UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
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.: NH0001562

NAME AND ADDRESS OF APPLICANT:

Wausau Papers of New Hampshire, Inc.
3 Mechanic Street
Groveton, New Hampshire 03582

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Wausau Papers of New Hampshire, Inc.
3 Mechanic Street
Groveton, New Hampshire 03582

RECEIVING WATER: Connecticut River (Outfall 017) and Upper Ammonoosuc River (Outfall 010 and 018), Hydrologic Unit Code: 01080101

CLASSIFICATION: Class B

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

The wastewater treatment plant is operated by Wausau Papers of New Hampshire, Inc. (Wausau Papers) and this plant receives the process wastewater from Wausau Papers and Groveton Paper Board. Wausau Papers is engaged in the manufacture of printing and writing papers including text and cover from purchased bleached virgin pulps, secondary fiber, and post consumer deinked waste fiber. Groveton Paper Board is engaged in the manufacture of semi-chemical soda ash based pulp from hardwood chips. This pulp with the addition of broke and waste kraft clippings is converted into 9 point unbleached corrugated medium. Process water and non-contact cooling water is obtained from the Upper Ammonoosuc River.

Wausau Papers has applied to the U.S. Environmental Protection Agency for the reissuance of its NPDES permit to discharge treated process wastewater, sand filter backwash water, river intake bypass water, and non-contact cooling water into the designated receiving waters via three outfalls. The permit application included the remaining storm water outfall; however, the Company obtained coverage for its storm water discharge under the 1995 EPA Storm Water Multi-Sector General Permit. Since this General Permit was reissued on October 30, 2000, Wausau Papers obtained coverage for its storm water discharge under the reissued MSGP. Thus, this draft permit omits the storm water outfall.

The facility's previous permit was issued on May 5, 1992, modified on September 10, 1992 to correct typographical errors, and it expired on May 5, 1997. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed a complete application for permit reissuance within the prescribed time period as per 40 Code of Federal Regulations (CFR) §122.6.

The location of the facility, Outfalls 001, 003, 010, 017 and 018, and the receiving waters are shown in Attachment A.

II. Description of Discharge.

Quantitative descriptions of the discharge in terms of significant effluent parameters based on the permit application (Form 2C) including certain additional data submitted on June 9, 2000 and in terms of recent effluent-monitoring data (June 1997 through May 1999) are shown in Attachment B.

III. Limitations and Conditions.

The effluent limitations of the draft permit and the monitoring and other requirements are found in Part I of the draft permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation.

A. Background

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The requirements of Sections 316(a) and 316(b) of the CWA concern the thermal component of any effluent discharge and the location, design, construction, and capacity of cooling water intake structures. 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 CWA and any applicable State Regulations. 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 criteria in addition to the existing permit conditions when developing permit limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (see 40 CFR § 125 Subpart A) to meet Best Practicable Control Technology Currently Available (BPT), Best Conventional Control Technology (BCT) for conventional pollutants, and Best Available Technology Economically Achievable (BAT) for non-conventional and toxic pollutants. The technology based-guidelines (effluent limitations and compliance deadlines) for industrial discharges are found at 40 CFR §§ 400-471, Subchapter N.

In the absence of published technology guidelines for a particular industry, 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 conjunction with water-quality considerations.

In general, all statutory deadlines for meeting various treatment technology-based guidelines (effluent limitations) established pursuant to the CWA have expired. Technology-based effluent limitations must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989 (40 CFR §125.3(a)(2)). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA 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 CWA. A water-quality standard consists of three elements: (1) beneficial designated use or uses for a waterbody or a segment of a waterbody; (2) numeric or narrative water-quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirement to ensure that once a use is attained it will not be eroded.
Receiving stream requirements are established according to numerical and narrative standards adopted under state

law for each stream classification. New Hampshire adopted water quality standards that establish designated uses for the State's waters and contain narrative and numeric criteria to protect such uses (see 50 § RSA 485-A:8 and N.H. Code of Administrative Rules Env-Ws 1700-1709, December 1999).

On December 3, 1999, the New Hampshire Department of Environmental Services (NHDES) adopted the final rules Env-Ws 1700 Surface Water Quality Regulations which contain the revisions to the state surface water quality standards regulations. EPA approved the new and revised surface water quality standards regulations on January 28, 2000. These regulations are referred to as the NH Standards in the remainder of this Fact Sheet.

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 instream 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).

B. Introduction

The NPDES 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 Control, March 1991, EPA/505/2-90-001, pages 47-66; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with the NH Standards, Env-Ws 1705.02, available dilution is based on a known or estimated value of the annual minimum seven day mean low flow at the 10-year recurrence interval (7Q10) for aquatic life criteria and human health criteria for non-carcinogens or the long-term harmonic mean flow for human health criteria for carcinogens. These flows in the receiving water are determined at a 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 the NH Standards, Env-Ws 1705.01.

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 specific toxic pollutants and their associated toxicity criteria are popularly know as the federal "Gold Book" criteria which EPA summarized and published in Quality Criteria for Water, 1986, EPA 440/5-86-001, as amended. 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 NH Standards (see Env-Ws 1703.21). EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit.

The available dilution (also referred to as dilution factor) in the Connecticut River for the process wastewater discharge (Outfall 017) was determined to be 17.7:1 using the equation shown in Attachment D. As part of the recent water quality modeling study mentioned below, the 7Q10 low flow value for the Connecticut River, above the confluence with the Upper Ammonoosuc River, was revised to 217 cfs. The available dilution factor in the Upper Ammonoosuc River for the sand filter backwash water (Outfall 018) was determined to be 47.8:1 using the equation shown in Attachment D. The 7Q10 low flow for the Upper Ammonoosuc River is 49.4 cfs based on the low-flow data for the streamflow gaging near Groveton, NH using the period 1942 to 1990.

The permit may not be renewed, reissued or modified with less stringent limitations or conditions than those in the

previous permit unless in compliance with the antibacksliding requirement of the CWA according to Sections 402(o) and 303(d)(4) and with the provisions in 40 CFR § 122.44(l)(1,2). EPA's antibacksliding provisions found in 40 CFR § 122.44(1) prohibit the relaxation of permit limits, standards, and conditions unless certain requirements are met. Therefore, unless these requirements are met the limits in the reissued permit must be at least as stringent as those in the existing permit.

The Act further requires that EPA obtain a state certification which provides that all water-quality standards will be satisfied by the permit. The permit must conform to the conditions established pursuant to a State Certification under Section 401 of the CWA (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 Clean Water Act and EPA to achieve and then to maintain the chemical, physical, and biological integrity of the Nation's waters. The existing quality of the State's receiving waters is protected by the Antidegradation requirements in the NH Standards (Part Env-Ws 1708).

Wausau Papers of New Hampshire, Inc. has applied for the reissuance of its NPDES permit to discharge into the Connecticut and Upper Ammonoosuc Rivers from three outfalls. The treated process wastewater from Wausau Papers and Groveton Paper Board discharges to the Connecticut River via Outfall 017 just below the mouth of the Upper Ammonoosuc River. The process wastewater includes the wastewater from both mills, non-contact cooling water, boiler blowdown, and the storm water that formerly discharged to Outfall 003. The remaining two outfalls discharge to the Upper Ammonoosuc River and these discharges consist of river intake bypass water and non-contact cooling water in Outfall 010, and sand filter backwash water after disinfection in Outfall 018. Storm water discharges in Outfall 001 are to be covered under the EPA Storm Water Multi-Sector General Permit.

The Connecticut and Upper Ammonoosuc Rivers are classified as Class B waterways by the New Hampshire Department of Environmental Services, Water Division. Class B waters shall be of the second highest quality and shall have no objectionable physical characteristics, and shall contain a dissolved oxygen content of at least 75 percent saturation. Designated uses are for the protection and propagation of aquatic life and wildlife, and for swimming and other recreational purposes, and after treatment for water supplies.

Permit Background

The State Certification Requirements in the existing permit required the permittee to provide the NHDES-WD with a verified water quality model for Dissolved Oxygen (D.O.) in the Connecticut River. The purpose of the modeling was to insure the Dissolved Oxygen standard would be achieved during the 7Q10 low-flow conditions. This D.O. modeling
was completed in 1993 and the results provided in the report "Water Quality Study of the Upper Connecticut River, December 1993" by Kleinschmidt Associates. Upon review of this report, the NHDES-WD, requested additional modeling using a revised 7Q10 flow, different effluent loadings, and critical minimum D.O. values. The results of this additional modeling for the Wausau Papers NPDES permit is summarized in the Kleinschmidt Associates letter dated December 14, 1999. The additional modeling results satisfies the specific State Certification requirement in the existing permit; thus, the draft permit excludes this modeling requirement.

