June 18, 2008

Mr. Richard Dickinson
Tate & Lyle Ingredients Americas, Inc.
2200 East Eldorado Street
Decatur, IL 62525

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0002216
Maine Waste Discharge License (WDL) Application #W000940-5N-E-R
FINAL MEPDES Permit/WDL

Dear Mr. Dickinson:

Enclosed, please find a copy of your **final** MEPDES permit and Maine WDL, which was approved by the Department of Environmental Protection. Please read the permit/license and its attached conditions carefully. You must follow the conditions in the order to satisfy the requirements of law. Any discharge not receiving adequate treatment is in violation of State law and is subject to enforcement action.

Any interested person aggrieved by a Department determination made pursuant to applicable regulations, may appeal the decision following the procedures described in the attached DEP FACT SHEET entitled "*Appealing a Commissioner's Licensing Decision*."

If you have any questions regarding the matter, please feel free to call me at 287-7659.

Sincerely,

Bill Hinkel
Division of Water Quality Management
Bureau of Land and Water Quality

Enc.

pc: James Peabody, Interested Person
Sean Bernard, DEP
Lori Mitchell, DEP
Sandy Lao, USEPA
File #940

IN THE MATTER OF

TATE & LYLE INGREDIENTS AMERICAS, INC.	)	MAINE POLLUTANT DISCHARGE
HOULTON, AROOSTOOK COUNTY, MAINE	)	ELIMINATION SYSTEM PERMIT
STARCH PROCESSING FACILITY	)	AND
#ME0002216	)	WASTE DISCHARGE LICENSE
#W000940-5N-E-R **APPROVAL**	)	**RENEWAL**

Pursuant to the provisions of the *Federal Water Pollution Control Act*, Title 33 USC, §1251, *Conditions of licenses*, 38 M.R.S.A. § 414-A, and applicable regulations, the Maine Department of Environmental Protection (Department) has considered the application of TATE & LYLE INGREDIENTS AMERICAS, INC. (TATE & LYLE), with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

APPLICATION SUMMARY

Tate & Lyle has applied to the Department for renewal of Waste Discharge License (WDL) #W000940-5N-D-R / Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME01002216, which was issued on June 26, 2003, and is scheduled to expire on June 26, 2008. The 6/26/03 permit authorized the discharge of: (1) 0.04 million gallons per day (MGD) of boiler blowdown and process waste waters to the Meduxnekeag River, Class B, via Outfall #001; (2) 0.05 MGD of non-contact cooling waters to the Meduxnekeag River, Class B, via Outfall #002; and (3) boiler blowdown and process waste waters to ground water, Class GW-A, via a surface wastewater disposal system (spray irrigation) at a weekly average rate of up to 40,728 gallons per acre per week and a daily maximum rate of up to 20,362 gallons per acre per day. All discharges are located in Houlton, Maine. Tate & Lyle has applied for authorization to spray irrigate non-contact cooling waters via the spray irrigation system.

On April 10, 2006, the Department amended the 6/29/03 permit by incorporating the whole effluent toxicity (WET), analytical chemistry and priority pollutant testing requirements of *Surface Water Toxics Control Program*, 06-096 CMR 530 (effective October 9, 2005).

PERMIT SUMMARY

This permitting action is similar to the 6/29/03 permitting action and 4/10/06 permit amendment in that it is:

For Outfall #001A:

1. Carrying forward the monthly average discharge flow limit of 0.04 MGD and the daily maximum discharge flow reporting requirement;

2. Carrying forward the separate winter season and summer season monthly average and daily maximum concentration and mass limitations for biochemical oxygen demand (BOD_5);

3. Carrying forward the monthly average and daily maximum concentration and mass limitations for and total suspended solids (TSS);

4. Carrying forward the seasonal, water quality-based monthly average concentration and mass limitations and the daily maximum concentration and mass reporting requirements for total phosphorous (total-P);

5. Carrying forward the seasonal river flow monitoring requirements and restriction on discharging when river flow is below 15 cubic feet per second;

6. Carrying forward ambient dissolved oxygen (DO) monitoring requirements and discharge restrictions when DO is below certain thresholds;

7. Carrying forward whole effluent toxicity (WET) and priority pollutant testing requirements consistent with 06-096 CMR 530;

8. Carrying forward an annual certification statement requirement as Special Condition G, *Statement for Reduced/Waived Toxics Testing* of this permit (a requirement imposed in the 4/10/06 permit amendment);

9. Carrying forward the minimum monitoring frequency requirements for all monitored parameters;

For Outfall #002A:

10. Carrying forward the monthly average discharge flow limit of 0.05 MGD and the daily maximum discharge flow reporting requirement;

