

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

AND

MAINE WASTE DISCHARGE LICENSE

FACT SHEET

Date: **July 2, 2002**

Revised: **September 17, 2002, November 4, 2002, March 26, 2003**

PERMIT NUMBER: **ME0100617**
LICENSE NUMBER: **W000870-5L-D-R**

NAME AND ADDRESS OF APPLICANT:

**SANFORD SEWERAGE DISTRICT
P.O. Box 338, River Street
Sanford, Maine 04083**

COUNTY: **York County**

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

**School Street Extension
Sanford, Maine 04401**

RECEIVING WATER AND CLASSIFICATION: **Mousam River/Class C**

COGNIZANT OFFICIAL AND TELEPHONE NUMBER: **Mr. Michael Hanson
Superintendent
(207) 324-5313**

1. APPLICATION SUMMARY

- a. Application: The applicant has applied for renewal of Department Waste Discharge License (WDL) #W000870-46-C-R which was issued on June 13, 1994, and expired on June 13, 1999. The WDL authorized the discharge of up to a monthly average flow of 5.5 million gallons per day (MGD) of advanced treated sanitary waste waters from a publicly owned treatment works (POTW) facility to the Mousam River, Class C, in Sanford, Maine.

1. APPLICATION SUMMARY (cont'd)

- b. Regulatory Authority: On January 12, 2001, the Department received authorization from the U. S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System (NPDES) permitting program in Maine. From this point forward, the program will be referred to as the Maine Pollutant Discharge Elimination System (MEPDES) permitting program and will utilize a permit number of #ME0100617 (same as NPDES permit) as the primary reference number for the SSD's MEPDES permit.
- c. Permit Summary: Major components of this permitting action include;
 - 1. Establishing three tiers of seasonal discharge limitations. Tier I limits for are being carried forward from the previous license and are in effect until May 31, 2005. Tier II and Tier III limits become effective June 1, 2005. Beginning calendar year 2006, Tier III limits provide for a higher level of discharge between February 15 and April 15 of each year when the flow in the Mousam River is greater than 100 cubic feet per second (cfs).
 - 2. Establishing year-round monthly average and or daily maximum water quality based mass and concentrations limits for aluminum, bis(2ethylhexyl) phthalate, cadmium, copper, silver and zinc for Tier I and requiring the submission of a toxicity reduction evaluation (TRE) for aluminum, ammonia, cadmium, copper, silver and the water flea.
 - 3. Establishing seasonal monthly average and daily maximum mass limits for ammonia and phosphorus for Tier I, Tier II and Tier III.
 - 4. Establishing critical flow thresholds of the Mousam River whereby discharges are prohibited. Tier I is 10 cfs, Tier II is 20 cfs and Tier III is 100 cfs.
 - 5. Establishing chronic no observed effect level (C-NOEL) whole effluent toxicity (WET) limits for the water flea and brook trout for Tier I and Tier II and requiring the submission of a TRE for the water flea.
 - 6. Establishing a minimum dissolved oxygen content of 7.5 ppm in the discharged effluent for Tier II.
 - 7. Establishing year-round monthly average and or daily maximum water quality based mass and concentrations limits for arsenic and lead for Tier II.

1. APPLICATION SUMMARY (cont'd)

- d. History: The most recent/relevant licensing, permitting and compliance actions include the following:

September 29, 1993 – The EPA issued a renewal of NPDES permit #ME0100617 for a five year term.

June 13, 1994 – The Department issued WDL renewal #W000870-46-C-R for a five year term.

July 14, 1998 – The EPA issued Administrative Order (AO) #ME0100617, Docket No. 98-12 based on the SSD's inability to consistently meet the effluent limitations for ammonia, aluminum, copper, biochemical oxygen demand (BOD), total suspended solids (TSS), settleable solids, pH and phosphorus and failure to fully implement the industrial pretreatment and combined sewer overflow (CSO) abatement requirements in the 1993 NPDES permit. The AO required the SSD to submit a Waste Water Treatment Facility Upgrade Facilities Plan and Implementation Schedule, a CSO Abatement Master Plan and Implementation Schedule and a final Local Industrial Discharge Limits Report containing proposed modifications to the existing local limits. The SSD has complied with the submission requirements of the AO. The AO established year-round interim mass and/or concentration limits for aluminum, copper, TSS, BOD and settleable solids and seasonal interim limits for ammonia, BOD and phosphorus.

January, 1999 – The SSD submitted an application to the EPA to renew NPDES permit #ME0100617. The EPA deemed the application complete for processing on February 4, 1999. It is noted the EPA never acted on the application by issuing a NPDES permit.

February 2001 – The Department submitted a final Total Maximum Daily Load (TMDL) report to the EPA for review and approval. The document entitled, Mousam River TMDL, Town of Sanford, Final Report, Feb 2001, was prepared due to the fact that a 3.7 mile segment of the Mousam River from the Route #4 bridge in Sanford to Estes Lake in Sanford is not attaining the standards of its assigned classification for dissolved oxygen and certain toxic substances. It is noted the SSD discharge is located approximately 0.8 miles downstream of the Route #4 bridge and 2.9 miles upstream of Estes Lake in Sanford. The TMDL was developed for BOD, phosphorus, ammonia nitrogen, and seven toxic substances.

March 8, 2001 – The EPA approved the Department's February 2001 TMDL for the aforementioned 3.7 miles segment of the Mousam River.

February 22, 2002 – The SSD submitted an application to the Department for renewal of the WDL.

1. APPLICATION SUMMARY (cont'd)

- e. Source Description: The waste water treatment facility, located on School Street Extension in Sanford, treats domestic, industrial, and commercial waste waters from entities within the District's boundaries in the Town of Sanford. The waste water treatment facility serves a population of approximately 12,000 users. Several industrial users are required to pre-treat their waste waters and the SSD monitors all industrial pretreatment under U. S. EPA guidelines. The sanitary collection system is approximately 60 miles in length, is 5% combined (sanitary and storm water) and 95% is separated, has 13 pump stations (two with on-site back-up power and 11 supported by portable generators) and two CSO's that are authorized to discharge pursuant to Special Condition N of this permitting action. The SSD waste water treatment facility is authorized to receive and treat up to 40,000 gallons per day of septage received from local septage haulers.
- f. Waste Water Treatment: The existing waste water treatment facility provides greater than a secondary level of treatment via two aerated lagoons and three facultative lagoons. Tertiary treatment of lagoon effluent is accomplished through chemical addition of poly-aluminum chloride (PAC) and clarification to remove phosphorus and enhanced BOD and TSS reductions through mixed media filtration of effluent prior to discharge to the Mousam River. Waste water flows from the headworks, where facilities for grit removal and septage receiving are located, to the two aerated lagoons and hence to the facultative lagoons. Lagoon effluent is pumped to mixing tanks where PAC is introduced to facilitate precipitation and flocculation of phosphorus-enriched organic mass which is settled out as sludge in two tertiary clarifiers. Clarified effluent is further filtered through a substrate of coal and sand in four tanks. Two now defunct ultra-violet disinfection units were utilized to further disinfect final effluent before discharge to the Mousam River via a small effluent pond then to a concrete channel. Waste sludge is pumped to two belt filter presses and dewatered sludge cake is removed to a licensed landfill located on the facility's grounds.