C. Effluent Limitations Derivation.

This Fact Sheet discusses the development of the effluent limitations for Conventional Pollutants, and Nonconventional and Toxic Pollutants organized by the effluent limitations and requirements for Outfall 017, 010, and 018; the Reopener Condition; Whole Effluent Toxicity; requirements for Section 316(a) and (b); and other permit conditions. Outfalls 001and 003 are proposed for elimination by this draft permit according to the discussion at the end of this section.

Facility Description

The Wausau Papers' mill produces printing and writing papers including text and cover from purchased bleached virgin pulps, secondary fiber, and post consumer deinked waste fiber. Groveton Paper Board's mill produces

semi-chemical soda ash based pulp from hardwood chips on site. This pulp with the addition of broke and waste kraft clippings is converted into 9 point unbleached corrugated medium. The combined process flow is typically 5.3 mgd according to the diagram showing the water flow through the facility submitted on April 28, 2000. This diagram of the water flow through both mills is shown in Attachment C. All water from the Town of Northumberland is returned to the Town's sanitary sewer system except for the small amount of air conditioner cooling water which is combined with the process wastewater. The wastewater treatment plant (Outfall 017) receives process wastewater from the fine paper system, pulp mill, and medium board paper machine, non-contact cooling water, boiler blowdown, and the storm water that formerly discharged from Outfall 003.

The process wastewaters from both mills are first collected in three sumps for discharge to the wastewater treatment facility which consists of the following treatment processes: initial settling in the primary clarifier, biological treatment in an aerated lagoon, and final settling in the two secondary clarifiers. Nutrients in the form of phosphoric acid and aqueous ammonia are added to the lagoon. When necessary, the Groveton Mill adds sodium hydroxide to its process wastewater to control the pH. The treated process wastewater is discharged via Outfall 017 to the Connecticut River just below the mouth of the Upper Ammonoosuc River. The flow schematic for the wastewater treatment facility is provided in Attachment C.

Process makeup and cooling water, and the non-contact cooling water for the mills is obtained from the Upper Ammonoosuc River using the two intakes. Water from the Fire Water intake is first used as the non-contact cooling water for the electric turbine and then it is combined with the Penstock intake water to form the influent water for the Filter Water Plant. Prior to the Filter Plant, there is an intermittent discharge of the intake water including non-contact cooling water via Outfall 010 (Penstock bypass) to the Upper Ammonoosuc River. With the installation of a new control system on the water intake, Outfall 010 is now used on an intermittent basis, at the time of ice-break up, to allow sufficient flow from the River to prevent the intake from freezing.

The Filter Water Plant provides the process makeup water and cooling water for the Wausau Papers and the Groveton Mills. This Plant is a gravity high rate sand filter with 20 individual beds that are back washed with the filtered water once a day during normal turbidity conditions in the River water. Depending on the influent water quality and paper making requirements a polymeric coagulant is added to improve the filtering process and to obtain the acceptable water color and turbidity for the papermaking operations. Polymer addition was optimized in 1999 with an automatic feed system and with measurement of the influent turbidity. This new feed system has significantly reduced the amount of coagulant usage. Sodium hypochlorite is added to the filtered water for the control of bacterial growth and a 0.5mg/L residual is maintained. Wausau Papers has reduced the total backwash discharge to about 0.5 mgd under normal influent conditions. More frequent backwash flows occur during periods of high turbidity and high flow events in the River especially in the spring and fall. The filter backwash water is discharged to the Upper Ammonoosuc River in Outfall 018.

<u>Outfall 017 (Process Wastewater)</u> Conventional Pollutants

BOD and TSS: EPA established minimum technology requirements for the pulp and paper industry in the form of effluent guidelines promulgated under 40 CFR § 430. These guidelines specify the maximum mass (lbs per day) of Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) which can be allowed to be discharged per mass (tons per day) of product produced. The maximum amount of BOD and TSS allowed varies for the different types of pulp and paper products as well as manufacturing methods. EPA revised the various subcategories under 40 CFR § 430 in 1998 and re-designated the subpart numbers and section numbers. No substantive changes to the limitations and standards were made except to the new Subparts B and E which are not applicable to Wausau Papers or to Groveton Paper Board.

Wausau Papers is a nonintegrated mill producing 326 tons/day (t/d) of fine paper (printing and writing papers including text and cover) from purchased bleached virgin pulps, secondary fiber, and post consumer deinked waste fiber. Fine paper production is expected to increase to 338 t/d over the next five years according to the Company. The Groveton Paper Board mill is engaged in the integrated production of 9 point unbleached corrugated medium in the amount of 425 t/d. This corrugated medium product is converted from 250 t/d of unbleached hardwood

semi-chemical soda ash based pulp manufactured from hardwood chips and 175 t/d of broke and waste kraft clippings. This production information was provided by Wausau Papers in the NPDES application as amended on November 16, 1999. The typical process flow is about 3.9 mgd for the paper production and 1.4 mgd for the pulp and corrugated medium production. The boiler scrubber waste stream was eliminated from this outfall in June 1999.

Based on these paper and pulp manufactured products, this facility is subject to the effluent guidelines in the following three paper and pulp subcategories: 1) Subpart K--Fine and Lightweight papers from Purchased Pulp, 2) Subpart F--Semi-Chemical Subcategory, and 3) Subpart J--Secondary Fiber Non-Deink Subcategory. The noncorrugating medium furnish subdivision mill subcategory is used for purposes of determining the effluent limits with Subpart J.

The production based limits for each subgroup were compiled and the effluent limits developed using the average daily production information provided by Wausau Papers. Total production at this facility is 763 t/d which is divided into the three pertinent Subparts as shown in Attachment B. The fine paper production at 338 t/d was used in computing these limits. Attachment B of this Fact Sheet presents the details of calculating the BPT effluent limitations in accordance with 40 CFR § 430.112 (Subpart K), 40 CFR § 430.62(Subpart F), and 40 CFR § 430.102 (Subpart J). According to the effluent limitations guidelines in § 430.113, § 430.63, and § 430.103, the BCT limitations are the same as those specified for conventional pollutants in 40 CFR §§§ 430.112, 430.62, and 430.102 of the previously identified Subparts, respectively, for the BPT limits.

The resulting production based and the existing BOD and TSS effluent limits are summarized below. However, the Maximum Daily and Average Monthly BOD and TSS effluent limits are continued from those in the existing permit because the anti-backsliding provisions in 40 CFR § 122.44(l)(2) require the more stringent BOD and TSS mass limits remain in this draft permit. A discussion of the anti-backsliding provisions is given in the Introduction to this Section.

	Production Based Limits (lbs/day)		Existing Permit Limits (lbs/day)			
			Summer		Winter	
	Average Monthly	Max Daily	Average Monthly	Max Daily	Average Monthly	Max Daily
BOD	5,573	10,943	2,750	4,125	3,400	5,100
TSS	7,613	14,686	3,610	5,520	4,470	6,830

pH: The pH limits of 6.5 to 8.0 Standard Units (S. U.) are continued in the draft permit for Outfall 017. The limitations for pH are based upon limitations in the existing permit in accordance with the antibacksliding requirements found in 40 CFR § 122.44(1) since the permittee has been able to achieve consistent compliance with all these limitations. The original basis for these limitations is found in New Hampshire's State statutes (N.H. RSA 485-A:8). Historically, the NHDES-WD has required pH limits to be satisfied at end-of-pipe with no allowance for dilution. Therefore, in addition to the antibacksliding requirement, these limitations are based on State certification requirements.

The language in the State Permit Conditions Part I.E.1.a allowing for a change in pH limit(s) under certain conditions was partly revised. A change would be considered if the permittee can demonstrate to the satisfaction of NHDES-WD that the in-stream pH standard will be protected when the permittee's discharge is outside the permitted range of 6.5 to 8.0. The permittee or NHDES-WD may then request in writing that the pH permit limit(s) be modified by EPA to incorporate the results of the demonstration. Anticipating the situation where the NHDES-WD grants a formal approval changing the pH limit(s), 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. 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 as provided by Part I.E.1.a. in the permit. However, the pH limit range cannot be less

restrictive than the limits of 6.0 to 9.0 S.U. found in the effluent guidelines for the Pulp, Paper, and Paper Board Point Source Category in 40 CFR § 430.

If the State approves the results from a pH demonstration study, this permit's pH limit range can be relaxed in accordance with 40 CFR § 122.44(l)(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 the New Hampshire Surface Water Quality Regulations amended on December 3, 1999.