11. Carrying forward the minimum monitoring frequency requirements for all monitored parameters;

For Spray Irrigation Wastewater Outfall #003A:

12. Carrying forward daily maximum monitoring and reporting requirements for discharge flow, BOD_5, total sodium, sulfate, nitrate-nitrogen, total Kjeldahl nitrogen (TKN), and total ammonia nitrogen;

PERMIT SUMMARY (cont'd)

For Spray Irrigation Field SF-1:

13. Carrying forward the daily maximum spray limitation of 20,362 gallons per acre per day;

For Ground Water Monitoring Wells (MW-1, MW-2, MW-2B, MW-3A, MW-3B, MW-4, MW-5A, MW5B, TW-A, TW-6, AND TW-8):

14. Carrying forward the daily maximum monitoring and reporting requirements for nitrate-nitrogen, TKN, total ammonia nitrogen, specific conductance, temperature, and total sodium, sulfate;

15. Carrying forward the daily maximum concentration limits ("action levels") for sodium and sulfate; and

16. Carrying forward the minimum monitoring frequency requirements for all monitored parameters.

This permitting action is different from the 6/29/03 permitting action and 4/10/06 permit amendment in that it is:

For Outfall #001A:

1. Establishing a year-round daily maximum temperature limit of 90˚F and minimum monitoring frequency requirement of once per day;

2. Establishing separate summer season (June 1 – September 15) and winter season (September 16 – May 31) dilution factors associated with the discharge based on the stream flow discharge restriction (guaranteed flow);

3. Establishing a critical chronic water quality-based limit of 2.0% for the water flea based on the results of facility testing;

4. Revising the surveillance level analytical chemistry testing requirement from once every two years to once per year to satisfy the testing requirements associated with annual WET testing on the water flea;

5. Utilizing site-specific receiving water hardness criteria for priority pollutant reasonable potential evaluations;

6. Establishing a daily maximum concentration reporting requirement for total arsenic;

7. Establishing monthly average, water quality-based effluent limitations for inorganic arsenic and a schedule of compliance (Special Condition H) for implementation of these limitations;

8. Revising the pH range limitation from 6.0 to 8.5 standard units (SU) to 6.0 to 9.0 SU;

PERMIT SUMMARY (cont'd)

For Outfall #002A:

9. Eliminating the monthly average effluent temperature reporting requirement and revising the year-round daily maximum temperature limit from 75˚F to 90˚F based on revised calculations of allowable thermal loadings;

10. Revising the pH range limitation from 6.0 to 8.5 SU to 6.0 to 9.0 SU;

For Spray Irrigation Wastewater Outfall #003A:

11. Eliminating the daily maximum monitoring and reporting requirements for total-P, chemical oxygen demand (COD), and specific conductance;

12. Revising the minimum monitoring frequency requirement for discharge flow from once per month to daily when discharging;

13. Revising the pH range limitation from 6.0 to 8.5 SU to 6.0 to 9.0 SU;

14. Eliminating the requirement to submit an annual report summarizing the overall performance of the spray system [previous Special Condition F(d)(2)];

15. Establishing a condition (Special Condition A, Footnote # 10) requiring the permittee to obtain written Department approval prior to commencing spray irrigation (*i.e.*, discharge via Outfall #003A) of boiler blowdown and process waste waters to SF-1;

For Spray Irrigation Field SF-1:

16. Correcting the weekly spray irrigation application rate from an average rate to a maximum rate of 40,728 gallons per acre per week;

17. Establishing a monthly total gallons applied reporting requirement;

For Ground Water Monitoring Wells (MW-1, MW-2, MW-2B, MW-3A, MW-3B, MW-4, MW-5A, MW5B, TW-A, TW-6, AND TW-8):

18. Eliminating the daily maximum concentration reporting requirements for COD, and total-P;

19. Revising the pH range limitation from 6.0 to 8.5 SU to 6.0 to 9.0 SU;

For Soil Sampling:

20. Eliminating the soils monitoring requirements established in the previous permitting action as Special Conditions A.10 and D.c.3; and

For Spray Irrigation Field SF-2 (new):

21. Authorizing the application of non-contact cooling waters to the spray irrigation field identified as SF-1.

CONCLUSIONS

BASED on the findings in the attached Fact Sheet dated June 16, 2008, and subject to the Conditions listed below, the Department makes the following conclusions:

1. The discharge, either by itself or in combination with other discharges, will not lower the quality of any classified body of water below such classification.

2. The discharge, either by itself or in combination with other discharges, will not lower the quality of any unclassified body of water below the classification which the Department expects to adopt in accordance with state law.

