

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

PUBLIC NOTICE START DATE:

NPDES PERMIT NO.: NH0100625

NAME AND ADDRESS OF APPLICANT:

Town of Hampton  
136 Winnacunnet Road  
Hampton, New Hampshire 03842

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Leavitt E. Magrath Wastewater Treatment Plant  
Tide Mill Road  
Hampton, New Hampshire 03842

The municipality of Rye, New Hampshire is a co-permittee for specific activities required by the permit, as set forth in Section IV.I. of this Fact Sheet Sections I.B., I.C., & I.D. of the draft permit. The responsible municipal department is:

Rye Sewer Commission  
Town of Rye  
10 Central Road  
Rye, NH 03870

RECEIVING WATER: An un-named tributary of Tide Mill Creek  
(Hydrologic Unit Code: 01060003)

CLASSIFICATION: New Hampshire Class B

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

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for reissue of its NPDES permit to discharge treated effluent into the designated receiving water (an un-named tributary of Tide Mill Creek). The facility collects and

treats an annual average flow of about 3.11 million gallons per day (MGD), consisting of domestic, commercial and industrial wastewater from the Towns of Hampton and Rye. The facility also accepts septage.

The collection system consists of separate sanitary sewers. The permittee estimates that about 1.22 MGD of infiltration enters the collection system. Infiltration and inflow to the collection system also result in maximum daily flows of up to 12.7 MGD.

The existing permit was issued on March 29, 2001; modified on April 23, 2002, and expired on October 1, 2006. The permit modification changed the effluent bacterial limit and monitoring requirement from Total Coliform bacteria to Fecal Coliform bacteria. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed a complete application for permit reissuance as per 40 Code of Federal Regulations (CFR) § 122.6. The existing permit authorizes discharge from Outfall 001 (Treatment Plant).

The Hampton's Leavitt E. Magrath Wastewater Treatment Plant is an activated sludge facility with a present design flow of 3.9 MGD. The facility previously had a design flow of 4.7 MGD. During this permit cycle one of the POTW's aeration tanks was partitioned to form an anoxic zone. The anoxic zone provides denitrification of the wastewater stream, which recovers alkalinity and oxygen. The anoxic zone also promotes enhanced sludge settling.

The wastewater treatment flow is as follows: Influent passes through an aerated grit chamber and is split between two primary clarifier tanks. In the clarifier tanks the settled sludge is pumped to a mixed sludge tank followed by a gravity thickener tank. The wastewater stream continues to two aeration tanks. In the aeration basins, biological treatment is provided by activated sludge, including nitrification and then denitrification in the aforementioned anoxic zone. After leaving the two aeration tanks, wastewater enters one of two secondary clarifiers for further settling. Sludge deposited in these clarifiers is either returned to the aeration tanks as activated sludge or pumped to the mixed sludge gravity thickeners. The effluents from the two secondary clarifiers are combined and sodium hypochlorite is added for disinfection before it enters the chlorine contact tank. After dechlorination by sodium meta-bisulfite the treated effluent is discharged into an unnamed tributary of Tide Mill Creek. Sludge removal is accomplished by thickening and then dewatering by a belt filter press. Sludge is then hauled offsite by a commercial firm.

A map showing the location of the treatment plant and its outfall is included as Attachment A.

The treatment plant discharges to an unnamed tributary of Tide Mill Creek, which discharges to Hampton Harbor. Hampton Harbor, Seabrook Harbor and the tributaries to these harbors are listed on the New Hampshire 303(d) list as waters not attaining State Water Quality Standards for fecal coliform bacteria. Section 303(d) of the Clean Water Act (CWA) and EPA's Water Quality Planning Regulations (40 CFR Part 130) require states to develop total maximum daily loads (TMDLs) for water quality limited segments that are not meeting designated uses under technology-based controls for pollution. The TMDL process establishes the allowable loadings of pollutants for a water body based on the relationship between pollutant sources and in stream water quality conditions, so that states can establish water quality based controls to reduce pollution from both point and non-point sources and restore and maintain the quality of their water resources. The causes of the non-attainment for Hampton Harbor, Seabrook Harbor and the tributaries are listed as sanitary sewer overflows (SSOs), wet weather discharges (point source and combination of storm water, SSO or combined sewer overflow (CSO), and source unknown. A TMDL study for this area has been completed and was approved in May 2004 by EPA. The TMDL is available at <http://www.des.state.nh.us/WMB/TMDL/nhstatus.htm>

