHDES as a level of concern (NHVRAP & NHDES 2002, 2003, and 2005).

As previously discussed, Section 303(d) of the CWA requires states to identify those waterbodies that are not expected to meet surface water quality standards after implementation of technology-based controls and thus require the development of total maximum daily loads (TMDL). Impaired water quality conditions persist in the Contoocook River and have resulted in its listing in the State of New Hampshire's *Final List of Threatened or Impaired Waters That Require a TMDL* (NHDES, 2004), also referred to as the 303(d) list. According to the 303(d) list, aquatic life and primary contact recreational uses in the Contoocook River are threatened in stretches of the river below the

discharge from the Jaffrey Wastewater Treatment Plant. Parameters which threaten aquatic life uses are dissolved oxygen saturation, dissolved oxygen, and total phosphorus. Parameters which threaten primary contact recreational uses are chlorophyll *a*, *Escherichia coli* bacteria, and total phosphorus. In order to prepare the draft TMDL for the Contoocook River sampling was performed at numerous points along the river on August 4 and 11, 2004. A summary of pertinent data from this sampling effort are provided below.

Sample Location	Sampling Date 8/04/2004		Sampling Date 8/11/2004	
	Chlorophyll A (mg/m ³)	Total P (mg/l)	Chlorophyll A (mg/m ³)	Total P (mg/l)
37-CTC	1.83	0.0105	4.065	0.012
01-MBR ¹	2.92	0.010	3.08	0.01
36-CTC	1.61	0.0125	2.16	0.014
34-CTC	3.08	0.014	2.80	0.0155
32T-CTC	2.055	0.0155	1.80	0.0165
32M-CTC	2.3	0.016	2.16	0.015
NH0100595	155.4	2.664	47.87	3.13
32-CTC	4.53	0.110	5.45	0.214
31C-CTC	4.91	0.105	4.72	0.203
31B-CTC	5.43	0.111	4.36	0.183
00H-TWN ²	2.53	0.022	1.61	0.017
31AT-CTC	2.51	0.092	3.79	0.151
02-GRD	7.17	0.021	2.16	0.024
31AF-CTC	3.06	0.061	3.08	0.122
01-MBD ³	1.07	0.016	1.61	0.014
31-CTC	2.32	0.054	2.68	0.071
30M-CTC	2.13	0.051	2.89	0.064
30-CTC	16.39	0.042	2.89	0.059
29-CTC	7.42	0.040	2.87	0.042
00H-NUB ⁴	1.64	0.017	0.9	0.014
28-CTC	1.8	0.023	2.51	0.034
27M-CTC	3.98	0.031	1.97	0.028
27-CTC	3.25	0.032	0.69	0.029
25Y-CTC	2.66	0.031	1.59	0.028

¹ Mountain Brook Reservoir (Tributary)

³ Meadow Brook (Tributary)

² Town Farm Brook (Tributary)

⁴ Nubansit Brook (Tributary)

Based on the sampling results above, the average total phosphorus concentration in the Jaffrey effluent is 2.9 mg/l $((2.664 + 3.13)/2)$. Further, the DMR data for the period January 2004 through April 2006 shows a phosphorus range of 1.78 to 4.99 mg/l. Even if the lowest reported phosphorus concentration of 1.78 mg/l (from August 2005) is divided by the dilution factor of 1.78 the resulting instream phosphorus concentration would be 1.00 mg/l which is well above the Gold Book instream criteria of 0.1 mg/l. While the TMDL monitoring data shows that several stations below Jaffrey's outfall exceed the Gold Book criteria of 0.1 mg/l most stations on the Contoocook below the confluence with Town Farm Brook do not. According to the *Nutrient Criteria Technical Guidance, Rivers and Streams* (U.S. EPA, July 2000), this is most likely due to the fact that much of the phosphorus in the water column is taken up in the plant biomass. In free flowing rivers, the dominant form of plant biomass is typically periphyton. The relatively low phytoplankton, as measured by chlorophyll *a*, and the high percent coverage of the stream bottom below Jaffrey with