Escherichia coli: The remaining conventional pollutant potentially of concern in the process wastewater discharge is bacteria because the Fecal Coliform concentration (colonies/100ml) based on two samples of this discharge is reported as TNC (To Numerous To Count) on the permittee's application Form 2C. The bacteria requirement for Escherichia coli in the NH Standards (Env-Ws 17303.06) are set forth in the New Hampshire's State statutes (N.H. RSA 485-A:8, II). Historically, the NHDES-WD has required bacteria to be satisfied at end-of-pipe with no allowance for dilution. In cases where bacteria limits are needed, the resulting average monthly and maximum daily permit limits would be 126 and 406 colonies/100ml, respectively. However, it is uncertain if the high level of Fecal Coliform in this discharge corresponds to an exceedance of these Escherichia coli criteria. Therefore, this draft permit proposes effluent monitoring for Escherichia coli over a one year period to provide data to enable a determination that Escherichia coli is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to exceedance of the previously stated bacteria requirements in the NH Standards. The "reasonable potential" determination is explained in more detail in the Introduction section. A one year monitoring period is selected to provide representative data over a climatic/hydrologic cycle and a yearly operational period at the mills. The Reopener Condition in the draft permit is discussed below and it includes the availability and evaluation of this new Escherichia coli data to determine the need to establish effluent limitations.

Nonconventional and Toxic Pollutants

The existing permit for the process wastewater discharge to the Connecticut River contains seasonal Temperature limits, and a Total Phosphorous maximum daily limit. This permit also includes a reporting requirements for Ammonia Nitrogen as N.

Temperature: The narrative temperature criterion in the NH Standards [see Env-Ws 1703.13(b)] provides that temperature in Class B waters shall be in accordance with the state statutes RSA 485-A:8,II and VIII. The first statute indicates any stream temperature increase associated with the discharge of cooling water and water diversions shall not appreciable interfere with the designated uses for Class B waters. The second statute indicates the minimum treatment requirements for thermal wastes discharged to interstate waters are to follow the water quality requirements and recommendations of the NHFGD, New England Interstate Water Pollution Control Commission, or the EPA whichever provide the most effective level of control. The NHFGD has determined an instream temperature of 68 ^{0}F is necessary, in waters with a cold water fishery, to protect the fishery.

The seasonal Temperature limits in the existing permit were established during the 1985 permit issuance to this facility which was then under the ownership of the James River Corporation-Groveton Division. The resulting Average Monthly and Maximum Daily limits are 80 and 90 ^{0}F, and 95 and 105 ^{0}F during the periods November 1 to April 30 and May 1 to October 31, respectively. These Temperature limits and associated temperature increase (ΔT) were subject to approval and revision by the New Hampshire Fish and Game Department (NHFGD) to maintain state water-quality standards.

These seasonal temperature limits were re-evaluated during the development of this draft permit because a large influent heat source to the treatment plant was eliminated when the boiler scrubber waste stream with an average flow of 0.6 mgd was removed in 1997. Additionally, the NHFGD considers this river a cold water fishery because the Connecticut River is free-flowing in the vicinity of the discharge from Wausau Papers with the breaching of the

Groveton Dam in Northumberland. In fact, the breach in this Dam began prior to 1978 with only the abutment walls remaining today.

The re-valuation of the seasonal temperature limits proceeded with first computing a new set of limits based on the current operating conditions and then computing a critical temperature increase. The calculated temperature limits and temperature increase were then compared with the temperature requirements in the NH Standards.

The operational characteristics of the wastewater treatment plant for temperature are reflected in the monitoring data measured at 3/week. Temperature data for the period November 1997 through October 2000 were selected to be representative of the wastewater treatment plant operations. The statistical approach presented in the Technical Support Document for Water Quality-based Toxics Control, March 1991, EPA/505/2-90-001, (Appendix E, Lognormal Distribution and Permit Limit Derivations: pages E-6 to E-10 and Table E-1on page E-19) was followed to determine the average monthly and maximum daily temperature limits for each season. The lognormal distribution using the 95th and 99th percentiles of the distribution provides the average monthly and maximum daily limits, respectively. This statistical approach results in proposed Average Monthly and Maximum Daily limits at 68 and 78, and 86 and 97 ^{0}F during the periods November to April 30 and May 1 to October 31, respectively. The equations and the statistical parameters to compute these limits are summarized in Attachment E. EPA believes the permittee can achieve compliance with these new seasonal temperature limits based on the available temperature data.

The critical temperature increase resulting from this discharge is determined by first calculating the downstream ambient temperature produced by the treatment plant's discharge using the equation as shown in Attachment D and then calculating the increase in temperature. The resulting temperature increase of 1.8 ^{0}F corresponds with the temperature increase of 1.98 ^{0}F determined during the development of the previous two permit issuances.

EPA has discussed this draft permit with the staff of the NHFGD and believes the proposed temperature limits and the temperature increase satisfy the temperature criteria in the State statutes. As was the case with the existing permit the proposed temperature limits and associated temperature increase (ΔT) are subject to approval and revision by the NHFGD.

Ammonia and Phosphorous: Due to concerns for algal growth in the Moore Reservoir which is an impoundment of the Connecticut River downstream from this facility, the existing permit included a Total Phosphorous maximum daily limit at 2.0 mg/L, and reporting requirements for Ammonia Nitrogen as N. Nutrients in the form of phosphoric acid and aqueous ammonia are added to the lagoon. Because these two pollutants can be governing factors for algal growth in surface water impoundments the effluent limitations in the existing permit are continued in this draft permit. Additionally, since the permittee has been able to achieve consistent compliance with this Phosphorous limit, the antibacksliding requirements previously mentioned above require retention of this limit in the draft permit.

Polynuclear Aromatic Hydrocarbons (PAHs): Analytical data on the concentrations of PAHs in the process wastewater are available from the permittee's permit application (Form 2C) and the 1999 testing data. These data do not allow a "reasonable potential" determination that Benzo(b) Fluoranthene is or may be discharged at a level that causes or contributes to an exceedance of the water quality criterion to protect human health (fish ingestion) at 0.049 ug/L in accordance with 40 CFR § 122.44(d)(1). The potential permit limit of 3.48 ug/L is calculated using the equation as shown in Attachment D.

Accordingly, this draft permit proposes a new monthly monitoring requirement for Benzo(b) Fluoranthene to provide representative data over a one year operating period to enable a determination that this pollutant is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to exceedance of the previously stated water quality criterion in the NH Standards. The "reasonable potential" determination is explained in more detail in the Introduction section. The need for an effluent limitation will be reassessed following the availability of this additional

data which is reflected in the Reopener Condition.

The potential limit for Benzo(b) Fluoranthene is below the minimum level(ML) for this pollutant which EPA has determined to be 10 ug/L Accordingly, this draft permit proposes with the reportable concentrations based on the ML as defined above. Any values below the specified ML are to be reported as non-detect. The Technical Support Document for Water Quality-based Toxics Control, March 1991, EPA/505/2-90-001, page 111, (TSD) defines the ML as "the level at which the entire analytical system gives recognizable mass spectra and acceptable calibrations points. This level corresponds to the lowest point at which the calibration curve is determined based on analyses for the pollutant of concern in a reagent water." The reported low levels of detection for the following six PAHs compounds summarized in Attachment B are not a concern: Benzo(a) Anthracene; Benzo(k) Fluoranthene; Benzo(a) Pyrene; Chrysene; Dibenzo(a,h)Anthracene; and Ideno(1,2,3-cd)Pyrene.

Phthalate Esters: Water quality criteria for Phthalate Esters are included in the NH Standards (see Table 1703.1) as the summation of the individual compounds for the protection of aquatic life. The sum of the concentrations for specific chemicals listed in Table 1703.1 is to meet the Phthalate Esters aquatic life criteria. Since this Table omits Diethyl Phthalate and includes two other chemicals (Di-n-butyl Phthalate and Di-2-ethylhexyl phthalate) which are identical to those chemicals already listed, EPA recompiled this list, for purposes of this draft permit, to reflect the appropriate set of six chemicals, that comprise Phthalate Esters, after discussions with the NHDES and EPA staff. Therefore, Phthalate Esters are composed of the following six chemicals: Bis (2-Ethylhexy)Phthalate, Butyl benzyl phthalate, Dibutyl Phthalate, Diethyl Phthalate, Dimethyl Phthalate, and Di-n-octyl phthalate.

The analytical data for these six chemicals obtained from the permit application (Form 2C) and the 1999 testing data are summarized in Attachment B. The potential limits are computed using the equation shown in Attachment D. The summation of the concentrations, excluding the values below the detection limit, for these six chemicals indicate there is no reasonable potential for the discharge to exceed the chronic water-quality criterion at 3 ug/L for Phthalate Esters.

Biocides: In a letter dated March 24, 2000, the permittee certified that it does not use chlorophenolic containing biocides in the manufacturing process in accordance with the requirements of the applicable Subparts K, F, and J. The draft permit continues the requirement prohibiting against using or discharging pentachlorophenol or trichlorophenol thus complying with the BAT requirements in 40 CFR §§§ 430.114, 430.64, and 430.104, respectively.