The TMDL does not propose more stringent bacteria limits on the Hampton treatment plant discharge but its implementation plan establishes that its objective is to "remove all human sources of bacteria to the estuary to the extent practicable", which would include the elimination of any untreated discharges of wastewater from wastewater collection systems. In December 2006, DES conducted a review of the implementation plan progress for the Hampton Harbor TMDL. Substantial progress has been made on seven of the 10 action items in the implementation plan. In particular, on September 30, 2005, all of the coastal waters in the State of New Hampshire were designated a "No Discharge Area" for treated and untreated boat sewage. Additionally, DES and University of New Hampshire conducted a bacterial source tracking study of Mill Creek and Cains Brook. The Town of Hampton completed a large sewer and storm water infrastructure upgrade in the Hampton Beach area. This upgrade reduced the infiltration and inflow to the Hampton POTW collection system by approximately 1.0 MGD. Based on these and other projects, water quality in Hampton Harbor appears to be improving.

The draft permit includes specific requirements regarding operation and maintenance of the collection system which include mapping of the wastewater collection system and reporting of SSOs. These requirements will ensure that any discharges from the wastewater collection system will be located and corrected.

For further information, see Section I.

## **II. Description of Discharge.**

A quantitative description of the treatment plant's discharge in terms of recent effluent-monitoring data from the 60-month period, May 2001 through April 2006, is shown in Attachment B. The data was compiled from Discharge Monitoring Reports (DMR) submitted to the New Hampshire Department of Environmental Services, Water Division (NHDES) and EPA. The draft permit contains limitations for pH, Five-Day Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), Total Copper, Fecal Coliform Bacteria, Total Residual Chlorine, Ammonia as Nitrogen, and Whole Effluent Toxicity (WET).

## **III. Limits and Conditions.**

Effluent limitations and monitoring requirements are found in PART I of the draft NPDES permit. The basis for each limit and condition is discussed in sections IV.C. through IV.J. of this Fact Sheet.

### **A. General Statutory and Regulatory Background**

Congress enacted the Clean Water Act ("CWA" or "Act"), "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 Act, one of which is Section 402. See CWA §§ 301(a), 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System or NPDES. Under this section of the Act, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based"

limitations and "water quality-based" limitations. See CWA §§ 301, 303, 304(b); 40 CFR Parts 122, 125 and 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant-reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b). As a class, POTWs must meet performance-based requirements based on available wastewater treatment technology. See 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<sub>5</sub>, TSS and pH. See 40 C.F.R. Part 133.

Water quality-based effluent limits, on the other hand, 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. See CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria," consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. See 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 numeric 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 maximum daily limits and chronic 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." See 40 CFR § 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 CFR §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 CFR Parts 122, 124, 125 and 136.

## **B. Development of Water Quality-based Limits**

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. See 40 CFR §122.44(d)(1). 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 nonpoint sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit application, monthly DMRs and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls*, March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire regulations (RSA 485-A:8,VI, Env-Ws 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01.

### 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 CFR § 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 § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. See 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)."

See 40 CFR. § 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 CFR. § 124.53(e)(2), and shall also include, "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," See 40 C.F.R. § 124.53(e)(3).

However, when EPA reasonably believes that a state water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA § 301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." See 40 CFR § 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 CFR § 122.4(d) and 40 CFR § 122.44(d).

### **C. Flow**

As mentioned in Section I, the current permit is based on a design flow of 4.7 MGD, which was the design flow of the facility at the time the permit was issued. In response to a 1997 EPA Administrative Order (97-14) to modify the treatment plant to effectively remove ammonia, the POTW partitioned one of its aeration tanks to form an anoxic zone for denitrification of the wastewater stream. This decrease in aeration tank volume led to a decrease of the POTW's treatment capacity to 3.9 MGD.

Hampton's average annual flow for both 2005 and 2006 was about 3.1 MGD, which is about 80% of the 3.9 MGD treatment capacity. On March 16, 2007 the NHDES notified the Town of Hampton that its WWTF has exceeded 80 percent of its 3.9 MGD treatment capacity, and any future sewer connections must be approved by NHDES. In the same letter, NHDES also recommended that Hampton consider implementing the WWTF upgrade recommendations included in its 2006 Facilities Plan Update. Among these are three recommendations that are needed to restore treatments capacity: a headworks

screening system upgrade, two new aeration basins, and an expansion of the chlorine contact tanks.