To comply with the most stringent limitations recommended in the TMDL prepared by the Department, the SSD is currently in the design phases of a treatment plant upgrade. Once upgraded, all influent waste water will be pumped by the Mousam River pump station to the grit removal facilities. Screenings removal equipment will be located at the pump station ahead of the wet well. Septage receiving facilities will be located near the grit removal facilities and septage will be metered into the grit removal facilities at a controlled rate. Effluent from the grit removal facilities will flow by gravity to a biological nutrient removal (BNR) oxidation ditch treatment system. The oxidation ditch provides sequential aerobic, anoxic, and anaerobic treatment zones to provide biological treatment of BOD, TSS, nitrogen (nitrification and denitrification) and phosphorus.

1. APPLICATION SUMMARY (cont'd)

Mixed liquor from the oxidation ditch will flow to two circular secondary clarifiers. Settled sludge will be either returned to the BNR system or wasted to a holding tank. Secondary clarifier effluent will flow to the secondary equalization basin and pump station. The equalization basin will moderate peak influent flows and allow a reduction in peak flows to the tertiary and disinfection treatment facilities. If influent flow exceeds the desired maximum tertiary flow rate for an extended period of time, excess flows will be diverted from the equalization basin to the long term storage lagoons (existing stabilization lagoons). Flow from the secondary equalization basin will be pumped to the tertiary treatment facilities. Poly-aluminum chloride (PAC) or ferric chloride will be added to the waste water prior to the flocculation tanks to precipitate remaining phosphorus. The flocculation tank's effluent will enter the inclined plate clarifiers where sludge solids (chemical phosphorus sludge) will settle out. Clarifier effluent will receive additional treatment in sand filters that will further reduce effluent BOD, TSS and phosphorus concentrations. During the summer period, filter effluent will be disinfected using ultraviolet light and post aerated with diffused aeration. Treated effluent will be discharged to the Mousam River via a serpentine outfall channel located adjacent to the river. Periodically, water will be pumped out of the long term storage lagoons using the intermediate pump station. The stored water will be pumped either to the grit removal facilities, flocculation tanks, disinfection facilities or directly to the effluent outfall depending on the characteristics of the water and the effluent discharge permit requirements at the time. Waste activated sludge and chemical phosphorus sludge will be mechanically dewatered and disposed of in an existing sludge landfill located adjacent to the treatment facility.

Construction of the facility upgrade is scheduled to begin on or before May 31, 2003 and substantial completion of the upgrade is scheduled for on or before May 31, 2005.

2. CONDITIONS OF PERMITS

Maine law, 38 M.R.S.A. Section 414-A, requires that the effluent limitations prescribed for discharges require application of best practicable treatment, be consistent with the U.S. Clean Water Act, and ensure that the receiving waters attain the State water quality standards as described in Maine's Surface Water Classification System. In addition, 38 M.R.S.A., Section 420 and Department Regulation Chapter 530.5, *Surface Water Toxics Control Program*, requires the regulation of toxic substances at the levels set forth for Federal Water Quality Criteria as published by the U.S. Environmental Protection Agency pursuant to the Clean Water Act.

3. RECEIVING WATER QUALITY STANDARDS

Maine law, 38 M.R.S.A., Section 467(6)(A)(2) classifies the Mousam River main stem, from a point located 0.5 miles above Mill Street in Springvale to its confluence with Estes Lake as a Class C waterway. Maine Law, 38 M.R.S.A., Section 465(4) describes the standards for classification of Class C waters.

Maine law, 38 M.R.S.A., Section 480-B(5) by definition classifies Estes Lake as a Great Pond (GPA). Maine law, 38 M.R.S.A., Section 465-A describes the standards for classification of Class GPA waters.

Maine law, 38 M.R.S.A., Section 464(4)(A)(3) states that the Department may not issue a waste discharge license to any discharge into a tributary of GPA waters that by itself or in combination with other activities causes water quality degradation that would impair the characteristics and designated uses of downstream GPA waters or causes an increase in the trophic state of those GPA waters.

4. RECEIVING WATER QUALITY CONDITIONS

The February 2001 TMDL for the Mousam River, published by the Department and approved by the EPA indicates that a 3.7 mile segment of the Mousam River from the Route #4 bridge in Sanford to Estes Lake is not attaining the standards of its assigned classification for dissolved oxygen and certain toxic substances based on two ambient water quality sampling events conducted by the Department in the summer of 1999. The report states that the major impact to the 3.7 mile segment of river is from nutrients (respiration of bottom attached algae) and nitrogenous BOD (ammonia) which are responsible for 50% and 25% of the total dissolved oxygen depletion, respectively. The water quality model developed by the Department indicates that at full permitted loading, the SSD waste water treatment facility discharge is responsible for two-third's (2/3) of the total dissolved oxygen depletion. The report also states that low dissolved oxygen levels above the SSD discharge are likely due to natural sources and nutrient rich runoff from urban areas of Sanford and Springvale but that non-point source pollution in general does not appear to be a significant factor contributing to dissolved oxygen depletion.

As for Estes Lake, it is listed in Appendix II, Table 4-B1: *Lake Waters Impaired By Pollutants, Pollution Control Requirements Reasonably Expected To Result In Attainment* in a document entitled State of Maine, Department of Environmental Protection, 2002 Integrated Water Quality Monitoring and Assessment Report published by the Department. The pollution control measures referred to in the title of Table 4-B1 referenced above are the more stringent discharge limitations imposed by this permitting action.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Dilution Factors: Dilution factors associated with the discharge from the SSD's waste water treatment facility were derived in accordance with freshwater protocols established in Department Rule Chapter 530.5, *Surface Water Toxics Control Program*, October 1994. **Prior to the treatment plant upgrade**, the facility will be prohibited from discharging when the receiving water is less than 10 cfs and the monthly average discharge flow limits are seasonal; 3.48 MGD in the summer (June 1 – October 31) and 5.5 MGD in the winter (November 1 – May 31). Dilution calculations are as follows:

OUTFALL #001 [See Special Condition A(1)]

$$\text{Dilution Factor} = \frac{\text{River Flow (cfs)}(\text{Conv. Factor}) + \text{Plant Flow}}{\text{Plant Flow}}$$

Tier I - Prior to the Treatment Plant Upgrade

Summer (June 1 – October 31)

$$\text{Acute \& Chronic: } 1\text{Q}10 \text{ \& } 7\text{Q}10 = 10 \text{ cfs} \Rightarrow \frac{(10 \text{ cfs})(0.6464) + (3.48 \text{ MGD})}{(3.48 \text{ MGD})} = 2.9:1$$

Winter (November 1 – May 31)

$$\text{Acute \& Chronic: } 1\text{Q}10 \text{ \& } 7\text{Q}10 = 10 \text{ cfs} \Rightarrow \frac{(10 \text{ cfs})(0.6464) + (5.5 \text{ MGD})}{(5.5 \text{ MGD})} = 2.2:1$$

Year-round

$$\text{Harmonic Mean: } = 30 \text{ cfs} \Rightarrow \frac{(30 \text{ cfs})(0.6464) + (5.5 \text{ MGD})}{(5.5 \text{ MGD})} = 4.5:1$$

Footnotes:

Tier I - The prohibition of discharging when the receiving water flow is less than 10 cfs **prior to the treatment plant upgrade** is being carried forward from the previous licensing action based on water quality considerations and the associated low dilution factors. For the purposes of this permitting action, the 10 cfs trigger flow is considered the 1Q10 and 7Q10 low flow for calculating the applicable acute and chronic dilution factors. As for the harmonic mean, historical flow records do not exist for the 70 to 100 year time frame recommended for the calculation of the harmonic mean flow for the river. The EPA's March 1991 document entitled *Technical Support Document (TSD) for Water Quality Based Toxics Control* authorizes a permit writer to

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

OUTFALL #001 – Tier I, Advanced Treated Effluent Prior to the Facility Upgrade
[See Special Condition A(1)]

use a value of three times the 7Q10 for estimating the harmonic mean flow of the receiving water in the absence of long term flow records. Because the statistical 7Q10 is estimated to be 10 cfs, the Department is multiplying the 7Q10 by a factor of three to calculate a harmonic mean flow of 30 cfs for this permitting action.