Aluminum: Downstream monitoring data indicate exceedances of the Aluminum chronic water quality criterion in the NH Standards. The Moore Reservoir impoundment on the Connecticut River is included on the 1998 New Hampshire 303(d) list, in Tier 3 - Waters With Potential Water Quality Exceedances, for the Aluminum exceedances and also for the D.O. standard exceedances which is discussed with the Reopener Condition below. Since actions will be taken during the term of this permit to resolve the Aluminum criterion exceedances, the draft permit proposes a new reporting requirement for Aluminum with a monitoring frequency at 1/Month to provide data on the variability of Aluminum in the discharge. In addition, a Reopener Condition (see below) is included in this draft permit in the event Aluminum limits are necessary based on the Total Maximum Daily Load (TMDL) or other pollution control or abatement measures to eliminate the Aluminum chronic water quality criterion exceedances in Moore Reservoir.

Other Limits and Requirements

Flow: The existing average monthly and maximum daily flow limits were continued in the draft permit in accordance with the antibacksliding requirement previously discussed.

Measurement Frequency: The measurement frequency for the following parameters in the draft permit remains the same as those in the existing permit: Flow, BOD, TSS, Total Phosphorous, pH, Whole Effluent Toxicity, and Temperature. The measurement frequency for Ammonia-Nitrogen increases to 1/Month. Measurement frequencies for the new pollutants established by this draft permit are: Escherichia coli at 2/Month; and Benzo(b)Fluoranthene and Aluminum at 1/Month.

Outfall 010 (River Intake Bypass Water)

As mentioned in the preceding discussion, the two intakes on the Upper Ammonoosuc River furnish the water that discharges from this outfall. The existing permit authorizes the continuous discharges of Upper Ammonoosuc River intake filter by-pass water and non-contact cooling water from Outfall 010 to the Upper Ammonoosuc River. This permit contained effluent limitations for Temperature and pH, and reporting requirements for Flow and TSS.

With the installation of a new control system on the Penstock Intake, Outfall 010 is now used on an intermittent basis, during the period of ice-break up in the River, to allow sufficient flow through the intake to preventing freezing. During a utility outage, this outfall can also be used in an emergency to drain the penstock for repairs to the Filter Water Plant. This intermittent discharge is composed of the intake filter by-pass water and non-contact cooling water due to the arrangement of the pipes. These discharges originate at the Penstock Intake and the Fire Water Intake structures, respectively, along the Upper Ammonoosuc River. According to the flow diagram (see Attachment C), the non-contact cooling water component is about 49 percent (3.7/7.5) of the discharge. Chemicals are not added to these intake water streams that discharge to outfall 010 according to the permittee.

EPA has not promulgated nor proposed effluent limits for non-contact cooling water dischargers from sources other than steam electric generating facilities. Thus, limitations for such sources are established on a case by case basis using BPJ as previously explained in the Background section. Since all permits must contain limits to maintain state water quality standards the pH and temperature limits in the existing permit were reviewed given the operational changes in the use of this outfall.

Conventional Pollutants

pH: The recent pH monitoring data available for this Outfall (see summary in Attachment B) indicate consistent exceedances of the minimum pH value at 6.5 S.U during the four months this outfall was operational between the period November 1997 and April 2000. The instream pH data for the Upper Ammonoosuc River during these same months, which are also submitted with the monthly DMRs, were within a 0.5 pH unit of the effluent value. In this particular situation without chemical addition, low effluent pH values probably result from the corresponding low values for the intake water. The NH Standards in Env-Ws 1703.18(b) allow for occurrences in the pH for Class B waters outside the 6.5 to 8.0 range due to natural causes, and the NHDES-WD considers pH exceedances of this type a result of the source water. Given the unique characteristics of this discharge (intermittent discharge without chemical addition), EPA believes it is appropriate to continue this practice at this facility. This draft permit proposes revised pH effluent limits to reflect the actual conditions such that the effluent pH shall be within 0.5 unit of the intake pH value. This is consistent with the NHDES interpretation of the NH Standard previously mentioned and with the language in the State Permit Conditions (Part I.E.1.a) pertaining to the permittee's discharge not significantly altering the naturally occurring receiving water pH. Monitoring should be scheduled to consider the travel time between the intake and outfall in order to measure the essentially the same slug or volume of water. In the event chemicals are added to the intake water or this discharge becomes continuous; the pH limits may be revised in a permit modification.

TSS: A review of the available TSS data that are summarized in Attachment B indicates it is appropriate to continue the reporting requirement in this draft permit.

Nonconventional and Toxic Pollutants

Temperature: The Maximum Daily Temperature limit of 80 ^{0}F in the existing permit is proposed for revision in this draft permit because the permittee has made a significant change in the overall operation of Outfall 010 and the Upper Ammonoosuc River is now important cold water fishery with support for Atlantic salmon, brook trout, and brown trout. Discharges from this outfall now occur on an intermittent basis during the colder months. Atlantic Salmon fry stocking during 2000 took place in the main stem upstream from the facility and in an upstream tributary, and this stocking is planned to continue in future years.

Water-quality based criteria for temperature provide the basis for the new temperature limit. The narrative criterion

in the NH Standards [see Env-Ws 1703.13(b)] specifies that temperature in Class B waters shall be in accordance with state statutes RSA 485-A:8,II and VIII. The first statute indicates any stream temperature increase associated with the discharge of cooling water and water diversions shall not appreciably interfere with the designated uses for Class B waters. The second statute indicates the minimum treatment requirements for thermal wastes discharged to interstate waters are to follow the water quality requirements and recommendations of the NHFGD, New England Interstate Water Pollution Control Commission, or the EPA whichever provide the most effective level of control. In waters with a cold water fishery, the NHFGD has determined an instream temperature of 68 ^{0}F is necessary to protect the fishery. This draft permit proposes a temperature limit at 68 ^{0}F (see Attachment D for the calculation) in accordance with the NH Standards and the requirement of the NHFGD. EPA believes the permittee can achieve compliance with this new temperature since this outfall discharges excess water from the Upper Ammonoosuc River and since it is activated during the period January through May. The available monitoring data indicate this new limit can be met.

Other Limits and Requirements

Flow: This draft permit continues the total daily flow reporting requirement. A limit is not necessary according to the intermittent nature of this discharge and the summary of the historic flow data from the DMRs in Attachment B. The permittee estimates the maximum flow from this outfall is 0.5 mgd (see Attachment C).

Discharge Period: Since this outfall is used intermittently, this draft permit authorizes the discharge from Outfall 010 during the actual period of usage January through May of each year. Rather than limit the number of days a discharge can occur, a requirement is included in this draft permit to report the total number of days this outfall is operational. This time limitation corresponds with the information updating the time in use information in the permit application as further updated in the Wausau letter dated July 9, 2000. Discharges at other times of the year are prohibited except a discharge in accordance with the bypass provisions of the General Conditions in Part II of the permit (see II.B.4). The draft permit is conditioned to require, in the event of bypass, identical limits and monitoring requirements as those during the intermittent discharge.

Chemical usage: Consistent with Wausau's practice to exclude chemicals from the intake water sources prior to the filter plant and to allow the unique pH limit for this outfall, this draft permit includes a prohibition against the addition of any chemical to the Upper Ammonoosuc River intake bypass water or to the non-contact cooling water.

Measurement Frequency: The measurement frequency for Temperature in the draft permit remains the same as in the existing permit and it increases to 2/Week for TSS, pH, and Flow. After the first 12 months this permit is effective, the measurement frequency for TSS is reduced to 2/Month. The permittee should schedule the sampling to coincide with the discharge event from this outfall. The changes in the sampling frequencies reflect the need to obtain monitoring data on the variability of these parameters in the discharge and the significance of the receiving water as a cold water fishery.

<u>Outfall 018 (Sand Filter Backwash Water)</u>
The process water for both mills is obtained from the Upper Ammonoosuc River (see flow diagram in Attachment C) using the Fire Water and the Penstock intakes and this water first passes through the sand filters where it receives disinfection with sodium hypochlorite. This discharge is composed entirely of sand filter backwash water including polymer treated filter backwash water during periods of high influent turbidity and during the production of high brightness paper. A summary of the Filter Water Plant operation is provided earlier with the Facility Description. The storm water component authorized by the existing permit no longer exists. The only pollutant in the existing permit with an effluent limitation is pH. The existing permit contained reporting requirements for Flow, Total Residual Chlorine, Manganese, and TSS.

EPA has not promulgated nor proposed national effluent guidelines for the filter water treatment plant that is in operation at Wausau Papers. In the absence of published technology 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). Since all permits must contain limits to maintain state water quality standards, the

pH limits in the existing permit and the monitoring data for Total Residual Chlorine and Manganese were reviewed for compliance with the NH Standards.