Hampton's 2006 Facilities Plan Update included projections of future treatment plant flows, which indicate that the lost treatment capacity will need to be re-established to keep pace with future flow projections. Hampton plans to restore capacity in phases, and some of the required plant upgrades have been constructed. Sludge handling system improvements, and a new secondary clarifier were completed in 2005, and installation of a new headworks screening system is planned for this summer (2007).

Hampton plans to continue constructing plant upgrades throughout this permit cycle and beyond. Based on the June 2006 Facilities Plan Update, Hampton will need to install two new aeration basins and expand the chlorine contact tanks to fully restore treatment capacity.

To ensure that the facility does not exceed the current design flow until the additional treatment capacity has been restored, an average monthly flow limit of 3.9 MGD was added to the permit, based on the facility's present treatment capacity of 3.9 MGD. A provision has been included in the draft permit (Section H. Special Conditions, item 3) that allows the average monthly flow limit to be restored when the construction activities to restore the design flow have been completed. The provision requires that EPA and NHDES be notified of the expected completion date of these facilities at least 90 days prior to completion. The increase in the average monthly flow limit will not result in higher allowed loading limits in the permit and therefore will not be considered an increase in the discharge of pollutants in relation to the State's antidegradation provisions, provided that the increased design flow does not exceed 4.7 MGD. In summary, a design flow increase, as long as that increase does not exceed 4.7 MGD, will not necessitate a permit modification or an antidegradation review.

#### **D. Conventional Pollutants**

Five-day Biochemical Oxygen Demand (BOD<sub>5</sub>)  
and  
Total Suspended Solids (TSS)

Effluent limitations in the draft permit for Five-day Biochemical Oxygen Demand (BOD<sub>5</sub>) and Total Suspended Solids (TSS) average monthly, average weekly and maximum daily concentrations and corresponding allowable loads for both constituents are the same

as the limits in the existing permit. The average monthly and weekly concentration-based limitations for BOD<sub>5</sub> and TSS are based on requirements under Section 301(b)(1)(B) of the ACT as defined in 40 CFR §133.102. The BOD<sub>5</sub> and TSS load limits are based on a design flow of 4.7 MGD, which is the existing permit design flow and the design flow towards which Hampton will be returning with its anticipated facility upgrades. See Attachment C for calculation of mass-based load limits.

#### pH

The pH limits in the draft permit remain unchanged from the existing permit, however, language has been added to the State Permit Conditions (PART I.E.1.a.) allowing for a change in pH limit(s) under certain conditions. A change would be considered if the applicant can demonstrate to the satisfaction of NHDES that the in-stream pH standard will be protected when the discharge is outside the permitted range. To apply for such a change, the applicant or NHDES must request (in writing) that the permit limits be modified by EPA to incorporate the results of the demonstration.

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

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

## Fecal Coliform and Enterococci Bacteria

When the existing permit was issued in March 2001, the effluent limitations contained limits for Total Coliform Bacteria. After the existing permit was issued, the permittee requested a permit modification to change the bacteria limit to Fecal Coliform bacteria. The NH water quality standards include water quality criteria for both Fecal Coliform and Total Coliform bacteria for tidal waters designated for growing or taking of shellfish. While these bacteria are not pathogenic, they serve as an indicator of the potential presence of harmful levels of pathogenic organisms in the receiving water and are easily measured. Effluent limits for bacteria are included in NPDES permits for POTWs because there is reasonable potential for the discharges from POTWs to cause or contribute to violations of the state water quality criteria. Permit limitations are also required as a condition for obtaining state certification.

Since the New Hampshire water quality standards include criteria for both Total Coliform bacteria and Fecal Coliform bacteria and Fecal Coliform limitations are as protective as Total Coliform limitations in ensuring that water quality criteria are not exceeded, the EPA and NHDES agreed to propose a permit modification. The modified permit was issued in April 2002.