periphyton support this conclusion. Further, as enrichment increases, the fraction of periphyton biomass composed of filamentous greens increases as does the percent of stream bed covered with algae. (U.S. EPA, July 2000) During the TMDL sampling the percentage of periphyton coverage for each station was estimated. For the August 4 sampling event, two stations below Jaffrey's discharge, 31B-CTC and 31AF-CTC, had periphyton coverage of 67–100%. For the August 11 sampling event periphyton coverage of 67-100% were noted at stations 31B-CTC, 31AT-CTC, and 31AF-CTC.

It should be noted that phosphorus is only bound up in plant biomass temporarily. With the change of the seasons, plant biomass will die and can be carried to downstream impoundments where it will decompose and the phosphorus will be recycled to the water column. In addition to the recycling of phosphorus into the water column, the decay of accumulated plant biomass at the bottom of downstream impoundments can lead to sediment oxygen demand and low dissolved oxygen levels in the lower portions of the impoundment. This is evidenced in Powder Mill Pond (an impoundment below Jaffrey) where sampling in August of 2002 showed dissolved oxygen levels near the bottom of the pond as low at 1.44 mg/l (16% saturation). According to NH RSA 485-A:8.II, Class B waters shall contain a dissolved oxygen content of at least 75% saturation. An additional impact associated with periphyton and the proliferation and subsequent decay of aquatic vegetation is that they can accumulate on the bottom of the river bed and impair the use of the substrates by species utilizing the river.

With respect to instream chlorophyll *a* concentrations, sampling stations both upstream and downstream of Jaffrey exceeded the ecoregional chlorophyll *a* concentration of 0.63 ug/l. The highest chlorophyll *a* concentration of 16.39 ug/l was from station 30-CTC during the August 4 sampling event. This station is located at the end of an impoundment on the Contoocook River down stream of Jaffrey. The *2006 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology (CALM)* for the NHDES uses a threshold of 15 ug/l for listing a waterbody as impaired for primary contact recreation. It should be noted that the 15 ug/l threshold used by the NHDES CALM for primary contact recreation is only a guideline used for recreational purposes, not for aquatic life.

The following table provides a summary from the literature of the trophic status for fresh water systems as characterized by mean chlorophyll *a*.

Freshwater System Trophic Status Based on Mean Chlorophyll <i>a</i> ¹				
Trophic Status	Wetzel (2001)	Ryding and Rast (1989)	Smith (1998)	Novotny and Olem (1994)
Eutrophic	> 10 ug/l	6.7 – 31 ug/l	---	>10 ug/l
Mesotrophic	2 – 15 ug/l	3 – 7.4 ug/l	3.5 – 9 ug/l	4 – 10 ug/l
Oligotrophic	0.3 – 3 ug/l	0.8 – 3.4 ug/l	---	< 4 ug/l

¹ Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll *a* for the Chesapeake Bay and Its Tidal Tributaries. U.S. EPA Region III. April 2003.

Based on the values presented, the Contoocook River is, at a minimum, mesotrophic, and thus at risk for eutrophication.

Based on the above information EPA has included a total phosphorus seasonal limit of 0.16 mg/l in the draft permit to ensure that the effluent does not cause or contribute to violations of water quality standards. This limit is based upon the Gold Book recommended instream concentration of 0.1 mg/l and is an average monthly limit applicable from April 1 through October 31 of each year. The derivation of the phosphorus limit can found in Attachment E.

EPA has decided to apply the Gold Book criterion rather than the more stringent ecoregional criteria, given that it was developed from an effects-based approach versus the ecoregional criteria that were developed on the basis of reference conditions. The effects-based approach is taken because it is more directly associated with an impairment to a designated use (i.e. fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e. water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e. phosphorus) and a response variable (i.e. chlorophyll *a*) associated with designated use impairments. Reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregional class. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions.