Conventional Pollutants

pH: The pH limits of 6.5 to 8.0 Standard Units (S. U.) are continued in the draft permit for Outfall 018 including the pH demonstration study. The limitations for pH are based upon are based on State certification requirements. The original basis for these limitations is found in New Hampshire's State statutes (N.H. RSA 485-A:8). Historically, the NHDES-WD has required pH limits to be satisfied at end-of-pipe with no allowance for dilution. The available pH monitoring data which were measured 1/Quarter are not adequate to indicate future exceedances in the minimum pH value or to demonstrate that the discharge does not significantly alter the naturally occurring receiving water pH. The latter condition can be confirmed by the pH demonstration study.

The draft permit language (see State Permit Conditions Part I.E.1.a) allowing for a change in pH limit(s) under certain conditions was partly revised and the specific procedures to be followed are explained in more detail under the earlier discussion on the pH limits for Outfall 017. The demonstration study is required for this outfall because the discharge is altered by treatment process including chemical addition. Since there is no national effluent guidelines for the filter water treatment plant, the pH limit range cannot be less restrictive than the federal " Gold Book" criteria range of 6.0 to 9.0 S.U. established by EPA in 1986.

If the State approves the results from a pH demonstration study, this permit's pH limit range can be relaxed in accordance with 40 CFR § 122.44(l)(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 the New Hampshire Surface Water Quality Regulations amended on December 3, 1999.

TSS: There are no promulgated or proposed national effluent guidelines applicable to the Wausau Paper's filter water treatment plant. While there is a NPDES General Permit applicable to water treatment facilities in New Hampshire (NHG640000), the discharge from this filter plant is from a different type of operation than the discharges covered by General Permit.

Following the installation of the automatic feed system in 1999 for polymer addition, sufficient TSS monitoring data are not available to characterize the current operational characteristics of the Filter Water Plant. The TSS data measured at 1/Month exhibit considerable variability in 2000 with a range from 3.8 to 198 mg/L. This draft permit continues the reporting requirement for TSS and increases the measurement frequency to provide data reflecting the variability of this parameter in the discharge.

Nonconventional and Toxic Pollutants

Total Residual Chlorine: The monthly monitoring data for Total Residual Chlorine (TRC) in this outfall were examined to compare with the ambient water quality criteria for this pollutant in the NH Standards. These data are available from the monitoring requirement in the existing permit and are summarized in Attachment B. These TRC data indicate concentrations in the discharge are causing the in-stream concentrations to exceed the numeric acute and chronic water quality criteria for TRC and there is reasonable potential that the discharge may cause or contribute to an excursion above the water quality criteria for this pollutant in accordance with 40 CFR § 122.44(d)(1). Therefore, this draft permit is proposing new Average Monthly and Maximum Daily TRC limits at 0.53 and 0.91 mg/L, respectively, based on the chronic and acute aquatic-life criteria, found in Table 1703.1 of the NH Standards. The equation and calculations to determine these permit limits are shown in Attachment D.

Aluminum: As mentioned in the discussion for this pollutant accompanying the limits for Outfall 017, there are exceedances of the Aluminum chronic water quality criterion in the Moore Reservoir impoundment on the Connecticut River. In order to provide data on the variability of Aluminum in this discharge, because actions will

be taken during the term of this permit to resolve the Aluminum criterion exceedances, the draft permit proposes a new reporting requirement for Aluminum with a monitoring frequency at 1/Month. The Reopener Condition (see below) reflects the need to establish Aluminum limits based on the Total Maximum Daily Load (TMDL) or other pollution control or abatement measures to eliminate the downstream Aluminum chronic water quality criterion exceedances.

Manganese: The monthly manganese monitoring requirement in the existing permit is proposed for elimination in this draft permit. The available discharge monitoring data on the concentration of manganese in this discharge in comparison to the proposed limit (see Attachment D) indicate additional monitoring data are not necessary.

Other Limits and Requirements

Flow: Flow reduction efforts in the operation of the Filter Plant have reduced the average flow in this outfall from 1.8 to 0.6 mgd according to the permittee's letter dated June 9, 2000. The 0.6 mgd flow is used in the development of the water quality based effluent limitations. Accordingly, a new average monthly flow limit of 0.6 mgd is proposed in this draft permit. Because this draft permit contains new flow and TRC limits, a continuous recording of the discharge with a flow meter is being required.

Polymer Study: The permit application identifies coagulation as a process contributing to the discharge from this outfall. EPA has no information to evaluate the impact of the polymer treated filter backwash water on the receiving water during the current polymer addition operation. Thus, this draft permit is requiring Whole Effluent Toxicity (WET) testing during the current polymer addition method at the time of two specific backwash events to provide this information.

The Polymer Study is designed to evaluate the toxicity and the residual polymer of the discharge during a typical spring and fall backwash event coincident with a high flow and turbidity event in the Upper Ammonoosuc River. Chronic Whole Effluent Toxicity testing is required on these samples using the Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas) following the test procedure and protocol (Freshwater Chronic Toxicity Test Procedure and Protocol dated December 1995). It is expected this study can be completed during the first 18 month period this permit is effective and the study report is due by June 15, 2003.

Measurement Frequency: The measurement frequencies for the following parameters in this draft permit increase from those in the existing permit as follows: TSS, TRC, and pH to 2/Week; and Flow to continuous. The measurement frequency The measurement frequency for Aluminum is established at 1/Month. As mentioned above this draft permit eliminates monitoring for Manganese. This increase in the measurement frequency will provide representative data on the variability of these parameters in the discharge.

Reopener Condition

This draft permit proposes a specific Reopener Condition for the discharge from Outfalls 017 and from Outfall 018. A downstream segment of the Connecticut River is on the 1998 New Hampshire 303(d) list for exceedances of the D.O. standard and the chronic water quality criterion for Aluminum. Specifically, the Moore Reservoir impoundment is listed on Tier 3 - Waters With Potential Water Quality Exceedances for these two parameters. Since actions will be taken during the term of this permit to resolve the D.O. and the Aluminum exceedances in the Reservoir impoundment, a Reopener Condition is included in this draft permit in the event these actions indicate additional permit limits are necessary. According to this 303(d) list , these actions include developing a TMDL or other pollution control or abatement measures. Additionally, this Reopener Condition includes a provision for a permit modification if the monitoring results indicate the discharge causes or contributes to an exceedance of the numeric water quality criteria for the following pollutants in Outfall 017: Aluminum, Benzo(b) Fluoranthene, and Escherichia coli and for the following pollutant in Outfall 018: Aluminum.

Outfall 001 and 003 (Storm water)

The storm water discharge from Outfall 003 was rerouted to Outfall 017 in January 1995 at which time this Outfall was shut down by the permittee. The remaining storm water at this facility discharges from Outfall 001 which was authorized under the 1995 Storm Water MSGP, (number NHR05A458) effective on May 31, 2000. With the

expiration of this 1995 permit, EPA reissued the Storm Water MSGP on October 30, 2000. Facilities currently covered by the 1995 MSGP are allowed to apply for coverage under the reissued MSGP until January 29, 2001. Wausau Papers has obtained coverage for the remaining storm water Outfall under the reissued MSGP (number NHR05A567) effective on January 31, 2001. Therefore, this draft permit eliminates Outfalls 001 and 003.

D. Whole Effluent Toxicity

New Hampshire has promulgated water quality standards which establish designated uses for the State's waters and contain narrative and numeric criteria to protect such uses - see 50 RSA § 485-A:8 and the N.H. Code of Administrative Rules, Env-Ws 1700-1709 (December 1999). Specifically, 50 RSA § 485-A:8, VI and Env-Ws 1703.21(a)(1) state that, "all classes of waters shall be free from toxic pollutants or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;." The federal NPDES permit regulations at 40 CFR § 122.44(d)(1)(v) require Whole Effluent Toxicity (WET) limits in a permit when a discharge causes, has a "reasonable potential" to cause, or contributes to an in-stream excursion above a narrative criterion within the State water quality standard.

Where EPA-New England believes toxicity testing and limits are appropriate and are required as described in the previous paragraph, the type of toxicity testing (acute and/or chronic) and the effluent limitation (LC50 and/or C-NOEC) are established based on the available dilution. Given the dilution factor of 17.7:1 in the Connecticut River for Outfall 017, the acute toxicity or LC50 limit would be 100 percent and the chronic toxicity or C-NOEC limit would be greater than or equal to 5.6 percent (see the equation in Attachment D). The LC50 is defined as the concentration of toxicant, or in this draft permit as percentage of effluent, that would be lethal to 50 % of the test organisms during a specific time period. The C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration of 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 where the test results (growth, survival and/or reproduction) exhibit a linear dose-response relationship. In those instances where these test results do not exhibit a linear dose-response relationship, report the lowest concentration where there is no observable effect.