Flow: The previous licensing action seasonal monthly average flow limitations of 5.5 MGD (November 1 – May 31, winter) and 3.48 MGD (June 1 – October 31 summer) which are being carried forward in this permitting action. The flow limits were derived based on back-calculating from the monthly average, weekly average and daily maximum allowable mass limits for biochemical oxygen demand and total suspended solids limits necessary to meet water quality standards in the receiving water. The limits will be in effect upon issuance of the permit and last through May 31, 2005.

A review of the monthly Discharge Monitoring Report (DMR) data submitted to the Department for the period June 1998 through December 2001 indicates the actual mean summertime flow discharged has been approximately 1.75 MGD and the actual mean wintertime flow discharged has been 2.51 MGD. No flow limit violations have been reported.

Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS) – The previous licensing action established year-round monthly average, weekly average and daily maximum concentration limits of 10 mg/L, 15 mg/L and 20 mg/L respectively, that are being carried forward in this permitting action. The record is unclear as to the origin of these limits but discussions between the SSD, their consulting engineers and staff members at the Department lead all parties to believe the limits were negotiated given the discharge would need to meet greater than secondary limits to protect the water quality in the Mousam River and Estes Lake. The seasonal monthly average, weekly average and daily maximum mass limits were calculated using the applicable seasonal monthly average flow limit and the applicable concentration limits.

A review of the DMR data submitted to the Department for the period June 1998 through December 2001 indicates that aforementioned monthly average, weekly average and daily maximum concentration limits for BOD₅ have been met with the exception of a three month period of May, June and July of calendar year 2001 where the limits were exceeded by 10% - 25%. As for mass, the summer and winter limits were attained due to the flows being discharged were at or about 50% of the monthly average flow limits established in the license.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

OUTFALL #001 – Tier I, Advanced Treated Effluent Prior to the Facility Upgrade

[See Special Condition A(1)]

For TSS, a review of the DMR data for the same period indicates with the exception of a six-month period between August 1998 and January 1999, the concentration limits established in the license were attained. As with BOD₅ the summer and winter mass limits for TSS were attained due to the flows being discharged were at or about 50% of the monthly average flow limits established in the license.

This permitting action also establishes a new requirement of 85% removal for BOD and TSS pursuant to Department rule Chapter 525(3)(III)(a&b)(3).

Settleable Solids - The previous licensing action established weekly average and daily maximum concentration limits of 0.1 ml/L and 0.3 ml/L respectively, for settleable solids. The Department has reconsidered its position on regulating settleable solids and has made the determination that a daily maximum limit of 0.3 ml/L is the only limitation necessary for determining the quality of the effluent and is considered a best practicable treatment (BPT) limit for secondary treated waste water. The weekly average concentration limit of 0.1 ml/L in the previous licensing action is not being incorporated into this permit as it is unnecessary given the establishment of the daily maximum limit.

E. coli Bacteria The previous licensing action established monthly average and daily maximum *E. coli* bacteria limits of 142 colonies/100 ml and 949 colonies/100 ml respectively, based on the State of Maine Water Classification Program criteria for Class C waters found at Maine law, 38 MRSA, §465(4). The limitations are being carried forward in this permitting action.

pH – The previous licensing action established a pH range limitation of 6.0 - 8.5 standard units. The limits were based on Maine Board of Environmental Protection Policy regarding the certification of NPDES permits and were considered best practicable treatment limitations. This permitting action is expanding the range limit from 6.0 – 8.5 to 6.0 –9.0 standard units pursuant to a new Department rule found at Chapter 525(3)(III)(c). The new limits are considered BPT.

River Flow: The previous licensing action established a discharge prohibition when the flow in the Mousam River was below 10 cfs which is being carried forward in this permitting until May 31, 2005. The license required the SSD to measure the river flow 2/Week on a year-round basis. The license was not specific as to where the river flow was to be measured but the permittee has been measuring the depth of the water at the

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

OUTFALL #001 – Tier I, Advanced Treated Effluent Prior to the Facility Upgrade
[See Special Condition A(1)]

Route #4 bridge in Sanford and calculating the flow. In September of calendar year 2002, the U.S. Geological Survey (USGS) installed a permanent gauging station at the Route #4 bridge approximately 0.8 river miles upstream from the SSD's waste water treatment outfall pipe. The gauge at the Route #4 bridge will be calibrated yearly by the USGS or other qualified professional approved by the Department.

Ammonia – The previous licensing action established seasonal daily maximum mass limitations for total ammonia, 114 lbs/day (June 1 – October 30) and 257 lbs/day (November 1 – May 31) and are being carried forward in this permitting action due to water quality conditions in the Mousam River. Both daily maximum limits in the previous licensing action and this permitting action are based on EPA's July 1992 recommended chronic ambient water quality criteria (AWQC) for ammonia. The criteria are pH and temperature dependent. For the winter season, a pH of 7.0 standard units and temperature of 10°C yields a total ammonia criteria of 2.7 mg/L and for the summer season, a pH of 7.0 standard units and temperature of 25°C yields a total ammonia criteria of 1.23 mg/L. The record is unclear as to why chronic rather than acute AWQC was used in deriving the daily maximum limits but given the current water quality concerns, recalculating less stringent limits using acute criteria would be inappropriate.

In addition to the daily maximum limitations in the previous licensing action being carried forward in this permit, this permitting action is establishing seasonal monthly average water quality based limits for ammonia based on the same chronic AWQC in the July 1992 license. See the calculations on page 12 of this Fact Sheet. Special Condition L of this permitting action establishes a schedule of compliance with ammonia limitations for Tier I.

Chemical Specific Testing – The SSD waste water treatment facility is categorically subject to Department rule Chapter 530.5, *Surface Water Toxics Control Program*. A recent review of the data indicates that the SSD has fulfilled the chemical specific testing requirements to date. See Attachment A of this Fact Sheet for the chemical specific test results and submission dates. Department rule Chapter 530.5 and Protocol E(1) of a document entitled Maine Department of Environmental Protection, Toxicity Program Implementation Protocols, dated July 1998, states that statistical evaluations shall be periodically performed on the most recent 60 months of chemical specific data for a given facility to determine if water quality based limitations must be included in the permit for a facility. On September 13, 2002, the Department conducted an evaluation on the aforementioned tests results in accordance with the statistical approach outlined in EPA's March 1991 document entitled Technical Support Document (TSD) for Water Quality Based Toxics Control, Chapter 3.3.2 and Maine Department of Environmental Protection Guidance, July 1998, entitled Toxicity Program Implementation Protocols.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

OUTFALL #001 – Tier I, Advanced Treated Effluent Prior to the Facility Upgrade
[See Special Condition A(1)]

Chapter 530.5 §C(2) states when a discharge "...contains pollutants at levels that have a reasonable potential to cause or contribute to an ambient excursion in excess of a numeric or narrative water quality criterion, appropriate water quality based limits must be established in the license upon issuance."