In addition to the seasonal total phosphorus limit of 0.16 mg/l, the permit contains a winter period total phosphorus limit of 1.0 mg/l from November 1 through March 31 of each year. The winter period limitation on total phosphorus is necessary to ensure that the higher levels of phosphorus discharged in the winter do not result in the accumulation of phosphorus in downstream sediments. The limitation assumes that the vast majority of the phosphorus discharged will be in the dissolved fraction and that dissolved phosphorus will pass through the system during the winter period.

g. 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 waters of the U.S.. EPA-New England adopted this "integrated strategy" on July 1, 1991, for used in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant specific approaches such as those in the Gold Book and State Regulations address individual chemicals, whereas whole effluent toxicity (WET) approaches evaluate interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "additive" and/or "antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts and 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;" (NH RSA 485-A:8, VI and the NH Code of Administrative Rules, PART Env-Ws 1703.21). The federal NPDES regulations at 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 criteria for toxicity. Inclusion of the whole effluent toxicity limit in the draft permit will demonstrate the compliance with narrative water quality criteria of "no toxics in toxics amounts" found in both the CWA and State of New Hampshire regulations.

The current policy of EPA New England is to require toxicity testing in all municipal permits. The type of whole effluent toxicity test (acute and/or chronic) and effluent limitation (LC50 and/or C-NOEC) are based on available dilution.

The existing permit contains a C-NOEC limit of 40.8 percent and an LC50 limit of 100 percent. Because of the revised dilution the C-NOEC limit for the draft permit has been calculated to be 56.2%. The LC50 limit of 100% remains unchanged. WET testing shall be performed once per quarter using *Ceriodaphnia dubia* and *Pimphales promelas*. WET tests performed on *Ceriodaphnia dubia* may be performed using an alternate dilution water with a hardness that closely matches the average hardness of the Contoocook River. This approval was granted in a letter to Jaffrey dated September 22, 2006.

Toxicity testing frequency may be reduced, to not less than once per year, after the completion of a minimum of the most recent four successive toxicity tests of effluent, all of which must be valid tests and demonstrate compliance with the permit limits for whole effluent toxicity. Any requests for toxicity testing frequency reduction must be made to EPA-New England in writing. If toxicity persists in the effluent, 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 NH standards are not adequately enforced and users of the receiving water are not adequately protected during the remaining life of the permit. Results of these toxicity tests are considered "new information not available at the permit development", therefore, the permitting authority is allowed to use said information to modify and issued permit under authority in 40 C.F.R. §122.62(a)(2).

h. Pretreatment

The permittee is required to administer a pretreatment program based on authority granted under 40 C.F.R. Part 403 and Section 307 of the CWA. The permittee's pretreatment program received EPA approval on August 22, 1990 and, as a result, appropriate pretreatment program requirements were incorporated into the existing permit which were consistent with the approval and federal pretreatment regulations in effect when the permit was issued.

Periodically, the Federal Pretreatment Regulations in 40 C.F.R. Part 403 are amended. Those amendments established new requirements for implementation of the pretreatment program. Upon reissuance of this NPDES permit, the permittee is obligated to modify its pretreatment

program to be consistent with the current Federal regulations. Those activities that the permittee must address include, but are not limited to, the following: (1) develop and enforce EPA approved specific effluent limits (technically-based local limits); (2) revise the local sewer use ordinance or regulation, as appropriate, to be consistent with Federal regulations; (3) develop an enforcement response plan; (4) implement a slug control evaluation program; (5) track significant noncompliance for industrial users; and (6) establish a definition of and track significant industrial users. These requirements are necessary to ensure continued compliance with the NPDES permit.