The existing permit required acute and chronic whole effluent toxicity testing of the effluent from Outfall 017 on a quarterly basis. A summary of the acute and chronic testing results for the period June 30, 1993 to September 30, 1996 accompanied the permit application. The recent toxicity testing results are summarized in Attachment B for the period December 31, 1996 to December 31, 1999. These data summaries indicate chronic toxicity exists with the specie Daphnid (Ceriodaphnia dubia) in the tests for March and September 1996, and September 1998 with C-NOEC values of <1, 1, and 1 percent, respectively. According to these chronic toxicity results, EPA has determined the discharge from Outfall 017 causes and has the "reasonable potential" to cause an excursion above the State's narrative water quality criterion. EPA believes WET limits are warranted given the presence of chronic toxicity and are necessary to satisfy the federal NPDES permit regulations and the no toxic provision of the NH Standards mentioned above. Therefore, EPA is proposing acute and chronic WET limits in the draft permit to protect the Connecticut River by assuring that Wausau Papers does not discharge an effluent of toxic nature. Additionally, the WET limits will also serve to protect the Anadromous Fish Program for the Connecticut River Basin. The WET testing with two species which is discussed in more detail below is to follow the test procedure and protocol (Freshwater Chronic Toxicity Test Procedure and Protocol dated December 1995).

The acute limits are included in accordance with EPA-New England Policy and to demonstrate the continued absence of acute toxicity. Additionally, the acute test results are easily obtained with the chronic test procedure and protocol in use. The acute test results are necessary to evaluate the permittee's future request for a reduction in the frequency of toxicity testing as discussed below.

This draft permit continues the WET testing requirement with four acute and chronic toxicity tests each year with two species and imposes new LC50 and C-NOEC limits. This draft permit is conditioned to require the permittee to perform annually, four chronic toxicity and modified acute and tests using two (2) species and the permit contains an LC50 limit of 100 % effluent concentration and an C-NOEC limit of $\geq$ 5.6 % effluent concentration. The four tests are to be performed on a calendar quarter basis using the species Daphnid (Ceriodaphnia dubia) and Fathead

Minnow (Pimephales promelas). Further details on the Fathead Minnow test procedures are provided below.

Therefore, the quarterly sampling for the WET test requirement shall be collected and tests completed during the calendar quarters ending March 31st, June 30th, September 30th, and December 31st of each year. Results are to be submitted to EPA and the NHDES-WD by the 15th day of the month following the end of the quarter sampled. For example, test results for the quarter beginning on April 1st and ending on June 30th, are due by July 15th.

If the results of these tests are consistently negative during the four most recent sampling events, the monitoring frequency and testing requirements may be reduced as discussed below. Alternatively, if toxicity violations are shown, 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 limit(s).

As a special condition of this draft permit (See applicable paragraph under SPECIAL CONDITIONS section), the frequency of WET testing may be reduced by a certified letter from 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 permitted 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. The frequency of toxicity testing may be reduced to as little as once 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.

By letter of March 11, 1999, EPA authorized the permittee to use standard alternate dilution water in future WET tests with the Fathead Minnow (Pimephales promelas) because the 1998 test data with this specie indicated site water problems. EPA believes an alternate dilution water is still appropriate for the chronic and modified acute Fathead Minnow tests and the draft permit is conditioned to allow an alternate dilution water and includes three controls: 1) alternate dilution water, 2) lab water control, and 3) site water control for future fathead tests. The alternate dilution water will need to match the characteristics of the Connecticut River and it must be of a known quality with water-quality characteristic such as organic carbon, total suspended solids, pH, specific conductivity, alkalinity, and hardness similar to that of the Connecticut River. Prior to toxicity testing, it is recommended that the permittee screen the alternate dilution water for suitability.

The use of Connecticut River water as the site water is to continue as required in the existing permit for the Daphnid (Ceriodaphnia dubia) tests. Site water problems were not evident with this specie.

E. Requirements and Conditions for Section 316(a) and 316(b) of the Clean Water Act.

Section 316(a) of the CWA concern the thermal component of any effluent discharge. EPA has not developed best practicable control technology current available (BPT) for thermal discharge from point sources. However, EPA assumes that if thermal limits satisfying BPT were developed in accordance with Section 301(b)(1)(A) of the CWA, these limits would be more stringent than what would be proposed by the NPDES Permit applicant because the water-quality criteria developed by the States would be the limiting factor in the development of the NPDES Permit. Thermal discharges (heat) are not subject to the technology standards required by best conventional pollutant control technology economically achievable (BCT) since heat it not considered a toxic or conventional pollutant as defined by the CWA and outlined in 40 CFR §§ 401.15 and 401.16. Thermal discharges are treated as a separate type of pollutant under Section 316. Authority of these two Sections of the CWA has been delegated to the Regional Administrator or their designees in accordance with the regulatory procedures outlined in 40 CFR § 125.

Section 316(a) of the CWA gives the Administrator of the EPA the authority to impose alternative effluent limitations for the control of the thermal component of any discharge. However, the owner or operator of the point source must demonstrate to the satisfaction of the Administrator that existing effluent limitations are more stringent

than necessary to assure the protection and propagation of a balanced indigenous community of shellfish, fish, and wildlife in and on the receiving water.

The thermal discharges at the Wausau Paper facility occur in Outfalls 010 and 017. The temperature limits in the existing permit issued to this facility satisfied the requirements of Section 316(a) of the CWA because the temperature limits and the associated temperature increase (ΔT) are in compliance with the narrative temperature criterion in the New Hampshire Water Quality Standards. As explained in the preceding Effluent Limitations Section for these two outfalls, the temperature limits are revised in this draft permit and are more restrictive than the corresponding limits in the existing permit. Because the thermal component of these two discharges are in attainment with the temperature requirements in the New Hampshire Water Quality Standards, alternate effluent limitations are not required. It is not necessary for the permittee to submit a thermal variance request because the temperature limitations in the existing permit met the water quality standards and the permittee was able to achieve compliance with these limits.

Section 316(b) of the CWA requires that any standard established pursuant to Section 301 or 306 of the CWA and applicable to a point source will require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available (BTA) for minimizing adverse impact. EPA is currently developing national regulations to implement Section 316(b) of the CWA. Until these regulations are developed, EPA is using existing guidance and information to reach a best professional judgement (BPJ) decision in determining appropriate Section 316(b) permit requirements.

According to information provided by the permittee, the two cooling water intakes are along the right bank of the Upper Ammonoosuc River just upstream from the Brooklyn Dam at the facility. The Penstock Intake is located at the right abutment of the Dam and is recessed in the River bank with a 10 ft. x 7.3 ft. bar rack with a 2 in. x 2 in. grid spacing. The Fire Water Intake is located upstream from the Dam and protrudes 5 ft. into the River with a 5.5 ft. x 8 ft. bar rack with a 4 in. x 1 in. grid spacing. The grid spacing at the two intakes allows the juvenile Atlantic salmon to pass through the plant. Typically, a 1 inch grid is the standard for intake structures at hydroelectric projects. It is unclear if a grid of this size will be needed given the river bank location; thus design plans for replacement trashracks are proposed in this draft permit.

As mentioned earlier in this Fact Sheet the Upper Ammonoosuc River system is an important Atlantic salmon fishery and also supports other cold water fish species. In order to protect the juvenile Atlantic salmon during downstream migration, this draft permit is conditioned to require the permittee to prepare a report with design plans for installation of replacement trashracks at the Fire Water Intake and the Penstock Intake. Appropriate design elements to prevent fish entrainment and impingement are to be determined in consultation with the U.S. Fish and Wildlife Service (USFWS) and the New Hampshire Fish and Game Department (NHFGD). This permit condition is necessary to minimize the adverse environmental impact of the two cooling water intake structures and to satisfy EPA's obligation under Section 316(b). Given the unique importance of the Atlantic salmon fishery , EPA's BPJ determination for this permit is to require the design plans for the trash racks at the intake structures to proceed in consultation with federal and state fishery agencies and to require the final installation. The draft permit contains a time line to prepare the design plan and to install the replacement trashracks within the term of the final permit. EPA has determined these permit conditions will satisfy the BTA requirement for minimizing adverse environment impact of the two intake structures at Wausau Papers.

F. Additional Requirements and Conditions.

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308(a) of the Clean Water Act in accordance with 40 CFR §§§ 122.41(j), 122.44(i) and 122.48.

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.

V. Antidegradation.

This draft permit is being reissued with an allowable wasteload no less stringent than the existing permit with expanded parameter coverage and no change in location of the outfalls. EPA expects the State of New Hampshire, during the review of this draft permit as part of the State Certification process, to determine that there will be no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted.

VI. Essential Fish Habitat.

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with NMFS if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. 16 U.S.C. § 1802(10). Adversely impact means any impact which reduces the quality and/or quantity of EFH. 50 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

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

Description of Proposed Action

The wastewater treatment facility at Wausau Papers utilizes the following treatment processes: initial settling in the primary clarifier, biological treatment in an aerated lagoon, and final settling in the two secondary clarifiers; and then it discharges to the Connecticut River. There are also two discharges to the Upper Ammonoosuc River consisting of Upper Ammonoosuc River intake bypass water and non-contact cooling water on an intermittent basis, and sand filter backwash water after disinfection. Process and non-contact cooling waters for the Wausau Papers and Groveton Paper Board are obtained from the Upper Ammonoosuc River. The average monthly flow limit for the treatment facility is 7.5 mgd and the average monthly flows for the other two discharges are about 0.5 and 0.6 mgd.