Chapter 530.5 §C(3) states that if data indicates that a discharge is causing an exceedence of applicable ambient water quality criteria (AWQC) then:"(1) the Department must notify the permittee of the exceedence; (2) the permittee must submit a toxicity reduction evaluation (TRE) plan for review and approval within 30 days of receipt of notice and implement the TRE after Department approval; (3) the Department must modify the waste discharge permit to specify effluent limits and monitoring requirements necessary to control the level of pollutant and meet receiving water classification standards within 180 days of the Department's approval of the TRE."

Chemical Specific testing

The Department's 9/13/02 statistical evaluation (based on a permitted treatment plant flow of 5.5 MGD and the associated dilution factor of 2.2:1 – most conservative) indicates the discharge from the SSD facility;

- a. Exceeds the acute and chronic AQWC for aluminum, cadmium and copper.
- b. Exceeds the chronic AQWC for ammonia.
- c. Exceeds the acute AQWC for silver.
- d. Has a reasonable potential to exceed the human health (water & organisms) AWQC for Bis(2-ethylhexyl) phthlate.
- e. Has a reasonable potential to exceed the chronic AQWC for zinc.

Acute:

In accordance with Chapter 530.5 §C(2) and §C(3), daily maximum mass and concentration limits for the chemical specific parameters of concern may be calculated as follows:

<u>Parameter</u>	<u>Acute⁽¹⁾ Criterion</u>	<u>Acute Dilution Factor</u>	<u>Calculated EOP⁽²⁾ Acute Concentration</u>	<u>Daily Max. Mass Limit</u>
Aluminum	750 ug/L	2.9:1	2,175 ug/L	63 lbs/day
Cadmium	0.638 ug/L	2.9:1	1.8 ug/L	0.053 lbs/day
Copper	3.89 ug/L	2.9:1	11 ug/L	0.33 lbs/day
Silver	0.25 ug/L	2.9:1	0.72 ug/L	0.021 lbs/day

Example calculation: Aluminum - $(0.750 \text{ mg/L})(2.9)(8.34)(3.48 \text{ MGD}) = 63 \text{ lbs/day}$

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

OUTFALL #001 – Tier I, Advanced Treated Effluent Prior to the Facility Upgrade
[See Special Condition A(1)]

It is noted that the summertime flow limit of 3.48 MGD and the associated dilution factor of 2.9:1 (as opposed to 5.5 MGD and 2.2:1) were utilized to calculate the daily maximum (acute) and monthly average (chronic and human health) limits as these values yield the most conservative mass limitations and are the most protective of water quality.

Chronic:

In accordance with Chapter 530.5 §C(2) and §C(3), monthly average mass and concentration limits for the chemical specific parameters of concern may be calculated as follows:

<u>Parameter</u>	<u>Chronic⁽¹⁾ Criterion</u>	<u>Chronic Dilution Factor</u>	<u>Calculated EOP⁽²⁾ Chronic Concentration</u>	<u>Mon. Avg. Mass Limit</u>
Aluminum	87 ug/L	2.9:1	252 ug/L	7.3 lbs/day
Ammonia	1,230 ug/L ⁽³⁾	2.9:1	3,567 ug/L	103 lbs/day
Ammonia	2,700 ug/L ⁽⁴⁾	2.2:1 ⁽⁵⁾	5,940 ug/L	272 lbs/day ⁽⁶⁾
Bis	1.76 ug/L	4.5:1 ⁽⁷⁾	7.9 ug/L	0.36 lbs/day ⁽⁸⁾
Cadmium	0.32 ug/L	2.9:1	0.93 ug/L	0.027 lbs/day
Copper	2.99 ug/L	2.9:1	8.7 ug/L	0.25 lbs/day
Zinc	27.1 ug/L	2.9:1	78 ug/L	2.3 lbs/day

Example calculation: Aluminum - $(0.087 \text{ mg/L})(2.9)(8.34)(3.48 \text{ MGD}) = 7.3 \text{ lbs/day}$

Footnotes:

- (1) Criteria based on EPA's 1986 AWQC.
- (2) End-of-pipe.
- (3) Criteria based on a pH of 7.0 standard units and a temperature of 25°C.
- (4) Criteria based on a pH of 7.0 standard units and a temperature of 10°C.
- (5) Based on a wintertime chronic dilution factor of 2.2:1.
- (6) A monthly average mass limit of 272 lbs/day is calculated based on a wintertime flow limit of 5.5 MGD, however, a monthly average permit limitation of 257 lbs/day has been established based on anti-backsliding provisions in federal regulation.
- (7) Harmonic mean dilution factor.
- (8) Mass limit based on a flow limit of 5.5 MGD to be consistent with the flow used to calculate the harmonic mean dilution factor.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

OUTFALL #001 – Tier I, Advanced Treated Effluent Prior to the Facility Upgrade
[See Special Condition A(1)]

Department rule Chapter 523, §6(f)(2) states pollutants limited in terms of mass additionally may be limited in terms of other units of measurement and the permit shall require the permittee to comply with both limitations. EPA's Technical Support Document For Water Quality Based Toxics Control, March 1991, Chapter 5, Section 5.7, recommends that permit limits for both mass and concentration be specified for effluents discharging into waters with less than 100 fold dilution to ensure attainment of water quality standards. As not to penalize facilities for operating at flows less than permitted design flow of the waste water plant, the Department has increased the calculated concentration limit by a factor of 1.5. This represents an effluent concentration that is achievable through proper operation and maintenance of the treatment plant. Therefore, end-of-pipe concentration limits may be calculated as follows:

<u>Parameter</u>	<u>Calculated EOP Concentration (A,C)</u>	<u>Daily Max.(Acute) Concentration Limit</u>	<u>Monthly Avg. Concentration Limit</u>
Aluminum	2,175(A), 252 ug/L(C)	3.3 mg/L	378 ug/L
Ammonia	3,567 ug/L(C)	---	---
Ammonia	5,940 ug/L (C)	---	---
Bis	7.9 ug/L (C)	---	12 ug/L
Cadmium	1.8 (A), 0.93 ug/L(C)	2.7 ug/L	1.4 ug/L
Copper	11(A), 8.7 ug/L(C)	16 ug/L	13 ug/L
Silver	0.72 ug/L (A)	1.1 ug/L	---
Zinc	78 ug/L (C)	---	114 ug/L

No monthly average concentration limits for ammonia have been established to be consistent with the previous licensing action and federal Administrative Order.

The testing frequencies established in Special Condition A of this permit are based on a Department best professional judgment taking into consideration the frequency, severity and timing of the exceedence(s) and or reasonable potential to exceed AWQC. This permitting action is also requiring the permittee to submit a toxicity reduction evaluation (TRE) to eliminate the toxicity associated with aluminum, ammonia, cadmium, copper, silver. See Special Condition K of this permitting action.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

OUTFALL #001 – Tier I, Advanced Treated Effluent Prior to the Facility Upgrade [See Special Condition A(1)]

As for the remaining chemical specific elements/compounds, the 9/13/02 statistical evaluation indicates there are no exceedences or RP to exceed AWQC. Therefore, this permitting action is establishing a surveillance level monitoring frequency of 1/Year until twelve months prior to the expiration date of the permit at which time the frequency reverts back to a screening level testing of 1/Quarter. See Special Condition A, footnote #11.

Whole Effluent Toxicity (WET) Testing – As with chemical specific testing, the SSD is categorically subject to WET testing pursuant to Department rule Chapter 530.5, *Surface Water Toxics Control Program*. A recent review of the data indicates that the SSD has fulfilled the WET testing requirements to date. See Attachment B of this Fact Sheet for the WET test results and submission dates.

