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.: NH0100706

PUBLIC NOTICE DATES: July 11, 2007 – August 9, 2007

NAME AND ADDRESS OF APPLICANT:

Town of Lincoln
P.O. Box 25
Lincoln, New Hampshire 03251

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Lincoln Wastewater Treatment Plant
Recycle Drive
Lincoln, New Hampshire 03251

RECEIVING WATER: East Branch Pemigewasset River
(Hydrologic Basin Code: 01070001)

CLASSIFICATION: B

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

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for reissuance its NPDES permit to discharge treated effluent from Outfall 001 into the designated receiving water (East Branch Pemigewasset River).

This facility is engaged in the collection and treatment of municipal and industrial wastewater. The discharge from outfall 001 is from a 1.3 million gallon per day (MGD) secondary wastewater treatment facility. The facility has two aerated lagoons as the principal means of wastewater treatment.

The East Branch Pemigewasset River is classified as a Class B waterway by the New Hampshire State Legislature. The designated uses of Class B water are: 1) the protection and propagation of fish, other aquatic life and wildlife and 2) primary and secondary contact recreation.

The East Branch Pemigewasset River is listed on the State's 303(d) list of impaired waters as not supporting fish consumption due to atmospheric deposition of mercury. Other uses were not assessed. The Upper Pemigewasset River, downstream of the confluence with the East Branch, is listed on the State's 303(d) list of impaired waters as not supporting fish consumption due to atmospheric deposition of mercury, and not supporting aquatic life uses due to aluminum (source unknown), pH (source unknown), and flow regime alterations (streambank modifications / destabilization). Other uses were not assessed.

The current permit was issued on September 22, 1998, and expired on October 22, 2003. The current permit has been administratively extended until the new permit is issued, since the applicant filed a complete application for permit reissuance as per 40 Code of Federal Regulations (CFR) §122.6. The location of the treatment facility, outfall 001 and the receiving water are shown in **Attachment A**.

II. Description of Discharge.

A quantitative description of the discharge in terms of recent effluent-monitoring data from Discharge Monitoring Reports (DMRs) submitted to EPA from January 2006 to March 2007 is shown in **Attachment B**. The draft permit contains limitations for ammonia nitrogen (as nitrogen), pH, total suspended solids (TSS), 5-day biochemical oxygen demand (BOD_5), total recoverable copper, total recoverable lead, total residual chlorine (TRC), Escherichia coli (E. coli) and whole effluent toxicity (WET).

III. Limitations and Conditions.

Effluent limitations, monitoring requirements, and implementation schedule (if required) are found in Part I of the draft permit. The basis for each limit and condition is discussed in section IV below.

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 the 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), 402(a). Section 402(a) 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 limitation to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 304(b); 40 C.F.R. 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, POTW's 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 BOD_5, 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 122.44(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 amouts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) and 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 the 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 average monthly limits. Where a State has not established a numeric water quality criterion for a specific chemical 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 Section 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, 125, and 136.

B. Introduction

The permit must limit any 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, see 40 C.F.R. §122.44(d)(1)(i). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

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 the permit's reissuance application, DMRs, and State and Federal Water Quality Reports; 3) sensitivity of the species to toxicity testing; 4) the statistical approach outlined in *Technical Support Document for Water Quality-Based Toxics Control*, March 1991, EPA/502/2-90-001 in Section 3; and, where appropriate, 5) dilution of the effluent in the receiving water. In accordance with the New Hampshire statutes and administrative rules [RSA 485-A:8, VI, Env-Ws 1705], available dilution is based on a known or estimated value of the lowest average annual flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health for non-carcinogens; for human health (carcinogens only) the harmonic mean flow in the receiving water is measured. Furthermore, 10 percent of the assimilative capacity of the receiving water is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations, Env-Ws 1705.01.

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. 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.