3. The provisions of the State's antidegradation policy, *Classification of Maine waters*, 38 M.R.S.A. § 464(4)(F), will be met, in that:

   (a) Existing in-stream water uses and the level of water quality necessary to protect and maintain those existing uses will be maintained and protected;

   (b) Where high quality waters of the State constitute an outstanding national resource, that water quality will be maintained and protected;

   (c) The standards of classification of the receiving water body are met or, where the standards of classification of the receiving water body are not met, the discharge will not cause or contribute to the failure of the water body to meet the standards of classification;

   (d) Where the actual quality of any classified receiving water body exceeds the minimum standards of the next highest classification that higher water quality will be maintained and protected; and

   (e) Where a discharge will result in lowering the existing water quality of any water body, the Department has made the finding, following opportunity for public participation, that this action is necessary to achieve important economic or social benefits to the State.

4. The discharge will be subject to effluent limitations that require application of best practicable treatment as defined in 38 M.R.S.A. § 414-A(1)(D).

ACTION

THEREFORE, the Department APPROVES the above noted application of TATE & LYLE INGREDIENTS AMERICAS, INC. to discharge a monthly average of up to 0.04 MGD of boiler blowdown and process waste waters and 0.05 MGD of non-contact cooling waters to the Meduxnekeag River, Class B, and to operate a surface wastewater disposal system that uses spray irrigation to discharge a weekly maximum of up to 40,728 gallons per acre per week of boiler blowdown and process waste waters or non-contact cooling waters during the period of May 15 – November 15 of each year, depending on weather and site conditions, to the soil above ground water resources of the State, Class GW-A, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations including:

1. *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, copy attached.

2. The attached Special Conditions, including any effluent limitations and monitoring requirements.

3. The expiration date of this permit is five (5) years from the date of signature below.

DONE AND DATED AT AUGUSTA, MAINE, THIS 17th DAY OF June, 2008.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____
DAVID P. LITTELL, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: December 26, 2007
Date of application acceptance: January 4, 2008

Date filed with Board of Environmental Protection: _____.

This Order prepared by William F. Hinkel, BUREAU OF LAND & WATER QUALITY
ME0002216 2008 June 16, 2008

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. The permittee is authorized to discharge **boiler blowdown and process waste waters** during **June 1 through September 30 via Outfall #001A** to the Meduxnekeag River **at times when the river flow is ≥ 15 cfs**. Such discharges shall be limited and monitored by the permittee as specified below[(1)]:

Effluent Characteristic	Effluent Limitations					Minimum Monitoring Requirements	
	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Minimum as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Flow *[50050]*	---	---	0.04 MGD *[03]*	---	Report MGD *[03]*	Continuous *[CN]*	Recorder *[RC]*
BOD_5 *[00310]*	54 lbs/day *[26]*	67 lbs/day *[26]*	243 mg/L *[19]*	---	300 mg/L *[19]*	2/Week *[02/07]*	24-Hr. Composite *[24]*
TSS *[00530]*	63 lbs/day *[26]*	126 lbs/day *[26]*	284 mg/L *[19]*	---	567 mg/L *[19]*	2/Week *[02/07]*	24-Hr. Composite *[24]*
Total Phosphorous[(2)] **June 1 – Sept 15** *[00665]*	0.17 lbs/day *[26]*	Report lbs/day *[26]*	0.5 mg/L *[19]*	---	Report mg/L *[19]*	2/Week *[02/07]*	24-Hr. Composite *[24]*
River Flow[(3)] **June 1 – Sept 15** *[00060]*	---	---	Report cfs *[08]*	15 cfs *[08]*	Report cfs *[08]*	1/Day *[01/01]*	Flow Meter *[MT]*
Dissolved Oxygen[(4)] **June 1 – Sept 15** *[00300]*	---	---	---	7 PPM *[20]*	---	1/Day *[01/01]*	Grab *[GR]*
Dissolved Oxygen[(4)] **June 1 – Sept 15** *[00300]*	---	---	---	7.3 PPM *[20]*	---	1/Day *[01/01]*	Grab *[GR]*
Temperature *[00011]*	---	---	---	90°F *[15]*	---	1/Day *[01/01]*	Grab *[GR]*
pH *[00400]*	---	---	---	---	6.0-9.0 SU *[12]*	1/Day *[01/01]*	Grab *[GR]*
Arsenic (Total) [(5)] *[01002]* ***(Upon permit issuance)***	---	---	---	---	Report µg/L *[28]*	1/Quarter *[01/90]*	24-Hr. Composite *[24]*
Arsenic (Inorganic) [(6)] *[01252]* ***(Upon test method approval)***	0.004 lbs./day *[26]*	---	1.3 µg/L *[28]*	---	---	1/Quarter *[01/90]*	24-Hr. Composite *[24]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 14-19 of this permit for the applicable footnotes.