On September 13, 2002, the Department conducted an evaluation on the most recent 60 months of WET tests results in accordance with the statistical approach outlined in EPA's March 1991 document entitled Technical Support Document (TSD) for Water Quality Based Toxics Control, Chapter 3.3.2 and Maine Department of Environmental Protection Guidance, July 1998, entitled Toxicity Program Implementation Protocols. The Department's 9/13/02 statistical evaluation indicates that the discharge from the SSD facility has two WET test results [10/17/00 (<25%), 7/10/01 (25%)] that exceed the C-NOEL critical threshold of 45% for the water flea, has nine WET results that have a reasonable potential to exceed the C-NOEL critical threshold of 45% for the water flea, and has two WET test results for the brook trout that have a reasonable potential to exceed the C-NOEL critical threshold of 45%. The critical threshold of 45% is the mathematical inverse of the acute and chronic dilution factor of 2.2:1. It is noted the C-NOEL WET test result of 41% on 2/17/98 for the brook trout is not being considered an exceedence of the 45% critical threshold as the previous license established a critical threshold of 41% and the permittee utilized that threshold as one of the five dilutions in the dilution series when conducting WET tests. A more in depth review of the C-NOEL data for the brook trout indicates 6 of the 8 other C-NOEL test results in the 60-month evaluation period do not exceed or have a reasonable potential to exceed the critical threshold.

Pursuant to Chapter 530.5§C(2) and §C(3), this permitting action is establishing C-NOEL limitations of 45% for both the water flea and the brook trout. Based on the frequency, timing, and severity of the test results that exceed or have a reasonable potential to exceed critical thresholds, the Department is establishing a testing frequency of 1/Quarter for the water flea and 1/Year for the brook trout. This permitting action is also requiring the permittee to submit a toxicity reduction evaluation (TRE) to eliminate the toxicity associated with the water flea. See Special Condition K of this permitting action.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 – Tier II, Advanced Treated Effluent After the Facility Upgrade
[See Special Condition A(2)]

Total phosphorus – The previous licensing action established seasonal monthly average and daily maximum total phosphorus mass limitations that are being carried forward in this permitting action. The limits were water quality based limits developed by the Department based on a best professional judgment of the mass limitations necessary to protect Estes Lake from algal blooms. The Findings of Fact section of the previous licensing action states” *that through compliance with the limitations in the license, Estes Lake has been attaining standards of its assigned classification (GPA) and that attainment will continue as long as the Sanford facility operates in compliance with the effluent limitations in this license.*”

Dilution Factors: Dilution factors associated with the discharge from the SSD’s waste water treatment facility were derived in accordance with freshwater protocols established in Department Rule Chapter 530.5, Surface Water Toxics Control Program, October 1994. Beginning June 1, 2005, the facility will be prohibited from discharging when the receiving water flow is less than 20 cfs and the monthly average discharge flow limits are seasonal; 3.48 MGD in the summer (October 1 – April 30) and 4.4 MGD in the winter (May 1 – September 30). This permit also establishes a monthly average limit of 8.8 MGD for discharges between February 15 and April 15 of each year (after the treatment plant upgrade is complete). Discharges are only authorized at this higher discharge rate when the Mousam River flow is greater than 100 cfs. Dilution calculations are as follows:

$$\text{Dilution Factor} = \frac{\text{River Flow (cfs)}(\text{Conv. Factor}) + \text{Plant Flow}}{\text{Plant Flow}}$$

Tier II – Beginning June 1, 2005

Summer (May 1 – September 30)

$$\text{Acute \& Chronic: } 1\text{Q}10 \text{ \& } 7\text{Q}10 = 20 \text{ cfs} \Rightarrow \frac{(20 \text{ cfs})(0.6464) + (3.48 \text{ MGD})}{(3.48 \text{ MGD})} = 4.7:1$$

Winter (October 1 – April 30)

$$\text{Acute \& Chronic: } 1\text{Q}10 \text{ \& } 7\text{Q}10 = 20 \text{ cfs} \Rightarrow \frac{(20 \text{ cfs})(0.6464) + (4.4 \text{ MGD})}{(4.4 \text{ MGD})} = 3.9:1$$

Year-round

$$\text{Harmonic Mean: } = 30 \text{ cfs} \Rightarrow \frac{(30 \text{ cfs})(0.6464) + (4.4 \text{ MGD})}{(4.4 \text{ MGD})} = 5.4:1$$

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 – Tier II, Advanced Treated Effluent After the Facility Upgrade
[See Special Condition A(2)]

Footnotes:

Tier II - The prohibition of discharging when the receiving water flow is less than 20 cfs **after the treatment plant upgrade is complete** is the critical low flow recommended in the Department's February 2001 TMDL as the flow below which there shall be no discharge. Therefore, 20 cfs is the 7Q10 and 1Q10 critical low flow of the Mousam River for the discharge from the Sanford Sewerage District. It is noted that 20 cfs is not the statistical 7Q10 or 1Q10 of the Mousam River at the point of discharge based on long term flow records of the Mousam River. The statistical 7Q10 is estimated to be 10 cfs. As for the harmonic mean, because the statistical 7Q10 is estimated to be 10 cfs, the Department is multiplying the 7Q10 by a factor of three to calculate a harmonic mean flow of 30 cfs to be used in calculating a harmonic mean dilution factor for this permitting action.

Flow:- The summertime (May 1 – September 30) monthly average flow limitation of 3.48 MGD established in the Tier I regime is being carried forward after the treatment plant upgrade and is based on water quality concerns. A new wintertime (October 1 – April 30) monthly average flow limit of 4.4 MGD is being established and is based on water quality concerns and is a negotiated settlement between the SSD and the Department. As a result of the reduction of the wintertime flow limit from 5.5 MGD in Tier I to 4.4 MGD in Tier II, the SSD is being required to store more waste water. Rather than build additional storage capacity, the SSD and Department have negotiated an additional flow regime (Tier III) whereby the SSD is authorized to discharge up to 8.8 MGD between February 15 and April 15 of each year (least water quality impact) provided the flow in the Mousam River is greater than 100 cfs.

Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS) – The BOD₅ and TSS mass limits in Tier II are based on the recommendations in the 2001 TMDL and are water quality based. The summertime mass limits are slightly more stringent than the Tier I limits. The monthly average, weekly average and daily maximum concentration limits of 10 mg/L, 15 mg/L and 20 mg/L respectively, are being carried forward from Tier I and are considered BPT limitations during this time of the year.

As for wintertime mass limits, the BOD₅ and TSS mass limits in Tier II are less stringent than the Tier I mass limits and have been determined to be protective of water quality during this time of the year. The monthly average and weekly average concentration limits of 30 mg/L, and 45 mg/L respectively, are also less stringent than the Tier I concentration limits and are based on secondary treatment requirements of the Clean Water Act of 1977 §301(b)(1)(B) as defined in 40 CFR 133.102 and Department rule Chapter 525(3)(III). The daily maximum BOD₅ and TSS concentration limits of 50 mg/L are based on a Department best professional judgment of best practicable treatment.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 – Tier II, Advanced Treated Effluent After the Facility Upgrade
[See Special Condition A(2)]

Summertime BOD5 and TSS mass limitations are calculated based on the monthly average permit flow limit of 3.48 MGD and the corresponding monthly average, weekly average and daily maximum concentration limits and wintertime BOD5 and TSS mass limitations are calculated based on the monthly average permit flow limit of 4.4 MGD and the corresponding monthly average, weekly average and daily maximum concentration limits.