In addition to the requirements described above, the draft permit requires the permittee to submit to EPA in writing, within 180 days of the effective date of the permit, a description of proposed changes to the permittee's pretreatment program deemed necessary to assure conformity with current federal pretreatment regulations. These requirements are included in the draft permit to ensure that the pretreatment program is consistent and up to date with all pretreatment requirements in effect. The permittee must also continue to submit, annually on February 15th, a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

i. Sludge

Section 405(d) of the CWA 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 sludge which is land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator are subject to Part 503 technical standards. Part 503 regulations have a self implementing provision, however, the CWA requires implementation through permits. Domestic sludge which is disposed of in a municipal solid waste landfill is in compliance with Part 503 regulations provided that the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 C.F.R. Part 258.

The draft permit requires that sewage sludge use and disposal practices meet Section 405(d) Technical Standards of the CWA. In addition, the EPA Region I – NPDES Permit Sludge Compliance Guidance document dated November 4, 1999 is included with the draft permit for use by the permittee in determining their appropriate sludge conditions for their chosen method of sludge disposal. The permittee is required to submit to EPA and to NHDES-WD annually, by February 19th, the various sludge reporting requirements as specified in the guidance document for the chosen method of sludge disposal.

The Jaffrey WWTF consists of aerated lagoons. The facility first went on-line in 1986 and sludge was removed for the first time in 2002 and 2003. Approximately 692.74 dry tons of sludge were removed during this period which translates to approximately 40.7 dry metric tons per year. The removal of sludge was performed by Subcontractor-Resource Management, Inc. The sludge was dewatered on-site by another subcontractor, P.H. Senesac, Inc., and then trucked

off-site to land application sites. The facility does not anticipate additional removal of any sludge during the life of this permit.

j. Operation and Maintenance

Regulations regarding proper operation and maintenance are found at 40 C.F.R. § 122.41(e). These regulations require, “that the permittee shall at all times operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit.” The treatment plant and collection system are included in the definition “facilities and systems of treatment and control” and are therefore subject to proper operation and maintenance requirements.

Similarly, a permittee has a “duty to mitigate” pursuant to 40 C.F.R. § 122.41(d), which requires the permittee to “take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment.”

General requirements for proper operation and maintenance, and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Par I.B, I.C. and I.D. of the draft permit. These requirements include reporting of unauthorized discharges including sanitary sewer overflows (SSOs), maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to the extent necessary to prevent SSOs and infiltration/inflow related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

k. Essential Fish Habitat and Endangered Species

A. Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104267), 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 area 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 1996 Sustainable Fisheries Act broadly defined EFH as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment, hard bottom, and structures underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types utilized by a species throughout its life cycle. Adversely affect means any impact which reduces the quality and/or quantity of EFH. Adverse impacts may include direct (i.e. contamination, physical disruption), indirect (i.e. loss of prey), site specific or habitat wide impacts including individual, cumulative, or synergistic consequences of actions.

According to the National Marine Fisheries Service (NMFS), the Contoocook River is EFH for Atlantic salmon (*Salmo salar*). According to the New Hampshire Department of Fish and Game, Atlantic salmon fry have been annually stocked into the Contoocook River in the Towns of Hillsborough and Henniker for the last 15 years. These annual stocking have ranged from 15,000 to 100,000 fry. No adult Atlantic salmon have been returning to the Contoocook River because any returning adults are captured at downstream dams on the Merrimack River.

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

- The permit prohibits the discharge to cause a violation of State water quality standards.
- The permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts.
- The permit requires toxicity testing four (4) times per year to ensure that the discharge does not present toxicity problems.
- The permit contains water quality base limits for aluminum, lead, copper, silver, and zinc.

EPA believes the draft permit adequately protects EFH and therefore additional mitigation is not warranted. NMFS will be notified and EFH consultation will be reinitiated if adverse impact to EFH are detected as a result of this permit action or if new information becomes available that changes the basis for these conclusions.

B. Endangered Species

The Endangered Species Act (16 U.S.C. 1451 et seq), Section 7, requires the EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (USFWS) and/or NMFS, as appropriate, that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species, or adversely affect its critical habitat.