Fecal Coliform bacteria limits and reporting requirements in the draft permit are the same as those in the existing permit and are therefore consistent with the anti-backsliding requirements found in 40 CFR § 122.44. The State of New Hampshire has adopted the Fecal Coliform limits from the National Shellfish program Operation Manual, U.S. Department of Food and Drug. NH RSA 485-A:8(V).

N.H. RSA 485-A:8,V. contains enterococci bacteria criteria for "tidal waters utilized for swimming purposes." The criteria for these waters is "... not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 35 colonies per 100 milliliters, or 104 enterococci per 100 milliliters in any one sample or unless naturally occurring."

The draft permit includes an added requirement for daily monitoring of enterococci. No enterococci limits are imposed because there is no swimming beach near the facility. Samples must be collected at the same time as samples collected for fecal coliform and total residual chlorine.

## **E. Non-Conventional and Toxic Pollutants**

Water quality based limits for specific toxic pollutants such as ammonia, metals, etc. are determined from numeric chemical specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in Quality Criteria for Water, 1986, EPA 440/5-86-001 as amended, commonly known as the federal "Gold Book". Each criterion consists of two values; acute aquatic-life criteria to protect against short-term effects, such as death, and chronic aquatic-life criteria to protect against long-term effects, such as poor reproduction or impaired growth. New Hampshire adopted these "Gold Book" criteria, with certain exceptions and included them as part of the State's Water Quality Regulations adopted on September 30, 1996. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit. Available dilution is discussed in the next subheading.

### Available Dilution

In the draft permit, the Hampton WWTP is credited with no dilution for their effluent discharge. The Hampton WWTP discharge pipe is exposed during low tide; i.e., the effluent discharges directly onto the tidal mud flats at low tide. EPA policy dictates the application of zero dilution for this type of discharge regardless of dilution values available downstream of the discharge.

### Ammonia

The draft permit's Ammonia limits are the same as the limits from the existing permit, and so are consistent with anti-backsliding provisions found in 40 CFR §122.44(1). The existing limits were calculated based on pH data obtained from the POTW's discharge, and temperature data from the National Oceanic and Atmospheric Agency (NOAA). Temperatures for Hampton Harbor were not available, so seasonal temperatures were from Portsmouth, NH Harbor were used. Because Portsmouth Harbor and the Hampton-Seabrook Estuary are in close proximity, it was considered reasonable to assume the Hampton-Seabrook Estuary water temperatures are nearly the same as those of Portsmouth Harbor. The pH and temperature data for the last five years were reviewed and showed that the pH value of 7.9, the summer season (May 1<sup>st</sup>-October 31<sup>st</sup>) temperature of 20°C, and the winter season (November 1<sup>st</sup>-April 30<sup>th</sup>) temperature of 8°C, used to calculate the limits in the existing permit are reasonable.

Refer to Attachment C for calculations of the ammonia limits.

#### Copper

The draft permit's Total Copper limits are the same as those in the existing permit and so are consistent with anti-backsliding provisions found in 40 CFR §122.44(1).

Refer to Attachment C for calculation of the Total Copper limits.

#### Disinfection

The Hampton WWTP effluent is disinfected using sodium hypochlorite. The draft permit's Total Residual Chlorine limit are the same as those in the existing permit and so are consistent with anti-backsliding provisions found in 40 CFR §122.44(1).

Refer to Attachment C for calculation of the Total Residual Chlorine Limits.

### **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 discharges from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. 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, the whole effluent toxicity (WET) approach evaluates interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "Additive" and/or "Antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Section 101(a)(3) of the ACT specifically prohibits the discharge of toxic pollutants in toxic amounts and New Hampshire law states, "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. The zero dilution credited the Hampton treatment plant's outfall contributes to a "reasonable potential" to cause an excursion of the no toxics provision in the State's regulations. Inclusion of the whole effluent toxicity limit in the draft permit will ensure compliance with both the Act's and the State's narrative water quality criterion of "no toxics in toxic amounts".

EPA New England's current policy requires toxicity testing in all municipal permits until no toxicity is demonstrated at the permit level. The type of Whole Effluent Toxicity (WET) test, acute and/or chronic and effluent limitations (LC50 and/or C-NOEC), are based on available dilution (See Attachment D). Since there is no dilution available for Hampton's wastewater treatment plant, the LC50 and C-NOEC monitoring frequency has been set at a quarterly basis.