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 limitations and State water quality standards. See CWA § 4012(a)(1). The regulatory provisions pertaining to State certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. § 124.53(a). The regulations further provide that, "when certification is required…no final permit shall be issued…unless the final permit incorporates the requirements specified in the certification under § 124.53(e)." 40 C.F.R. § 124.55(a)(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 conditions 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 regulation provides 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. Flow

The Lincoln Wastewater Treatment Facility has a design flow rate of 1.3 mgd. A review of the DMRs from January 2006 to March 2007 reveals that monthly average and maximum daily flow rates vary between 0.320 mgd to 0.689 mgd and 0.505 mgd to 1.129 mgd respectively. The long-term monthly average flow is about 0.556 mgd. The current permit does not have a flow limit and the draft permit also will continue without a limit. The design flow rate of 1.3 mgd is used to calculate mass limits for Biochemical Oxygen Demand (BOD_5), Total Suspended Solids, and Available Dilution as discussed below. If the effluent flow rate exceeds 80 percent of the 1.3 mgd design flow (1.04 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.

D. Conventional Pollutants

Five-Day Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)

The effluent limitations for Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS) in the draft permit are based on secondary treatment regulation found in 40 CFR 133.102 of the Clean Water Act. For this draft permit, the average monthly, average weekly and maximum daily concentration and mass limitations for biochemical oxygen demand (BOD_5) and total suspended solids (TSS) are same as in the existing permit. See **Attachment C** for example calculation of mass-based limits. The permittee has been able to achieve consistent compliance with those limits.

Compliance monitoring frequencies for both BOD_5 and TSS in this draft permit are once per week (1/Week), the same as in the current permit and in conformance with the July 19, 1999 **EPA/NHDES-WD Effluent Monitoring Guidance**. These frequencies are minimum requirements consistent with sampling needed to assess a treatment system's effluent variability in order to properly evaluate compliance with NPDES permitted limits.

pH and Bacteria (E. Coli) Limits Including Related Conditions

Effluent limitations in the draft permit for pH and Escherichia coli bacteria (E.Coli) are the same as the limits in the existing permit and are in accordance the State's Water Quality Criteria found under Parts Env-Ws 1703.18 and Env-Ws 1703.06 of NHDES's Surface Water Quality Regulations dated December 10, 1999. The permittee has been able to achieve consistent compliance with those limits.

The compliance monitoring frequency for bacteria (E.Coli) in the draft permit is changed from three per week (3/Week) to two times per week (2/Week) and the pH in the draft permit remains unchanged (Daily) from the existing permit. Again, both frequencies conform with the July 19, 1999 **EPA/NHDES-WD Effluent Monitoring Guidance** described above. This does not violate anti-backsliding regulations.

Anticipating the situation where NHDES-WD may grant a formal approval changing the pH limit(s) to outside the 6.5 to 8.0 Standard Units (S.U.), EPA has added a provision to this draft permit (See SPECIAL CONDITIONS section in the draft permit). That provision will allow EPA to modify the pH limit(s) using a certified letter approach. This change will be allowed only if the permittee demonstrates that the revised pH limit range will not alter the naturally occurring receiving water pH (see STATE PERMIT CONDITIONS in the draft permit). However, the pH limit range cannot be made less restrictive than 6.0 - 9.0 S.U. found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133).

E. Non-conventional and Toxic Pollutants

Water-quality based limits for specific toxic pollutants such as chlorine, ammonia, etc. are determined from chemical specific numeric criteria derived from extensive scientific studies. The specific toxic pollutants and their associated toxicity criteria are popularly known as the "Gold Book Criteria" which EPA summarized and published in **Quality Criteria for Water, 1986, EPA 440/5-86-001** as amended. On December 10, 1998 EPA amended the water quality criteria. The State of New Hampshire adopted these "Gold Book Criteria", with few exceptions, and included them as part of the State's Revised Water Quality Regulations adopted on December 10, 1999. EPA and State uses these pollutant specific criteria, along with available dilution in the receiving water, to determine a specific pollutant's draft permit limit.

Available Dilution

Available dilution (also referred to as dilution factor) in the receiving water is changed from 14.8 to 16.6 using the plant's design flow of 1.3 MGD, a revised estimate of the 7Q10 low flow in the East Branch Pemigewasset River at the treatment plant's outfall (35.09 CFS), and a 10 percent (%) set aside or reserve for future needs. See State Regulation Env-Ws 1705.01 for the set aside definition. The current permit used the discontinued gaging station # 01074500 with a 7Q10 flow of 30.9 cfs which includes drainage area adjustments. The draft permit uses the 7Q10 flow at the U.S. Geological Survey gaging station # 01074520 for the period of record 1993 – present, located upstream of the Lincoln WWTF outfall. The drainage area of the East Branch Pemigewasset at this gage is 115 square miles. The 7Q10 flow upstream of the wastewater treatment facility outfall is 35.09 cfs. No adjustment of drainage basin area is needed.