EPA believes that the authorized discharge from this facility is not likely to adversely affect and federally listed species or their habitats. EPA is informally consulting with USFWS to confirm this determination.

V. Antidegradation.

This draft permit is being reissued with limitations that are more stringent than those in the existing permit and there is no change in the outfall location. Since the State of New Hampshire has indication there will be no lowering of water quality and no loss of existing uses, no additional antidegradation review is needed.

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 violation NH standards or waives its right to certify as set forth in 40 C.F.R. §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 C.F.R. §§ 124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the CWA, 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 issuance, 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 conditions may be established by EPA during the permit issuance process based on information received following the public notice of the draft permit. 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.

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 set forth in 40 C.F.R. 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:

Dan Arsenault
U.S. Environmental Protection Agency
One Congress Street
Suite 1100 (Mail Code CMP)
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1562
Fax: (617) 918-1505

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 at 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 comment period, and after a public hearing (if applicable), 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 a formal hearing must satisfy the requirement of 40 C.F.R. §124.74.

Information concerning the draft permit may be obtained between the hours of 9:00 am and 5:00 pm, Monday through Friday, excluding holidays.

_____ Date

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

ATTACHMENT A

JAFFREY WASTEWATER TREATMENT PLANT LOCATION



* Aerial photo taken April 13, 1998. Photo obtained through <http://www.terraserver.microsoft.com>.

ATTACHMENT B

SUMMARY OF EFFLUENT CHARACTERISTICS AT OUTFALL 001

The following effluent characteristics were derived from analysis of discharge monitoring data collected from Outfall 001 from January 2004 through April 2006. All data taken from the monthly Discharge Monitoring Reports as retrieved from EPA's Permit Compliance System (PCS) data base. These effluent values characterize the treated wastewater discharged from this facility.

Effluent Parameter	Average of Monthly Averages	Range of Monthly Averages	Maximum of Daily Maximums ¹
CBOD ₅ (mg/l) May 1 – Oct. 31	6.3	1.8 - 24	120, 48, 11
TSS (mg/l) May 1 – Oct. 31	8.48	4.3 – 15.03	38, 30, 23
Ammonia (mg/l) May 1 – Oct. 31	8.65	5.07 – 12.98	16.4, 15.9, 13.1
CBOD ₅ (mg/l) Nov. 1 – April 30	6.4	3.3 – 11.3	11.3, 10.4, 8.8
TSS (mg/l) Nov. 1 – April 30	3.89	0 – 7.8	16, 11, 10
Ammonia (mg/l) Nov. 1 – April 30	11.38	7.48 - 18	26.1, 18, 17.5
CBOD ₅ Removal (%)	94	78 - 100	78, 85, 90 ²
TSS Removal (%)	96.3	87 - 100	87, 89, 92 ²
Flow (MGD)	0.559	0.232 – 0.996	2.327, 2.2, 2.087
<i>E. Coli</i> (colonies/100 ml)	9.95	0 - 54	470, 430, 270
Dissolved Oxygen (mg/l)	9.47	6.25 – 13.4	6.25, 6.82, 7.01 ²
Phosphorus (mg/l)	---	1.78 – 4.99	4.99, 4.45, 4.12
pH (standard units)	---	6.28 – 8.64 ³	---
LC50 (% effluent) <i>Pimephales promelas</i>	---	100 to >100	100 ³
LC50 (% effluent) <i>Ceriodaphnia dubia</i>	---	100 to >100	100 ³
C-NOEC (% effluent) <i>Pimephales promelas</i>	---	20 - 100	20, 40.8, 100 ³
C-NOEC (% effluent) <i>Ceriodaphnia dubia</i>	---	<10 - 100	<10, 40.8, 50 ³