The draft permit contains an LC50 limit of 100 percent effluent concentration (See Appendix D for the LC50 limit). The LC50 is defined as the concentration of toxicant, or as in this draft permit, the percentage of effluent lethal to 50% of the test organisms during a specific length of time. Samples with a high LC50 value are less likely to cause environmental impact. Mysid shrimp (Mysidopsis bahia) and Inland Silversides Minnow (Menidia beryllina) are species selected for the LC50 test.

The Chronic-No Observed Effect Concentration (C-NOEC) is defined as the highest concentration to which test organisms are exposed in a life cycle or partial life cycle test, which causes no adverse effect on growth, survival or reproduction during a specific time of observation. Since there is zero dilution available for the Hampton WWTP the C-NOEC limit of 100% was selected (See Attachment D). The test results (growth, survival or reproduction) at a specific time of observation as determined from hypothesis testing should exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the draft permit requires the Permittee to report the lowest concentration where there is no observable effect (See the draft permit's ATTACHMENT A (VII. TOXICITY TEST DATA ANALYSIS) on page A-9 for additional clarification in selecting appropriate C-NOEC values). Survival and growth (weight) tests will use the Inland Silversides Minnow

(Menidia beryllina). Reproduction; i.e. fertilization rate, tests use the sea urchin (Arbacia punctulata).

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

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

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

This draft permit requires the reporting of selected parameters determined from the chemical analysis of the WET tests 100%

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

### **G. Sludge**

Domestic sludges which are land applied; disposed of in a surface disposal unit; or fired in a sewage sludge incinerator are subject to Part 503 technical standards and NH Standard Env-Ws 800. Part 503 regulations have a self-implementing provision, however, the ACT requires implementation through permits. The existing permit contains conditions intended to implement the Part 503 regulations. These conditions include: required notifications for any planned changes in sludge use or disposal practices; causes for modification of the permit; and specific conditions relative to the permittee's method of sludge disposal. The draft permit has been conditioned such that EPA and NHDES are notified 180 days prior to a change in the sludge use or disposal method employed at permit reissuance.

Presently, sludge is hauled offsite by a commercial firm. The draft permit, as the existing permit, requires the facility to monitor its sludge annually for the following parameters: Arsenic; Cadmium; Chromium; Copper; Lead; Mercury; Molybdenum; Nickel; Selenium and Zinc. Reports are to be submitted to EPA by February 19, of each year.

### **H. Industrial Users**

The Permittee is not presently required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR § 403, and § 307 of the Act. However, the draft permit contains conditions that will allow EPA and NHDES to ensure that pollutants from industrial users will not pass through the facility and cause waterquality 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 whenever a

process wastewater discharge 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 requires the permittee to: (1) report to EPA and NHDES the name(s) of all Industrial Users (IU) subject to Categorical Pretreatment Standards pursuant to 40 CFR §403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443,446-447, 454-455, 457-461, 463-469, and 471 as amended) and/or New Hampshire's Standards for Pretreatment of Industrial Wastewater (Env-Ws 904) who currently discharge to the POTW as well as those who commence discharge to the POTW after the effective date of the finally issued permit, and (2) submit to EPA and NHDES copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users.

## **I. Essential Fish Habitat and Endangered Species**

### Essential Fish Habitat

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

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

### Endangered Species

The Endangered Species Act (16 USC 1451 et seq) requires that EPA ensure that any action it authorizes is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat. Further, 40 CFR 122.49(c) requires the EPA to consult with the U.S. Fish and Wildlife

Service (USFWS) to determine particular permit conditions when the regulations of the Endangered Species Act may apply.

There are no endangered species resident in the Tide Mill Creek area. The EPA, therefore, does not have to consult with the USFWS.

#### **J. 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.

#### **K. Additional Requirements, Conditions and Effluent Monitoring**

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR §122.41(j), §122.44(i) and §122.48. Compliance monitoring frequencies for Flow, BOD<sub>5</sub>, TSS, Total Residual Chlorine, pH and Total Coliform bacteria in the draft permit have been established in accordance with the EPA/NHDES Effluent Monitoring Guidance mutually agreed upon and implemented in July 19, 1999. A monitoring only requirement for Enterococci bacteria has been added to the Draft Permit.

WET test monitoring requirements have been set according to EPA New England's Municipal Toxicity Policy. As explained in the Whole Effluent Toxicity section, section IV.E., the quarterly WET testing frequency is maintained from the existing permit.