See below calculations of dilution factor.

Equation used to calculate dilution factor at Outfall 001.

$$DF = [(Q_{001}) + (Q_{PDF} \times 1.547) / (Q_{PDF} \times 1.547)] \times 0.90$$

where:

DF = Dilution Factor
Q_{001} = 7Q10 flow at Outfall 001, in CFS.
0.90 = Factor to reserve 10 percent assimilative capacity.
Q_{PDF} = Treatment plant's design flow, in MGD.
1.547 = Factor to convert MGD to CFS.

$$DF = [35.09 + (1.3 \times 1.547) / (1.3 \times 1.547)] \times 0.90$$
$$= 16.6$$

As stated above, the new dilution factor is slightly greater than the dilution factor used in the existing permit. The new dilution factor will be used to calculate water quality-based limitations and will generally result in slightly less stringent limits. Anti-backsliding regulations include an

exception for situations where new information, not available at the time the permit was previously issued would have justified a less stringent limit, provided that the new limit will not result in a violation of water quality standards (see CWA Sections 402(o)(2)(B) and 402(o)(3)). The revised dilution factor is such new information, and the new limitations are protective of water quality standards.

Total Residual Chlorine

The total residual chlorine (TRC) limits in the draft permit are water quality-based and are changed from the existing permit as stated below. The December 10, 1998 EPA water quality criteria for chronic and acute numbers for chlorine are 0.011 mg/l and 0.019 mg/l respectively. The State's Water Quality Criteria for chlorine found under Part Env-Ws 1703.21 of NHDES's Surface Water Quality Regulations dated December 10, 1999 are the same as the EPA criteria. With available dilution of 16.6 in the receiving water (previously 14.8 in existing permit), the revised calculated average monthly and maximum daily limits are 0.18 mg/l (0.011 x 16.6) and 0.31 mg/L (0.019 x 16.6), respectively. Monitoring frequency will continue at once per day.

Metals

Certain metals in water can be toxic to aquatic life. Toxic metal concentrations must be limited where the discharge has the reasonable potential to cause or contribute to an exceedance of water quality standards. The existing permit includes a permit limit for total recoverable copper. This limit has been retained in this draft permit, and a limit for total recoverable lead has been added. Also, though there does not appear to be a reasonable potential for the discharge of aluminum to cause or contribute to exceedances of water quality criteria a routine monitoring requirement has been included on the permit to better characterize the discharge given the downstream water quality impairment for aluminum.

Total Recoverable Copper

The total recoverable copper limits included in the existing permit were based on chronic aquatic life criteria of 3.65 ug/l, acute aquatic life criteria of 4.79 ug/l, and a dilution factor of 14.8. Monitoring for total recoverable and dissolved copper was required twice per month, with a "report only" requirement for dissolved copper. From November 1998 to January 2006, Lincoln WWTF had 30 violations of the total recoverable copper limits (54.0 ug/l monthly average and 70.9 ug/l maximum daily), of which 17 of the violations were of the maximum daily limit. On January 3, 2006 EPA New England issued the Town of Lincoln an Administrative Order (Docket No. 06-07). Under this Administrative Order (AO), the Town is required to investigate sources of copper to the WWTF influent. The AO did not set an interim limit for copper in the effluent.

This draft permit includes total recoverable copper limits based on the NH Standards (adopted December 10, 1999) and the new dilution factor. The aquatic life dissolved copper water quality criteria in Env-Ws 1703.21 are 3.6 ug/l-acute and 2.7 ug/l-chronic at a hardness of 25 mg/l. Using a conversion factor of 0.96 to convert from dissolved to total recoverable copper criteria, in accordance with Env-Ws 1703.23, results in total recoverable copper criteria of 3.75 –acute

and 2.8 ug/l- chronic. These criteria are slightly more stringent than the criteria used to calculate the limits in the existing permit, and result in more stringent effluent limits, even with the higher calculated dilution factor. The monitoring requirement for dissolved copper have not been included in the draft permit.