As with Tier I, this permitting action establishes an 85% removal for BOD and TSS pursuant to Department rule Chapter 525(3)(III)(a&b)(3).

Generally, anti-backsliding provisions found in federal regulation at 40 CFR 122.44(l) prohibit the Department from reissuing a permit with less stringent limitations than the previous license/permit. However, 40 CFR 122.44(l)(2)(i)(B)(1) authorizes backsliding based on new information that was not available at the time of the permitting action. The Department has determined that new information is available since issuance of the June 1994 license in that a TMDL was approved in April of calendar year 2001 for a 3.7 mile segment of the Mousam River, the SSD is in the process of final design of a significantly different waste water treatment plant (stabilization ponds to oxidation ditch) and the less stringent limits are protective of water quality in the winter months. Therefore, anti-backsliding provisions of the federal regulations have been sufficiently satisfied.

The provisions of the State's antidegradation policy, found at Maine law, 38 MRSA Section 464(4)(F), will be met with less stringent BOD and TSS limits, in that existing in-stream water uses and the level of water quality necessary to protect and maintain those existing uses will be maintained and protected, the discharge will not cause or contribute to the failure of the water body to meet the standards of classification and the discharge will be subject to effluent limitations that require application of best practicable treatment

Settleable Solids – The daily maximum concentration limitation of 0.3 ml/L established in Tier I is being carried forward in Tier II. The limitation is considered a best practicable treatment limit for secondary treated waste water.

E. coli Bacteria The previous licensing action and Tier I of this permitting action established seasonal monthly average and daily maximum *E. coli* bacteria limits of 142 colonies/100 ml and 949 colonies/100 ml respectively, based on the State of Maine Water Classification Program criteria for Class C waters found at Maine law, 38 MRSA, §465(4). The limitations are being carried forward in Tier II of this permitting action.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 – Tier II, Advanced Treated Effluent After the Facility Upgrade

[See Special Condition A(2)]

pH –Tier I of this permitting action established a pH range limitation of 6.0 –9.0 standard units that is being carried forward to Tier II pursuant to a new Department rule found at Chapter 525(3)(III)(c). The new limits are considered BPT.

River Flow: The previous licensing action and Tier I of this permitting action established a discharge prohibition when the flow in the Mousam River was below 10 cfs which is being carried forward in this permitting until May 31, 2005. Beginning June 1, 2005, the discharge prohibition threshold is more stringent and is being established at 20 cfs based on recommendations of the 2001 TMDL to protect water quality during low flow conditions in the river. This permit requires the SSD to measure the river flow 2/Week on a year-round basis at the new permanent gauging station installed at the Route #4 bridge approximately 0.8 river miles upstream from the SSD's waste water treatment outfall pipe. The gauge at the Route #4 bridge shall be calibrated yearly by the U. S. Geological Survey or a qualified hydrogeologist.

Dissolved Oxygen – This permitting action is requiring the SSD to maintain a dissolved oxygen content of >7.5 ppm in the effluent from the waste water treatment facility between May 1 and September 30 based on a recommendation in the 2001 TMDL. Maintaining a minimum dissolved oxygen of >7.5 ppm in the effluent is necessary in order for the Mousam River to attain the Class C dissolved oxygen standards of 5 ppm and 60% saturation at all times and 6.5 ppm as a monthly average.

Total Phosphorus – Tier I mass limitations for total phosphorus were originally established to protect Estes Lake from algal blooms and have demonstrated to be successful. Therefore, the wintertime monthly average and daily maximum mass limits of 23 lbs/day and 46 lbs/day respectively are being carried forward as Tier II limitations. However, the 2001 TMDL recommends the monthly average summertime mass limit of 5 lbs/day be reduced to 3.0 lbs/day due to dissolved oxygen depletion in the Mousam River due to algal respiration. The TMDL took into consideration the natural, non-point, and the ground water source inputs of phosphorus in developing the limitation of 3.0 lbs/day. See Attachment C of this Fact Sheet entitled, “*Table 6a, Summer TMDL for BOD, Ammonia, Phosphorus*” for the natural, non-point, and the ground water source inputs.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 – Tier II, Advanced Treated Effluent After the Facility Upgrade
[See Special Condition A(2)]

Ammonia – As with phosphorus, the TMDL considered natural, non-point, and the ground water source inputs of ammonia in developing both the winter (October 1 – May 14) and summer (May 15 – September 30) ammonia limitations for the SSD discharge. See Attachment C of this Fact Sheet entitled, “*Table 6a, Summer TMDL for BOD, Ammonia, Phosphorus*” for the natural, non-point, and the ground water source inputs. For the wintertime monthly average mass limit, the TMDL recommends the SSD be limited to 276 lbs/day based on an AWQC of 2.6 mg/L which is based on a river temperature of 15°C and a pH of 7.0 standard units. Back-calculating a concentration limit based on the mass and a flow limitation of 4.4 MGD yields a concentration of 7.52 mg/L. To be consistent with establishing concentration limits for toxics, the calculated end-of-pipe concentration of 7.52 mg/L was increased by a factor of 1.5 to 11.3 mg/L as not to penalize facilities for operating at flows less than permitted design flow of the waste water plant. This represents an effluent concentration that is achievable through proper operation and maintenance of the treatment plant.

The TMDL recommends a weekly average summertime ammonia limitation of 14.5 lbs/day that is being established in this permitting action to meet water quality in the summer months. No concentration limits have been established to give the SSD flexibility in managing the nitrification process in the treatment plant during the summer.

Arsenic and Lead - The 2001 TMDL recommends the mass and concentrations established in Special Condition A of this permit. The Department took into consideration natural background and non-point source concentrations for each metal. See Attachment D, entitled *Table 7 Mousam River (Sanford) TMDL for Toxic Substances*, of this Fact Sheet for the derivation of the monthly average and or daily maximum mass and concentration limits for each parameter. It is noted, the concentrations calculated in the far right-hand column with the heading [*(Sanford TMDL Conc (ppb)*] of Table 7 were multiplied by a factor of 1.5 to establish the applicable permit limits for concentration as not to penalize facilities for operating at flows less than permitted design flow of the waste water plant.

Whole Effluent Toxicity and Chemical Specific Testing – The SSD waste water treatment facility is categorically subject to Department rule Chapter 530.5, *Surface Water Toxics Control Program*. For Tier II, surveillance level and screening level testing have been established in accordance with the Department rule. The C-NOEL WET limitations of 45% for the water flea and brook trout in Tier I have been reduced to 26% in Tier II due to the increase in the acute and chronic dilution factor from 2.2:1 to 3.9:1. It is noted that mass and concentration limits

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 – Tier II, Advanced Treated Effluent After the Facility Upgrade
[See Special Condition A(2)]

established for aluminum, bis(2-ethylhexyl) phthalate, cadmium, copper, silver, and zinc in Tier I of this permit are not being carried forward as Tier II limits as the data points that result in exceedences and a reasonable potential to exceed AWQC will fall outside of the 60-month evaluation period when Tier II limitations become effective.

OUTFALL #001 – Tier III, High Flow After the Facility Upgrade
[See Special Condition A(3)]

As a result of the reduction of the wintertime flow limit from 5.5 MGD in Tier I to 4.4 MGD in Tier II, the SSD is being required to store more waste water in the winter months. Rather than build additional storage capacity, the SSD and Department have negotiated an additional flow regime (Tier III) whereby the SSD is authorized to discharge up to 8.8 MGD between February 15 and April 15 of each year (least water quality impact) provided the flow in the Mousam River is greater than 100 cfs.