EPA and NHDES intend to establish minimum monitoring frequencies in all NPDES permits at permit modification and/or reissuance in accordance with this Effluent Monitoring Guidance. As previously discussed, the Hampton WWTF design flow has been changed to 3.9 MGD from 4.7 MGD. Presently, the EPA and NHDES do not consider changes in effluent sampling frequency warranted.

Parameter	Existing Permit		Draft Permit	
	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	Continuous	Recorder	Continuous	Recorder
BOD <sub>5</sub>	2/Week	24-hr Composite	2/Week	24-hr Composite
TSS	2/Week	24-hr Composite	2/Week	24-hr Composite
pH	Daily	Grab	Daily	Grab
Total Coliform	Daily	Grab	Daily	Grab
<b>Enterococci bacteria</b>			<b>Daily</b>	<b>Grab</b>
Total Residual Chlorine	2/Day	Grab	2/Day	Grab
Total Recoverable Copper	2/Week	24-hr Composite	2/Week	24-hr Composite
Ammonia as N	2/Month	Grab	2/Month	24-hr Composite
WET	1/3 Months	24-hr Composite	1/3 Months	24-hr Composite

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 the allowable wasteload calculated using a design flow of 4.7 MGD even though the POTW's design flow has been reduced to 3.9 MGD. The EPA and NHDES have taken this approach for calculating the wasteload to facilitate the Town of Hampton's actions to re-establish the original treatment capacity of their wastewater treatment facility. Refer to Section III.C. for the explanation of this approach.

The draft permit contains the identical parameter coverage and the same outflow location as the existing permit. Since the State of New Hampshire has indicated there will be no lowering of water quality and no loss of existing uses, no additional antidegradation review is warranted.

**VI. State Certification Requirements.**

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

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

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issuance, any failure by

the State to provide this statement waives the State's right to certify or object to any less stringent condition. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The only exception to this is the sludge conditions/requirements implementing Section 405(d) of the CWA are not subject to the Section 401 State Certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 CFR Part 124.

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." See 40 CFR § 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 CFR § 122.4 (d) and 40 CFR § 122.44(d).

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

All persons, including applicants, who wish to comment on any condition of the Draft Permit 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 Paul King, Environmental Scientist  
U.S. Environmental Protection Agency  
1 Congress Street  
Suite 1100 (Mailcode CPE)  
Boston, Massachusetts 02114-2023  
Telephone: (617) 918-1295  
FAX No.: (617) 918-1505**