SPECIAL CONDITIONS

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

2. The permittee is authorized to discharge **boiler blowdown and process waste waters** during **October 1 through May 31 via Outfall #001A** to the Meduxnekeag River. Such discharges shall be limited and monitored by the permittee as specified below[(1)]:

Effluent Characteristic	Effluent Limitations				Minimum Monitoring Requirements	
	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Flow *[50050]*	---	---	0.04 MGD *[03]*	Report MGD *[03]*	Continuous *[CN]*	Recorder *[RC]*
BOD_5 *[00310]*	75 lbs/day *[26]*	133 lbs/day *[26]*	338 mg/L *[19]*	599 mg/L *[19]*	2/Week *[02/07]*	24-Hr. Composite *[24]*
TSS *[00530]*	63 lbs/day *[26]*	126 lbs/day *[26]*	284 mg/L *[19]*	567 mg/L *[19]*	2/Week *[02/07]*	24-Hr. Composite *[24]*
pH *[00400]*	---	---	---	6.0-9.0 SU *[12]*	1/Day *[01/01]*	Grab *[GR]*
Temperature *[00011]*	---	---	---	90°F *[15]*	1/Day *[01/01]*	Grab *[GR]*
Arsenic (Total) [(5)] *[01002]* ***(Upon permit issuance)***	---	---	---	Report µg/L *[28]*	1/Quarter *[01/90]*	24-Hr. Composite *[24]*
Arsenic (Inorganic) [(6)] *[01252]* ***(Upon test method approval)***	0.004 lbs./day *[26]*	---	1.3 µg/L *[28]*	---	1/Quarter *[01/90]*	24-Hr. Composite *[24]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 14-19 of this permit for the applicable footnotes.

SPECIAL CONDITIONS

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

3. Whole effluent toxicity, analytical chemistry and priority pollutant testing requirements for **Outfall #001A**(1).

SURVEILLANCE LEVEL - Beginning upon issuance and lasting until 12 months prior to permit expiration.

Effluent Characteristic	Effluent Limitations				Minimum Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Whole Effluent Toxicity (7)						
Acute – NOEL						
Ceriodaphnia dubia (Water flea) *[TDA3B]*	---	---	---	Report % *[23]*	1/Year *[01/YR]*	Composite *[24]*
Salvelinus fontinalis (Brook trout) *[TDA6F]*	---	---	---	Report % *[23]*	1/2 Years *[01/2Y]*	Composite *[24]*
Chronic – NOEL						
Ceriodaphnia dubia (Water flea) *[TBP3B]*	---	---	---	2.0 % *[23]*	1/Year *[01/YR]*	Composite *[24]*
Salvelinus fontinalis (Brook trout) *[TBQ6F]*	---	---	---	Report % *[23]*	1/2 Years *[01/2Y]*	Composite *[24]*
Analytical Chemistry (8) *[51477]*	---	---	---	Report ug/L *[28]*	1/Year *[01/YR]*	Composite/Grab *[24]*

SCREENING LEVEL - Beginning 12 months prior to permit expiration and lasting through permit expiration and every five years thereafter.

Effluent Characteristic	Effluent Limitations				Minimum Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Whole Effluent Toxicity (7)						
Acute – NOEL						
Ceriodaphnia dubia (Water flea) *[TDA3B]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Salvelinus fontinalis (Brook trout) *[TDA6F]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Chronic – NOEL						
Ceriodaphnia dubia (Water flea) *[TBP3B]*	---	---	---	2.0 % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Salvelinus fontinalis (Brook trout) *[TBQ6F]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Analytical Chemistry (8) *[51477]*	---	---	---	Report ug/L *[28]*	1/Quarter *[01/90]*	Composite/Grab *[24]*
Priority Pollutant (9) *[50008]*	---	---	---	Report ug/L *[28]*	1/Year *[01/YR]*	Composite/Grab *[24]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 14-19 of this permit for applicable footnotes.

SPECIAL CONDITIONS

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

4. The permittee is authorized to discharge **non-contact cooling waters via Outfall #002A** to the Meduxnekeag River. Such discharges shall be limited and monitored by the permittee as specified below[(1)]:

Effluent Characteristic	Effluent Limitations				Minimum Monitoring Requirements	
	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Flow *[50050]*	---	---	0.05 MGD *[03]*	Report MGD *[03]*	Continuous *[CN]*	Recorder *[RC]*
Temperature *[00011]*	---	---	---	90°F *[15]*	1/Day *[01/01]*	Grab *[GR]*
pH *[00400]*	---	---	---	6.0-9.0 SU *[12]*	1/Day *[01/01]*	Grab *[GR]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 14-19 of this permit for the applicable footnotes.