The limits are calculated below:

- Total Recoverable Acute limit = Criteria/0.96 x Dilution Factor
  = 3.6 /0.96 ug/l x 16.6
  = **62.3 ugl**

- Total Recoverable Chronic limit = Criteria/0.96 x Dilution Factor
  = 2.7 /0.96 ug/l x 16.6
  = **46.7 ug/l**

Monitoring frequency will continue at two samples per month.

Total Recoverable Lead

A review of the Toxicity Test Reports from January 2006 to March 2007 reveals that lead varies between 5 ug/l to 21 ug/l, with an average value 11.6 ug/l. Env-Ws 1703.23 includes freshwater aquatic life acute and chronic criteria for dissolved lead of 14 ug/l and 0.54 ug/l based on a hardness of 25 mg/l. A conversion factor of 0.993 is used to convert dissolved to total recoverable lead in accordance with Env-Ws 1703.21.

The data shows that the there is reasonable potential for the discharge to cause or contribute to a violation of the chronic freshwater aquatic life criteria. Therefore, the draft permit establishes a lead limit of 9.0 ug/L with a monitoring frequency of two samples per month.

The allowable concentrations are calculated below :

- Total Recoverable Acute = Criteria /0.993 x 16.6
  =14/0.993 x 16.6 ug/l
  = 234 ugl

- Total Recoverable Chronic = Criteria /0.993 x 16.6
  = 0.5/ 0.993 ug/l x 16.6
  =9.0 ug/l

Ammonia Nitrogen as Nitrogen

The existing permit contains an average monthly ammonia limit of 30.4 mg/l, applicable from June 1 through October 31 each year. The applicable period covers the portion of the year when low flows and maximum temperatures in the East Branch Pemigewasset River overlap.

Ammonia limit calculations were re-calculated based on the new dilution factor (DF) of 16.6, and new criteria from EPA's "1999 Update of Ambient Water Quality Criteria for Ammonia".

Warm Weather Limits (June through October)

Chronic Criteria at pH of 6.5 and 25^0C (early life stages present) = 3.39 mg/l
Chronic Limit = 3.39 mg/l x 16.6 (DF) = **56.3 mg/l as N**
Acute Criteria at pH of 6.5 (salmonids present) = 32.6 mg/l
Acute Limit = 32.6mg/l * 16.6 (DF) = **541.2 mg/l**

Cool Weather Limits (November through May)

Chronic Criteria at pH of 6.5 and 10^0C (early life stages present) = 6.67 mg/l
Chronic Limit = 6.67 mg/l * 16.6 (DF) = **110.7 mg/l as N**

Acute Criteria at pH of 6.5 (salmonids present) = **32.6 mg/l**
Acute Limit = 32.6 mg/l * 16.6 (DF) = **541.2 mg/l**

The recalculated limits were compared to the effluent data submitted from January 2006 to March 2007 and show that there is no reasonable potential for the discharge of ammonia from the facility to cause or contribute to violations of New Hampshire's numeric ambient water-quality criteria after mixing in the receiving water.

However, it appears that ammonia concentrations may have a positive correlation with whole effluent toxicity test results, as described in the Whole Effluent Toxicity Section that follows. The limit has been removed from the permit, but the sampling frequency has been retained at once per week. If ammonia is identified as causing violations of WET limits the permit may be reopened and modified to include an appropriate limit.

Total Phosphorus

The 1986 Quality Criteria of Water (the "Gold Book") recommends in-stream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 within the lake or reservoir. The receiving water is not listed as impaired for dissolved oxygen or for other nutrient-related conditions, but under 7Q10 dilution conditions (DF = 16.6) a discharge concentration of 1.66 mg/l would cause the receiving water to exceed the Gold Book-recommended in-stream total phosphorus concentration of 0.1 mg/l for streams not entering a lake or reservoir (0.1 mg/l x16.6 = 1.66 mg/l). Therefore, the draft permit includes a monitoring requirement for total phosphorus to help determine the impact of the discharge on receiving water quality.