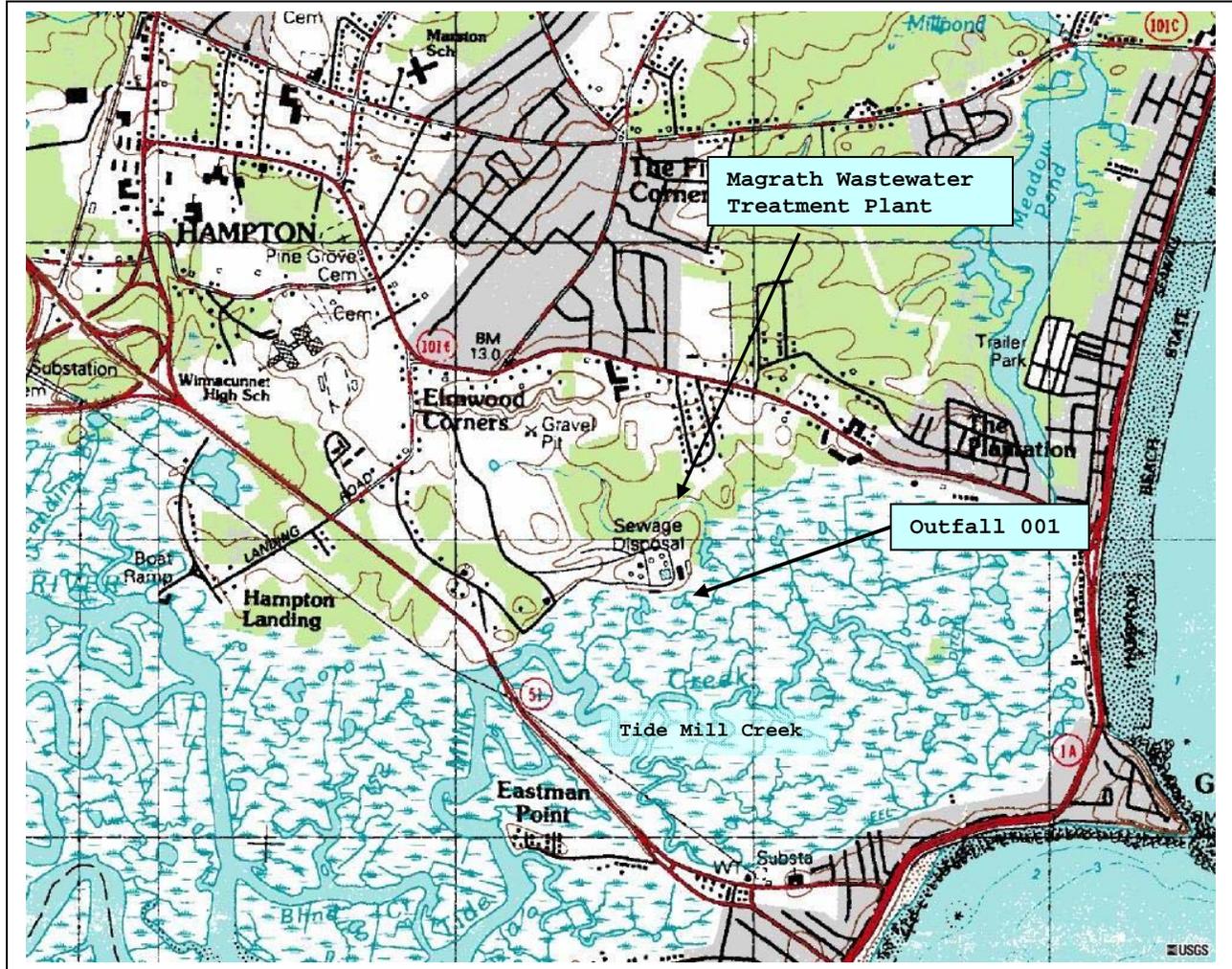
Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the NHDES. Such requests shall state the nature of the issue proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston Office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Permits may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

Information concerning the Draft Permit may be obtained from the contact person named above between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays.

	<p><b>Stephen S. Perkins, Director</b>  <b>Office of Ecosystem Protection</b>  <b>U.S. Environmental Protection Agency</b></p>
<p><b>Date</b></p>	

ATTACHMENT A



## ATTACHMENT B

TABLE I

## EFFLUENT CHARACTERISTICS AT OUTFALL 001

The following effluent characteristics were derived from analysis of discharge monitoring data collected from Outfall 001 during the 60-month period, May 2001 through April 2006. This data was extracted from the monthly Discharge Monitoring Reports (DMR's) submitted by the Hampton's Wastewater Treatment Plant. These effluent values characterize the treated sanitary waste waters discharged from this facility.

Effluent Characteristic	Average of Average Monthly	Maximum of Maximum Daily <sup>1</sup>
Flow (MGD)	2.74	7.80, 6.34, 5.71
pH (Standard Units)	--	6.2 to 7.7 <sup>2</sup>
Total Copper (mg/L)	0.012	0.066, 0.029, 0.022
Fecal Coliform (Colonies/100 ml)	2.24	562, 476, 289
Total Residual Chlorine (mg/L)	0.0012	0.61, 0.34, 0.05
TSS (lbs/day)	179.8	9745, 7527, 5022
TSS (mg/L)	13.8	207, 169, 156
TSS (Percent Removal)	96.2	86 <sup>3</sup> , 91 <sup>3</sup> , 91 <sup>3</sup>
BOD <sub>5</sub> (lbs/day)	110.8	3568, 1782, 895
BOD <sub>5</sub> (mg/L)	6.8	69, 49, 29
BOD <sub>5</sub> (Percent Removal)	97.7	91 <sup>3</sup> , 93 <sup>3</sup> , 94 <sup>3</sup>
Ammonia as N (mg/l): Summer	0.82	27, 19, 14
Ammonia as N (mg/l): Winter	0.58	9, 7, 5