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

Effluent Parameter	Average of Monthly Averages	Range of Monthly Averages	Maximum of Daily Maximums ¹
Cyanide ² (ug/l)	<10	<10	<10
Aluminum (ug/l)	64.4	16.1 – 150.5	242, 170, 120
Copper (ug/l)	12.3	4.1 – 47.5	65, 47, 26
Lead (ug/l)	5.85 ³	0 – 7.4	18, 17, 5
Silver (ug/l)	6.54 ⁵	0 – 25.2	25.2, 2.8, 1.5
Zinc (ug/l)	23.4	7.6 - 55	70, 50, 47
Cadmium (mg/l)	0.0008 ⁴	0 – 0.001	0.001
Chromium (mg/l)	0.004 ³	0 – 0.005	0.005, 0.004
Nickel(mg/l)	0.005 ⁵	0 – 0.012	0.012, 0.004, 0.003

1. More than one value represents the second and third highest values.
2. Cyanide monitoring was only required for the first two years of the permit.
3. This average is for four (4) months that were not below detection level.
4. This average is for three (3) months that were not below detection level.
5. This average is for five (5) months that were not below detection level.

ATTACHMENT C

DILUTION FACTOR CALCULATION

$$DF = \frac{(Q_{\text{Plant}} + Q_{7Q10})}{Q_{\text{Plant}}} * 0.9$$

Where:

DF = Dilution Factor

Q_{Plant} = Design flow of the treatment plant = 1.25 mgd = 1.93 cfs

Q_{7Q10} = 7Q10 flow of the Contoocook just above the Jaffrey outfall = 1.89 cfs = 1.22 mgd

0.9 = Factor to reserve 10% of the assimilative capacity of the receiving water.

$$DF = \frac{(1.93 + 1.89)}{1.93} * 0.9 = 1.78$$

ATTACHMENT D

LIMIT CALCULATIONS FOR COPPER, LEAD, SILVER, AND ZINC

	Dissolved		Total Recoverable Conversion Factor		Dilution Factor	Total Recoverable Limit	
	Acute Criteria (ug/l)	Chronic Criteria (ug/l)	Acute	Chronic		Acute ¹ (ug/l)	Chronic ² (ug/l)
Cu	3.6	2.7	0.96	0.96	1.78	6.7	5.0
Pb	14	0.54	0.993	0.993	1.78	1.0	24.9
Ag	0.32	---	0.85	---	1.78	0.6	---
Zn	36.2	36.5	0.978	0.986	1.78	65.9	65.9

¹ Acute Total Recoverable Limit =

$$((\text{Dissolve Acute Criteria})/(\text{Acute TR Conversion Factor})) \times (\text{Dilution Factor})$$

² Chronic Total Recoverable Limit =

$$((\text{Dissolve Chronic Criteria})/(\text{Chronic TR Conversion Factor})) \times (\text{Dilution Factor})$$

ATTACHMENT E

DERIVATION OF PHOSPHORUS LIMIT

The following equation was used to derive the phosphorus limit:

$$(Q_{up})(P_{up}) + (Q_{Plant})(P_{Plant}) = ((Q_{up} + Q_{Plant})(0.9))(0.1)$$

where:

Q_{up} = Upstream 7Q10 flow = 1.89 cfs

P_{up} = Upstream phosphorus concentration; the average of two upstream readings were used. $(0.016 + 0.015)/2 = 0.0155$ mg/l

Q_{Plant} = Design flow of the plant = 1.25 mgd = 1.93 cfs

P_{Plant} = P concentration of the discharge necessary to meet the Gold Book recommended criteria

0.9 = Factor to reserve 10% of the assimilative capacity of the receiving water

0.1 = Gold Book recommended instream concentration for P; mg/l

$$(1.89 \text{ cfs})(0.0155 \text{ mg/l}) + (1.93 \text{ cfs})(P_{Plant}) = ((1.89 \text{ cfs} + 1.93 \text{ cfs})(0.9))(0.1 \text{ mg/l})$$

$$P_{Plant} = 0.16 \text{ mg/l} = \text{Permit Limit}$$