River Flow: - Due to the 100 cfs threshold, the permittee is required to measure the river flow 2/Week on a year round basis at the new permanent gauging station installed at the Route #4 bridge approximately 0.8 river miles upstream from the SSD's waste water treatment outfall pipe. The gauge at the Route #4 bridge shall be calibrated yearly by the U. S. Geological Survey or a qualified hydrogeologist.

Flow: The monthly average flow limit of 8.8 MGD is being established in this permit based on the recommendation in the 2001 TMDL. The limit was a negotiated value by the SSD and Department and is necessary to manage the different flow regimes in the permit.

Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS) – The monthly average, weekly average and daily maximum mass limits for BOD₅ and TSS are based on recommendations in the 2001 TMDL. The Department has determined the limits are protective of water quality given dissolved oxygen deficits in the Mousam River only occur during the summer months. The monthly average and weekly average concentration limits of 30 mg/L, and 45 mg/L are based on are based on secondary treatment requirements of the Clean Water Act of 1977 §301(b)(1)(B) as defined in 40 CFR 133.102 and Department rule Chapter 525(3)(III). The maximum daily BOD₅ and TSS concentration limits of 50 mg/L are based on a Department best professional judgment of best practicable treatment. All BOD₅ and TSS mass limitations are calculated based on the monthly average permit flow limit of 8.8 MGD and applicable concentration limits.

5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 – Tier III, High Flow After the Facility Upgrade
[See Special Condition A(3)]

Total Phosphorus – The monthly average and daily maximum limits of 23 lbs/day and 46 lbs/day respectively established in Tier II of this permit are being carried forward in Tier III. The Tier II mass limitations for total phosphorus were originally established to protect Estes Lake from algal blooms and have demonstrated to be successful. Therefore, the wintertime monthly average and daily maximum mass limits of 23 lbs/day and 46 lbs/day respectively are being carried forward as Tier III limitations.

Ammonia Nitrogen - As with Tier II limitations for ammonia, the TMDL considered natural, non-point, and the ground water source inputs of ammonia in developing the high flow ammonia limitations for the SSD discharge. The TMDL recommends the SSD be limited to 612 lbs/day based on an AWQC of 2.7 mg/L which is based on a river temperature of 10°C and a pH of 7.0 standard units. Back-calculating a concentration limit based on the mass and a flow limitation of 8.8 MGD yields a concentration of 8.33 mg/L. To be consistent with establishing concentration limits for toxics, the calculated end-of-pipe concentration of 8.33 mg/L was increased by a factor of 1.5 to 12.5 mg/L as not to penalize facilities for operating at flows less than permitted design flow of the waste water plant. This represents an effluent concentration that is achievable through proper operation and maintenance of the treatment plant.

Arsenic and Lead – The 2001 TMDL recommends the mass and concentrations established in Special Condition A(3) of this permit. The monthly average and or daily maximum concentration limits for said parameters in Tier III are being carried forward from Tier II while the corresponding mass limits have been doubled from the Tier II limitations based on a doubling of the flow from 4.4 MGD to 8.8 MGD.

6. ANTI-BACKSLIDING

Federal regulation 40 CFR, §122(l) contains the criteria for what is often referred to as the anti-backsliding provisions of the Federal Water Pollution Control Act (Clean Water Act). In general, the regulation states that except for provisions specified in the regulation, effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards or conditions in the previous permit. Applicable exceptions include (1) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation and (2) information is available which was not available at the time of the permit issuance (other than revised regulations, guidance or test methods) and which would justify the application of less stringent effluent limitations at the time of permit issuance.

6. ANTI-BACKSLIDING (cont'd)

This permitting action is establishing less stringent wintertime mass and concentration limitations for BOD and TSS in Tier II and less stringent mass and concentration limits for all parameters in Tier III based on new information that was not available at the time of the previous licensing action. This permitting action is establishing higher stream flow triggers

(20 cfs for Tier II and 100 cfs – Tier III) than the previous licensing action which increases the assimilative capacity of the receiving water. The Department has made the determination that authorizing these less stringent limitations is necessary to compensate for the more stringent limitations in the summer and that the discharges at these levels will not cause or contribute to failure of the receiving water to meet its classification standards at those times of the year.

7. PRETREATMENT

The permittee is required to administer a pretreatment program based on the authority granted under Federal regulations 40 CFR §122.44(j), 40 CFR Part 403 and section 307 of the Federal Water Pollution Control Act (Clean Water Act) and Department rule Chapter 528, *Pretreatment Program*. The permittee's pretreatment program received EPA approval on July 19, 1985 and as a result, appropriate pretreatment program requirements were incorporated into the previous National Pollutant Discharge Elimination System (NPDES) permit which were consistent with that approval and federal pretreatment regulations in effect when the permit was issued.

Since issuance of the previous NPDES permit, the State of Maine has been authorized by the EPA to administer the federal pretreatment program as part of receiving authorization to administer the NPDES program. Upon issuance of this MEPDES permit, the permittee is obligated to modify (if applicable) its pretreatment program to be consistent with current federal regulations and State rules. Those activities that the permittee must address include, but are not limited to, the following: (1) develop and enforce Department approved specific effluent limits (technically-based local limits - lasted approved by the EPA on January 9, 1999; (2) revise the local sewer-use ordinance or regulation, as appropriate, to be consistent with federal regulations and State rules; (3) develop an enforcement response plan; (4) implement a slug control evaluation program; (5) track significant non-compliance for industrial users; and (6) establish a definition of and track significant industrial users.

These requirements are necessary to ensure continued compliance with the POTW's MEPDES permit and its sludge use or disposal practices.

7. PRETREATMENT (cont'd)

In addition to the requirements described above, this permit requires that within 180 days of the permit's effective date, the permittee shall submit to the Department in writing, a description of proposed changes to permittee's pretreatment program deemed necessary to assure conformity with current federal and State pretreatment regulations and rules respectively. These requirements are included in the permit (Special Condition 0) to ensure that the pretreatment program is consistent and up-to-date with all pretreatment requirements in effect. Lastly, by December 1 of each calendar year, the permittee must submit a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

8. DISCHARGE IMPACT ON RECEIVING WATER QUALITY

As permitted (with implementation of the recommendations in the TMDL), the Department has determined the existing water uses will be maintained and protected and the discharge will not cause or contribute to the failure of the Mousam River to meet standards for Class C and Estes Lake to meet standards for Class GPA.

9. PUBLIC COMMENTS

Public notice of this application was made in the Sanford News newspaper on or about February 14, 2002. The Department receives public comment on an application until the date a final agency action is taken on that application. Those persons receiving copies of draft permits shall have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to Chapter 522 of the Department's rules.

10. DEPARTMENT CONTACTS

Additional information concerning this permitting action may be obtained from and written comments should be sent to:

Gregg Wood
Division of Water Resource Regulation
Bureau of Land and Water Quality
Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017
Electronic mail: gregg.wood@state.me.us

Telephone (207) 287-7693

11. RESPONSE TO COMMENTS

During the period of July 2, 2002 through August 2, 2002, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit to be issued for the discharges cited in this permit. The Department received written comments (letters and or electronic mail dated August 2, 2002, September 17, 2002 and October 1, 2002) from Wright-Pierce, a consulting engineer representing the SSD and the U.S. Environmental Protection Agency in an electronic mail message dated September 18, 2002. Responses to the comments that were received by the Department that resulted in substantive changes to the permit or required a more in-depth explanation have been prepared as follows:

Comment #1: The EPA questioned why the metals in Table 7 of the TMDL (aluminum, arsenic, selenium, copper, lead and zinc) are not being limited in the Tier II table of limitations and monitoring requirements (effective beginning June 1, 2005) specified in Special Condition A of the permit.