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

## ATTACHMENT C

**TABLE II**  
**Whole Effluent Toxicity Testing**

Effluent Test	Minimums of Maximum Test Result		
<b>LC50<sup>1</sup></b> (Percent Effluent)			
<u>Mysidopsis bahia</u>	100(19) <sup>2</sup>	>100(1)	
<u>Menidia beryllina</u>	65(1)	100(18)	>100(1)
<b>C-NOEC<sup>3</sup></b> (Percent Effluent)			
<u>Menidia beryllina</u>			
Survival <sup>4</sup>	50(2)	100(18)	
Growth	50(2)	100(18)	
<u>Arbacia punctulata</u>			
Fertilization	25(1)	50(3)	100(16)

1. This test involves preparing a series of effluent concentrations by diluting the effluent with control water. Groups of test animals, i.e. Mysidopsis bahia (Mysid shrimp) and Menidia beryllina (Inland Silversides minnow) are exposed to each effluent concentration and a control for a specific period. The mortality data for each concentration can be used to calculate (by regression) the medium lethal concentration or LC-50. LC-50 is defined as the concentration which kills half the test organisms. Samples with a high LC-50 value are less likely to affect survival.

2. Number in parenthesis represents the number of test results.

3. This test measures the sublethal effects by exposing test organisms to effluent samples during a sensitive period in their life cycle. Chronic Inland Silversides minnow (Menidia beryllina) tests measure survival and growth (weight) over the seven days; chronic sea urchin (Arbacia punctulata) tests measure egg fertilization rate after exposure to effluent solutions.

4. Survival data were extracted from the actual WET toxicological evaluation reports from instead of the DMR data.

## ATTACHMENT C (continued)

## MAXIMUM ALLOWABLE LOADS

Equation used to calculate mass limits for BOD<sub>5</sub> and TSS:

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

Where:

- L - Maximum allowable load, in lb/day
- C - Maximum allowable effluent concentration for reporting period, in mg/l. Reporting periods are average monthly, average weekly and maximum
- $Q_{PDF}$  - Treatment plant's design flow, in MGD.
- 8.345 - Factor to convert effluent concentration, in mg/l, and plant's design flow, in MGD, to lbs/day.

## WATER QUALITY CRITERIA (WQC) BASED LIMITS

Total Residual Chlorine; NH Standards Table 1703.1.

Chronic WQC: 0.0075 mg/l. Average Monthly Limit  
Acute WQC: 0.013 mg/l, Maximum Daily Limit

Total Recoverable Copper; NH Standards Table 1703.1.

Criteria are given as dissolved copper. To convert to total recoverable metal the criteria are divided by the conversion factor(CF)of 0.83 shown Table 1703.2

Chronic WQC: 0.0031 mg/l (dissolved)  
0.0031 mg/l/0.83 = 0.0037 mg/l (total recoverable)  
0.037 mg/l = Average Monthly Limit

Acute WQC: 0.0048 mg/l (dissolved)  
0.0048 mg/l/0.83 = 0.0057 mg/l (total recoverable)  
0.0057 mg/l = Maximum Daily Limit

Ammonia as Nitrogen; NH Standards Tables 1703.6 and 1703.7 for Acute Limits, and Tables 1703.9 and 1703.10 for Chronic Limits. (NH<sub>3</sub> to N Conversion Factor = 0.822)

Ambient Conditions. As discussed in the body of the Fact Sheet the values for pH and Temperature values were reassessed, and remain unchanged from the existing permit. Temperature data was evaluated as a t-distribution. A five percent level of significance was assumed. By choosing a five percent level of significance the Ammonia limits based on reasonable upper limit for pH and Temperature. The pH value was based on the average of seawater taken from the WET Test dilution water which is collected in the tidal flats upstream of the effluent discharge.

Summer (May 1<sup>st</sup>-Oct 30<sup>th</sup>) Criteria: pH of 7.9, Temperature of 20°C, Salinity of 25g/kg

Chronic WQC: 1.10 mg/l, Average Monthly Limit  
Acute WQC: 7.40 mg/l, Maximum Daily Limit

Winter (Nov 1<sup>st</sup>-Apr 30<sup>th</sup>) Criteria: pH of 7.9, Temperature of 8°C, Salinity of 25g/kg

Chronic WQC: 2.70 mg/l, Average Monthly Limit  
Acute WQC: 17.90 mg/l, Maximum Daily Limit