F. 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 dischargers from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use 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 additivity 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.

New Hampshire law states that, "all waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;..."(N.H. RSA 485-A:8, VI and the N.H. Code of Administrative rules, PART Env-Ws 430.50(a)). 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 criterion for toxicity.

EPA-New England's current policy requires toxicity testing in all municipal permits with the type of toxicity test (acute and/or chronic) and effluent limitation based on the available dilution. The existing permit includes an acute LC50 toxicity limit of 100 percent and a chronic NOEC monitoring only requirement without a limit.

During permit development, EPA-New England reviewed the WET test reports conducted from January 2006 through March 2007. The permittee is complying with the acute LC_{50} limit of 100% effluent for C. Dubia, however, it violated the limit three times (77.6%, 84.3% and 95.6%) using P. Promelas.

NOEC results show that the effluent has exhibited chronic toxicity in concentrations as low as 6.25 % effluent. Effluent limits for chronic toxicity were calculated to determine if the discharge has the reasonable potential to violate water quality standards. The limit was calculated using the following equation:

Limit = RWC = 1/DF where,

RWC = receiving water concentration
DF = dilution factor (16.6)

Therefore the limit is 1/16.6, which equals 0.06, or 6 percent effluent. Because the data shows that some test results have been approximately equal to the calculated limit, the discharge has the reasonable potential to cause or contribute to violations of water quality standards. An NOEC limit of 6 percent effluent has therefore been added to the permit.

The draft permit also includes an acute LC_{50} limit of 100 percent (the same as in the current permit and maintains the same sampling frequency as the current permit of 4 times per year

using two species; Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas).

The LC50 is defined as the percentage of effluent that would be lethal to 50% of the test organism during an exposure of 48 hours. Therefore, a 100% limit means that a sample of 100% effluent shall cause no greater than a 50% mortality rate in that effluent sample. Chronic NOEC is defined as the highest concentration 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. Therefore, a 6 % limit means that a sample of 6 % effluent shall cause no adverse effect on growth, survival or reproduction in that effluent sample.

The quarterly WET samples 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 with the June Discharge Monitoring Report (DMR) report which is due to both agencies by July 15th.

As a special condition of this draft permit, the frequency of testing may be reduced by a certified letter from the EPA. This permit provision anticipates that the permittee may wish to request a reduction in WET testing. After completion of a minimum of four consecutive WET tests, all of which must be valid tests and must demonstrate compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a reduction in the toxicity test frequency. The EPA will review the tests results and other pertinent information to make a determination whether to approve the request. 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 condition. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

G. Sludge

Section 405(d) of the Clean Water Act (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 is subject to Part 503 technical and to State Env-Ws 800 standards. Part 503 regulations have a self-implementing provision. However, the CWA requires implementation through permits. Domestic sludge which is disposed of in municipal solid waste landfills are in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 CFR Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA-New England has included with the draft permit a 72-page document entitled "EPA Region I NPDES Permit Sludge

Compliance Guidance, November 1999" for use by the permittee in determining the appropriate sludge conditions for the chosen method of sewage sludge use or disposal practices.

The permittee is required to submit an annual report to EPA-New England and NHDES- WD, by February 19th each year, containing the information specified in the Sludge Compliance Guidance document for their chosen method of sewage sludge use or disposal.

The Lincoln WTP uses two on-site lagoons for sludge storage. During September of 2004, for the first time since the plant was built, the permittee removed 950 dry metric tons of sludge from the bottom of the lagoons and disposed them in five different off-site facilities. The permittee will not need to remove the sludge for another 5 to 7 years.

H. Industrial Users

The permittee is presently not required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR §403 and Section 307 of the Act. However, the draft permit contains conditions that are necessary to allow EPA and NHDES-WD to ensure that pollutants from industrial users will not pass through the facility and cause water quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility. The permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharges to the facility from a primary industrial category (see 40 CFR 122 Appendix A for list) is planned or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the permit. The permit also contains the requirements to: 1) report to EPA and NHDES-WD the name (s) of all Industrial Users subject to Categorical Pretreatment Standards (see 40 CFR 403 Appendix C for list) who commence discharge to the POTW after the effective date of the finally issued permit, and 2) submit copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users to EPA and NHDES-WD.