EFH Species

The Connecticut River and the Upper Ammonoosuc River which is a tributary are designated EFH for Atlantic salmon (*Salmo salar*). According to New Hampshire Fish and Game Department (NHFGD), the Upper Ammonoosuc River is an important cold water fishery which supports Atlantic salmon, brook trout (*Salvelinus fontinalis*), and brown trout (*Salmo trutta)*. Atlantic Salmon fry stocking took place during 2000 in the main stem, upstream from the facility, and in an upstream tributary. This stocking is planned to continue in future years.

Analysis of Effects

The EFH consultation was prompted by the discharge of a heated effluent to the Connecticut River and the presence

of two intake structures on the Upper Ammonoosuc River. The proposed seasonal temperature limits in the draft permit for this effluent are reduced from those limits in the existing permit by 10 ^{0}F in the winter and by at least 8 ^{0}F in the summer. These new temperature limits and the associated critical temperature increase (1.8 ^{0}F) satisfy the temperature criterion in the state water quality standards.

The draft permit requires a study of the two intake structures on the Upper Ammonoosuc River which provides habitat for juvenile Atlantic salmon. Planned modifications to the intake structures include replacement of the existing intake screens with a mesh size that will prevent entrainment of juvenile Atlantic salmon. Intake screen design plans will be prepared in consultation with the NHFGD and the USFWS.

EPA's Opinion of Probable Impacts

The EPA believes that the effluent limitations and monitoring requirements for the discharges and the conditions for the intake structures contained in the proposed permit will minimize impacts to aquatic organisms, including EFH species, as well as their habitat and forage species. It is EPA's opinion that these discharges will meet state water quality standards including those for temperature. The permit condition for the two intake structures will prevent the entrainment of the salmon smolt as they migrate downstream. Approach velocities averaging 0.15 and 01.08 ft/s at these both intakes should not pose an impingement hazard to the juvenile salmon.

Mitigation

The NPDES permit, as drafted, should sufficiently protect all aquatic resources including Atlantic salmon once the intake structures are modified. Compensatory mitigation does not appear to be warranted since any adverse impact caused by the intake structures will be eliminated within the initial 18 months of this final permit. If adverse impacts to EFH do occur either as a result of non-compliance, or from unanticipated effects from this activity, the permit may be modified. Additionally, if such an incident occurs, or if new information becomes available that changes the basis for our determination, then consultation with NMFS will be reinitiated.

VII. 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 State Water Quality 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, is the certifying authority. EPA has discussed this draft permit with the Staff of the Water Division 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. Failure to provide this statement for any condition waives the right to certify or object to any less stringent condition which may be established by EPA during the permit issuance process. 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 of 40 CFR Part 124.

VIII. 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, NPDES Permit Task Force Unit, U.S. Environmental Protection Agency, 1 Congress Street, Suite 1100 (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 regarding 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.

IX. 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. William Wandle
U.S. Environmental Protection Agency
1 Congress Street, Suite 1100 (CPE)
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1605
FAX No.: (617) 918-1505

03/28/01
_____
Date

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

ATTACHMENT A

NH0001562

Location of the Wausau Papers of New Hampshire, Inc, Facility.

ATTACHMENT B

CHARACTERISTICS OUTFALL 017 - TREATED PROCESS WASTEWATER

The following effluent characteristics were derived from analysis of discharge-monitoring data collected during the 24-month period, June 1997 through May 1999. These data were extracted from the monthly Discharge Monitoring Reports (DMRs) submitted by the Wausau Papers of New Hampshire, Inc. as retrieved from EPA's Permit Compliance System (PCS) data base.

Parameter	PERMIT LIMITS Average Monthly	PERMIT LIMITS Maximum Daily	Average of Average Monthly	Maximum Daily[1]
Flow (mgd)	7.5	8.5	5.63	7.2,6.9, 6.9
Nitrogen as Ammonia (mg/L)	–	–	–	0.32, 0.27, 0.2
Total Phosphorous (mg/L)	–	2.0	–	1.8, 1.6, 1.6
pH Range (Standard Units)		6.5 to 8.0		7.0 to 7.8[2]
Whole Effluent Toxicity [3] (percent effluent)				
LC50 Ceriodaphnia dubia		>100, >100, >100, >100, >100, >100, 100, >100, >100, >100		
LC50 Pimephales promelas		>100, >100, >100, >100, >100, >100, 100, >100, >100, >100		
C-NOEC Ceriodaphnia dubia		50, 100, 25, 50, 1, 6.25, 100, 100, 100, 100		
C-NOEC Pimephales promelas		100, 100, 100, 50, 100, 100, 100, 100, 100, 25		
November 1 to April 30				
BOD (lbs/day)	3400	5100	669	2370, 1780, 1727
TSS (lbs/day)	4470	6830	1187	4257, 3870, 2967
Temperature (^{0}F)	80	90	60.3	72, 70, 69
May 1 to October 31				
BOD (lbs/day)	2750	4125	511	1882, 1558, 1025
TSS (lbs/day)	3160	5520	826	3330, 2114, 1805
Temperature (^{0}F)	95	105	78.7	90, 90, 88

1. Three highest values are shown except for the pH.
2. Numbers listed are minimum and maximum daily readings.
3. Results for the 10 WET tests from December 1996 to December 1999.

Effluent characteristics as reported on the permit application - Form 2C. The Phthalate Esters and the PAH data submitted with June 9, 2000 letter are within the parentheses

Color 350, PTCO
Fecal Coliform, TNC colonies /100 ml
Zinc, 0.031 mg/L
Aluminum, 0.24 mg/L
Manganese, 0.786 mg/L

Phthalate Esters Chemicals

Bis (2-Ethyl-hexyl)Phthalate, 49 ug/L, (9 ug/L)
Butyl benzyl phthalate, <5 ug/L, (<5 ug/L)
Di-n-octyl phthalate, <5 ug/L, (<5 ug/L)
Di-n-butyl Phthalate, <5 ug/L, (<5 ug/L)
Diethyl Phthalate, <5 ug/L, (<5 ug/L)
Dimethyl Phthalate, <5 ug/L, (<5 ug/L)

Polynuclear Aromatic Hydrocarbons (PAHs)

Benzo(a) Anthracene, <8 ug/L, (<8 ug/L)
Benzo(a) Pyrene, <5 ug/L , (<5 ug/L)
3,4 Benzofluoranthene [Benzo(b) Fluoranthene], 6 ug/L, (<5 ug/L)
Benzo(k) Fluoranthene, <5 ug/L, (<5 ug/L)
Chrysene, <5 ug/L, (<5 ug/L)
Dibenzo(a,h)Anthracene, <8 ug/L, (<8 ug/L)
Ideno(1,2,3-cd)Pyrene, <5 ug/L, (<5 ug/L)

DATA FOR OUTFALLS 010 AND 018. These data are summarized from the DMRs for the period from June 1997 through May 1999 unless indicated otherwise.

Parameter	PERMIT LIMITS Maximum Daily	Average Daily	Average of Monthly Average	Daily Maximum[1]	Daily Minimum
		Outfall 010 (River intake bypass and non-contact cooling water)			
The data represent the four months this intake was in use during the period November 1997 to April 2000.					
Flow (mgd)	Report			0.5	0.5
pH Range (S.U.)	6.5 to 8.0			6.3	5.93
Upper Ammonoosuc River pH Range (S.U.) [3]				6.45	5.99
TSS (mg/L)	Report			8.2	0
Temperature (^{0}F)	80			50	39
The historic data for the period from January 1995 to June 1997 summarized from the DMRs.					
Flow (mgd)	Report		0.4	0.5 to 0.6 (range)	
TSS (mg/L)	Report		1.65	0 to 8.4 (range)	
		Outfall 018 (sand filter backwash)			
Flow (mgd)	Report	1.103		1.490, 1.414, 1.327	
pH Range (Standard Units)	6.5 to 8.0			5.46	6.78
TSS ((mg/L)	Report	52.0		310, 176, 89	
TSS ((mg/L) [4]	Report	–		198, 168, 115	3.8
Total Chlorine Residual (mg/L)	Report	0.30		0.96, 0.70, 0.69	
Manganese (mg/L)	Report	0.19		0.568, 0.513, 0.476	
Aluminum (mg/L)		0.70 [2]			
Zinc (mg/L)		0.040 [2]			

1. Three highest values are shown except for the pH. 2. Reported values on permit application - Form 2C.
3. Reported values submitted with the DMRs. 4. TSS data for 2000.