Response #1: To be consistent with Department protocols established for implementation of Department rule, Chapter 530.5, *Surface Water Toxics Control Program*, the Department statistically evaluates the most current 60 months of chemical specific to determine if the discharge exceeds or has a reasonable potential to exceed ambient water quality criteria. Page 11 of 22 of the Fact Sheet states that:

The Department's 9/13/02 statistical evaluation (based on a permitted treatment plant flow of 5.5 MGD and the associated dilution factor of 2.2:1 – most conservative) indicates the discharge from the SSD facility;

- a. *Exceeds the acute and chronic AQWC for aluminum, cadmium and copper.*
- b. *Exceeds the chronic AWQC for ammonia.*
- c. *Exceeds the acute AWQC for silver.*
- d. *Has a reasonable potential to exceed the human health (water & organisms) AWQC for Bis(2-ethylhexyl) phthalate.*
- e. *Has a reasonable potential to exceed the chronic AWQC for zinc.*

As a result, the Department established limits for all applicable parameters for Tier I. It is noted, test results to-date for arsenic and lead do not exceed or have a reasonable potential to exceed AWQC.

In the case of Tier II, all of the results for the parameters listed above that exceeded or have a reasonable potential to AWQC will be no longer fall within the 60-month evaluation period. Therefore, the Department can not justify establishing limits for said parameters for Tier II. Should future test results indicate otherwise, the permit will be re-opened pursuant to Special Condition G, *Reopening Permit for Modifications*, to incorporate applicable and appropriate limitations.

11. RESPONSE TO COMMENTS (cont'd)

Arsenic and lead are being limited in Tier II as the background concentrations of arsenic and lead in the Mousam River are above applicable AWQC without being influenced by the discharge from the SSD. Therefore, the Department is establishing concentration limits for arsenic and lead equivalent to the background concentrations in the TMDL. The mass limitations were derived by multiplying the concentration limit by a flow of 3.48 MGD, the most stringent flow limitation.

Arsenic and lead are not being limited in Tier I to be consistent with licensing/permitting actions in that background concentrations of pollutants are not being factored into the current statistical evaluations. Doing so at this time would be inconsistent with licensing/permitting actions since 1994. The Department is currently re-writing the Chapter 530.5 rule to modify it to take background concentrations into consideration when establishing limitations for toxics in licensing/permitting actions. The Department anticipates the rule to be adopted by the Board of Environmental Protection in mid to late spring.

Comment #2: The SSD has expressed concern that Tier I limitations for several parameters in the proposed permit are more stringent than interim limitations in the July 1998 Administrative Order (AO) issued by the EPA. More specifically, year-round monthly average, weekly average and daily maximum concentration limits for BOD5 and TSS, both seasonal daily maximum mass limits for BOD5, the monthly average daily maximum mass limit for total phosphorus and both seasonal daily maximum mass limits for total ammonia.

Response #2: The Department acknowledges the permit establishes more stringent limits for the BOD5, TSS, phosphorus and ammonia than the EPA AO. The limits in the permit are imposed to ensure existing water quality is maintained while the limits in the AO were negotiated values based on the SSD's past performance up to that date in time. The Department has reviewed the SSD's Discharge Monitoring Reports for the previous five-year period and the data indicates the limits in the permits are achievable at the present time. The Department will use its enforcement discretion for violations during the period of time the SSD is designing and constructing the new waste water treatment facility.

Comment #3: The SSD has requested to reduce the pH monitoring frequency from 1/Day to 5/Week as the extra two weekend days requires additional labor costs and are not necessary.

Response #3: The Department is denying the permittee's request. The Department thinks it is important and necessary for an operator to visit the waste water treatment facility at least 1/Day to ensure the facility is operating and performing as expected. Failure to check on such a large facility between late Friday afternoon and early Monday morning is not acceptable to the Department. The time to sample and analyze for pH will take less than one hour and is not unreasonable or a costly requirement.

11. RESPONSE TO COMMENTS (cont'd)

Comment #4: The SSD commented on language in Special Condition Q (2)(b) of the draft permit that prohibits a discharge from pump stations as a result of mechanical failure. The District has taken the position it can not ensure no discharge will occur at it Mousam River Pump Station until the upgrade of the pump station is complete.

Response #4: The Department agrees and will use its enforcement discretion in the event of a discharge from the Mousam River Pump Station prior to completion of the upgrade.

Comment #5: The SSD has requested the Department change the sample type for aluminum, bis(2-ethylhexyl) phthalate, cadmium, copper, silver, zinc, arsenic and lead from composite sampling to grab sampling due to the potential for contamination during compositing.

Response #5: To be consistent with other licensing/permitting actions issued by the Department for similar facilities, the Department is rejecting the SSD proposal. All facilities subject to WET and chemical specific testing are required to collect 24-hour composite samples for analysis for the aforementioned parameters. However, the District is free to collect and hold grab samples taken during the compositing time frame to confirm or refute contamination. The Department will review such discrepancies on a case-by-case basis.

Comment #6: The SSD is requesting a revision to the compliance schedule for the waste water treatment facility, more specifically, the new or re-construction of the existing tertiary sand filters. The draft permit establishes a date certain for completion of the treatment plant upgrade which includes the sand filters. The SSD would like to break-out the sand filters from the schedule as pilot testing of the existing sand filters is not possible in this instance because current secondary effluent characteristics (lagoon effluent) is very different than the future secondary effluent from the biological nutrient removal activated sludge system.

Response #6: The Department concurs and has revised the language accordingly. The treatment plant upgrade (with the exception of the sand filters) shall be completed by May 31, 2005. By November 1, 2005 , the permittee shall submit to the Department for a review, a report of the pilot testing of the effectiveness of the existing sand filter to meet Tier II limitations. A scope of work and schedule for rehabilitation of the existing sand filters or the new construction of new sand filters or another treatment technology will be established based on a review of the 11/1/05 report of the pilot testing.

Comment #7: The SDD has requested to calculate monthly average flow and mass loadings based on the total flow and mass for the month divided by the number of calendar days in the month rather than the number of days of actual discharge during a calendar month as discharge prohibition based on trigger flows is fundamentally different than other Department licensing actions. The District's position is that the trigger flows of 10 cfs (Tier I) and 20 cfs (Tier II) will prohibit them from discharging every day and will unfairly cut their monthly

11. RESPONSE TO COMMENTS (cont'd)

allocation to discharge at acceptable loadings for particular parameters. The example discussed was phosphorus. If the flow in the river was at 10 cfs for a 30-day period of time under Tier I, the District would be able to discharge 5 pounds per day for 30 consecutive days or 150 pounds for the month. If during the next month, the flow in the river fell below 10 cfs for 16 days during the month, the District would be limited to 70 pounds for the month (14 days x 5 lbs/day).

Response #7: The Department is denying the District's requested based on the definitions in Standard Condition F (attached to the permit) that are applicable to all permits issued by the Department. The definitions clearly state that monthly and weekly average values are "*...calculated as the sum of all discharges measured during a calendar month divided by the number of daily discharges measured during a calendar month.*" If during the term of the permit, application of this methodology for calculating monthly average and weekly average values is found to overly restrictive and not necessary to protect water quality given the fundamental differences in the discharge, the permittee may request a modification of the permit to re-evaluate the methodology for said calculations.