I. Operation and Maintenance

Regulations regarding proper operation and maintenance are found at 40 CFR §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 CFR §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 Part I.B, I.C and

I.D of the Draft Permit. These requirements include mapping of the wastewater collection system, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to the extent necessary to prevent SSOs and I/I related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

J. Additional Requirements and Conditions

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of §308(a) of the CWA in accordance with 40 CFR §§122.41(j), 122.44(i) and 122.48. Compliance monitoring frequencies for Flow, BOD_5, TSS, pH, Escherichia coli, ammonia and TRC have been established in accordance with the EPA/NHDES-WD Effluent Monitoring Guidance mutually agreed upon and first implemented in March 1993 and last revised on July 19, 1999. WET test monitoring requirements have been set according to EPA - New England's Toxicity Strategy for Municipal Permits. 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. Essential Fish Habitat and Endangered Species

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). Adverse 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.

A review of the Lincoln wastewater treatment facility's outfall location at the East Branch Pemigewasset River reveals that it is outside the jurisdiction of EFH. So, Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)) **does not apply.**

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**.**

USFWS and NMFS were both contacted to determine whether or not threatened or endangered species are present in the East Branch Pemigewasset River. Both agencies stated that there are not species of concern.

VI. Antidegradation

This draft permit includes some water quality-based effluent limitations which are slightly greater than in the existing permit, based on the revised dilution factor. This increase in discharge does not violate the State's antidegradation policy. The draft permit has identical parameter coverage and no change in the outflow location. Since the State of New Hampshire has indicated there will be no lowering of water quality and no loss of existing uses, no additional antidegradation review is warranted.

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's Surface Water Quality Regulations or waives its right to certify as set forth in 40 CFR §124.53.

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

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

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act, §§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 certification is provided prior to permit issuance, 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 following public noticing as a result of information received during that noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is

based. Failure to provide such a citation waives the right to certify as to that condition. **The sludge conditions implementing §405(d) of the CWA are not subject to the 401 certification requirements.**

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

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. Suprokash Sarker, Municipal Permits Branch, U.S. Environmental Protection Agency, One Congress Street, Suite 1100 (Mail Code: CMP), Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issue proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft, 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 of 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. Suprokash Sarker, P.E.
U.S. Environmental Protection Agency
Suite 1100 (Mail Code: CMP)
One Congress Street
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1693
FAX No.: (617) 918-1505

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Date

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

ATTACHMENT B

The following data are taken from the Discharge Monitoring Reports (DMRs) for the period from January 2006 to March 2007.

Effluent Characteristic	Average of Average Monthly	Range of Average Monthly	Range of Maximum Daily
Flow (MGD)	0.560	0.320 - 0.689	0.505 - 1.29
BOD_5 (lbs/day)	52.81	28.5 -118.0	39.9 - 159.9
BOD_5 (mg/l)	11.69	6.5 - 20.8	8.9 - 26.5
BOD_5 (percent removal)	94.98	91.3 - 97.7	----
TSS (lbs/day)	57.43	14.2 -119 2	22.5 - 171.4
TSS (mg/l)	12.96	2.7 - 20.9	5.4 - 27.8
TSS (percent removal)	94.72	92.2 - 98.8	----
pH (S.U.)	6.93	6.50 - 7.40	6.75 -8.0
TRC (mg/l)	0.024	0.01 - 0.04	0.03 - 0.17
Total Recoverable Copper (ug/l)	22.60	4.7 – 59.4	5.2 – 77.1
Ammonia Nitrogen as N (mg/l)	8.07	1.07 – 18.2	3.2 – 22.0
E. Coli (#/100 ml)	3. 76	2.0 - 7.1	2.0 – 26.0

		Average of Test Results	Range of Test Results
Ceriodaphnia dubia (LC50)	----	95.5	82.03-100
Pimephales promelas (LC50)	----	100	100-100
Ceriodaphnia dubia (CNOEC)	----	45.31	6.25-100
Pimephales promelas (CNOEC)	----	6.25	6.25-100