PRODUCTION BASED LIMITS FOR WAUSAU PAPERS OF NEW HAMPSHIRE, INC.

Type	Production Tons per day	BOD AVG lbs/1000 (lbs/day)	BOD MAX lbs/1000 (lbs/day)	TSS AVG lbs/1000 (lbs/day)	TSS MAX lbs/1000 (lbs/day)
Subpart K Fine paper	338	4.25 (2873)	8.2 (5,543)	5.9 (3,988)	11.0 (7,436)
Subpart F Unbleached sodium base	250	4.35 (2,175)	8.7 (4,350)	5.5 (2,750)	11.0 (5,500)
Subpart J Noncorrugating medium mill	175	1.5 (525)	3.0 (1,050)	2.5 (875)	5.0 (1,750)
Totals	763	(5,573)	(10,943)	(7,613)	(14,686)

ATTACHMENT C

Flow Distribution / Water Balance Diagram

ATTACHMENT C

Flow schematic for the Wastewater Treatment Facility at Wausau Papers of New Hampshire, Inc.

DEVELOPMENT OF WATER QUALITY BASED EFFLUENT LIMITS

Temperature Calculations:

Equation used to calculate the instream water temperature below the Outfall pipe. This equation determines the energy balance on the discharge using critical riverine conditions and referencing each temperature above the base of 0 ^{0}F which cancels from the final equation.

$$\text{TMP-Dn} = \frac{\text{7Q10FL (TMP-Bk)(0.9) + PlantQ (TMP-Plant)}}{\text{7Q10FL(0.9) + PlantQ}}$$

where:

7Q10FL is the estimated 7Q10 low flow in the river above the outfall pipe in cubic feet per second (cfs).

0.90 is the adjustment factor for the State assimilative capacity reserve policy.

PlantQ is the discharge from the facility in cfs which is 8.5 mgd or 13.18 cfs.

TMP-Bk is the stream temperature for cold water fishery at 68 degrees Fahrenheit (^{0}F) for the Connecticut River and the Upper Ammonoosuc River.

TMP-Plant is the temperature of wastewater discharge at 97 ^{0}F.

TMP-Dn is the instream water temperature below the outfall.

Connecticut River below Outfall 017

$$\text{TMP-DN} = \frac{[217(68)] \times 0.9 + 13.18\ (97)}{(217) \times 0.9 + 13.18} = 69.8\ ^0\text{F}$$

Temperature increase on the Connecticut River is 69.8 - 68 = 1.8 ^{0}F

Upper Ammonoosuc River below Outfall 010

The maximum discharge is 0.5 mgd or 0.78 cfs based on the Form 2C update. The 7Q10 flow is reduced by 0.78 cfs since the source water for this discharge is the Upper Ammonoosuc River.

$$\text{TMP-DN} = \frac{[48.6(68)] \times 0.9 + 0.78\ (\text{TMP-Plant})}{48.6(0.9) + 0.78} = 68$$

Temperature limit or TMP-Plant = 68 ^{0}F

Dilution Factor Calculations:

Dilution Factor used with the aquatic life criteria and human health criteria for non-carcinogens for Outfalls 017 and 018.

Connecticut River below Outfall 017

Equation used to calculate the Dilution Factor(lf) using the 7Q10 flow.

$$\text{Dilution Factor(lf)} = \frac{\text{7Q10 Flow + Plant Flow}}{\text{Plant Flow}} \times 0.90$$

where:

0.90 is the Adjustment Factor for the State Assimilative Capacity Reserve Policy.

7Q10 Flow is 217 cfs for the Connecticut River. Flow from the Upper Ammonoosuc River is not included since this River is the source of the process water for the facility.

Plant Flow is 7.5 mgd or 11.62 cfs.

$$\text{Dilution Factor(lf)} = \frac{217 + 11.62}{11.62} \times 0.90 = 17.7$$

Connecticut River below Outfall 017

Equation used to calculate the Dilution Factor(hm) using the long-term harmonic mean flow.

$$\text{Dilution Factor(hm)} = \frac{\text{Qhm Flow + Plant Flow}}{\text{Plant Flow}} \times 0.90$$

where:
0.90 is the Adjustment Factor for the State Assimilative Capacity Reserve Policy.
Qhm Flow is the long-term harmonic mean flow or 907 cfs for the Connecticut River (see calculation below).
Plant Flow is 7.5 mgd or 11.62 cfs.

$$\text{Dilution Factor (hm)} = \frac{907 + 11.62}{11.62} \times 0.90 = 71.1$$

Upper Ammonoosuc River below Outfall 018

Equation used to calculate the Dilution Factor using the 7Q10 flow.

$$\text{Dilution Factor(lf)} = \frac{7Q10}{\text{Plant Flow}} \times 0.90$$

where:
7Q10 is 49.4 cfs for the Upper Ammonoosuc River.
0.90 is the Factor to Adjust for the State Assimilative Capacity Reserve Policy.
Plant Flow is the average monthly flow for this outfall at 0.6 mgd or 0.93 cfs.

$$\text{Dilution Factor(lf)} = \frac{49.4}{0.93} \times 0.90 = 47.8$$

Dilution Factor determination for the human health criteria for carcinogens.

Equation used to determine the long-term harmonic mean flow to develop permit limits for human health criteria for carcinogens.

$$Qhm = (1.194Qam^{0.473})(7Q10^{0.552})$$ This equation is given in the TSD, page 89.

where: Qhm is the long-term harmonic mean flow in cfs.
Qam is the mean annual flow in cfs.
7Q10 is the annual minimum seven day mean low flow at the 10-year recurrence interval in cfs.

Mean annual flow calculation
Qam is determined using the mean annual flow of 1,584 cfs for the Connecticut River at North Stratford, NH and adjusting for the increase in drainage area at the confluence with the Upper Ammonoosuc River and then adding the mean annual flow of 476 cfs for the Upper Ammonoosuc River near Groveton, NH less the flow completely diverted through the plant.

$$Qam = \frac{930}{799} \times 1{,}584 + 476 - [(7.5 - 1.1) \times 1.55] = 2310 \text{ cfs}$$

$$Qhm = (1.194)(2{,}310^{0.473})(217^{0.552}) = 907 \text{ cfs}$$

Water Quality Based Effluent Limitations for Outfalls 017 and 18:

Equation used to calculate the average monthly and maximum daily values effluent limits.

Effluent Limitation = [Dilution Factor] X (Water-Quality Criterion)

where the acute and chronic water quality criteria are used to determine the monthly and daily limits as discussed in the Fact Sheet and the appropriate Dilution Factor based on the 7Q10 low flow or the long-term harmonic mean flow determined as mentioned above.

Outfall 017

Potential Phthalate Esters Limits are: Average Monthly Limit = [17.7] X 0.003 mg/L = 0.053 mg/L

Maximum Daily Limit = [17.7] X 0.94 mg/L = 16.6 mg/L. Therefore, no limit or monitoring requirements are required as discussed in the Fact Sheet.

Potential Manganese Limit is: Average Monthly Limit = [17.7] X 0.100 mg/L = 1.77 mg/L. Therefore, no limit or monitoring requirements are necessary based on the Form 2C data.

Potential PAHs Limits are:

The Potential Benzo(b) Fluoranthene [3, 4 Benzofluoranthene] Limit using the human heath criteria for fish ingestion of 0.049 ug/L. The potential limit for each of the other PAHs of concern is identical to this value.

Average Monthly Benzo(b) Fluoranthene = [71.1] X 0.049 ug/L = 3.48 ug/L

Monitoring requirements are required as discussed in the Fact Sheet.

C-NOEC Toxicity Limit

Equation used to calculate Whole Effluent Toxicity's C-NOEC limit which is set equal to or greater than the Receiving Water Concentration (RCW).

$$RCW = \frac{1}{DF} \times 100$$

where:

RCW is the Receiving Water Concentration
DF is the Dilution Factor.
100 is the Factor to convert reciprocal to a percent.

$$\text{C-NOEC limit for Outfall 017} = \frac{100}{17.7} = 5.6 \text{ percent.}$$

Outfall 018

The Total Residual Chlorine Limits are:

Average Monthly Limit = [47.8] X 0.011 mg/L = 0.53 mg/L
Maximum Daily Limit = [47.8] X 0.019 mg/L = 0.91 mg/L

The Potential Manganese Limit is: Average Monthly Limit = [47.8] X 0.100 mg/L = 4.78 mg/L
Thus, no limit or further monitoring requirements are necessary based on the DMR data.

ATTACHMENT E

Table 1. Statistical parameters to derive Maximum Daily permit limits using the lognormal distribution of the temperature data for Outfall 017. Values in natural logarithm units except for k and X.

Table 2. Statistical parameters to derive Average Monthly permit limits using the lognormal distribution of the temperature data for Outfall 017. Values in natural logarithm units except for n and X.