SPECIAL CONDITIONS

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

5. The permittee is authorized to discharge **boiler blowdown and process waste waters** during **May 15 through November 15 via Outfall #003A through spray irrigation(10)**. Such discharges shall be limited and monitored by the permittee as specified below(1):

Monitoring Characteristic	Monitoring Requirements		Minimum Monitoring Requirements	
	Monthly Average as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Flow *[50050]*	---	Report GPD *[07]*	Daily When Discharging *[WH/DS]*	Calculate *[CA]*
BOD_5 *[00310]*	---	Report mg/L *[19]*	1/Month(11) *[01/30]*	8-Hr. Composite(12) *[08]*
Nitrate-Nitrogen (NO_3) *[00620]*	---	Report mg/L *[19]*	1/Month(11) *[01/30]*	8-Hr. Composite(12) *[08]*
Total Ammonia Nitrogen (as N) *[00610]*	---	Report mg/L *[19]*	1/Month(11) *[01/30]*	8-Hr. Composite(12) *[08]*
Total Kjeldahl Nitrogen *[00625]*	---	Report mg/L *[19]*	1/Month(11) *[01/30]*	8-Hr. Composite(12) *[08]*
Sodium (Total, as Na) *[00929]*	---	Report mg/L *[19]*	1/Month(11) *[01/30]*	8-Hr. Composite(12) *[08]*
Sulfate (SO_4) *[00945]*	---	Report mg/L *[19]*	1/Month(11) *[01/30]*	8-Hr. Composite(12) *[08]*
pH *[00400]*	---	6.0 – 9.0 SU *[12]*	1/Month(11) *[01/30]*	Grab *[GR]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 14-19 of this permit for the applicable footnotes.

SPECIAL CONDITIONS

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

6. The permittee is authorized to operate a surface wastewater treatment and disposal system for **boiler blowdown and process waste waters** from **May 15 through November 15**. Application of waste waters to **SPRAY IRRIGATION FIELD (SF-1)** shall be limited and monitored as specified below[(1)]:

Effluent Characteristic	Effluent Limitations			Minimum Monitoring Requirements	
	Monthly Total as specified	Weekly Maximum as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Application Rate (Weekly) *[51125]*	---	40,728 gal/acre/week[(13)] *[8B]*	---	1/Week *[01/07]*	Calculate *[CA]*
Application Rate (Daily) *[51124]*	---	---	20,362 gal/acre/day[(13)] *[8B]*	1/Day *[01/01]*	Calculate *[CA]*
Flow – Total Gallons *[51500]*	Report (Gallons) *[57]*	---	---	1/Month *[01/30]*	Calculate *[CA]*

7. The permittee is authorized to operate a surface wastewater treatment and disposal system for **non-contact cooling waters** from **May 15 through November 15**. The **SPRAY IRRIGATION FIELD (SF-2)** shall be limited and monitored as specified below[(1)]:

Effluent Characteristic	Effluent Limitations			Minimum Monitoring Requirements	
	Monthly Total as specified	Weekly Maximum as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Application Rate (Weekly) *[01287]*	---	40,728 gal/acre/week[(13)] *[8B]*	---	1/Week *[01/07]*	Calculate *[CA]*
Application Rate (Daily) *[01284]*	---	---	20,362 gal/acre/day[(13)] *[8B]*	1/Day *[01/01]*	Calculate *[CA]*
Flow – Total Gallons *[82220]*	Report (Gallons) *[80]*	---	---	1/Month *[01/30]*	Calculate *[CA]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 14-19 of this permit for the applicable footnotes.

SPECIAL CONDITIONS

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

8. The permittee shall monitor the ground water conditions in **GROUND WATER MONITORING WELLS MW-1, MW-2A, MW-2B, MW-3A, MW-3B, MW-4, MW-5A, MW-5B, TW-1, TW-5, TW-6, and TW-8** as specified below[(1)]:

Effluent Characteristic	Effluent Limitations		Minimum Monitoring Requirements	
	Monthly Average as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Nitrate-Nitrogen (NO_3) *[00620]*	---	10 mg/L[(16)] *[19]*	3/year[(14)] *[03/YR]*	Grab *[GR]*
Total Ammonia Nitrogen (as N) *[00610]*	---	Report mg/L *[19]*	3/year[(14)] *[03/YR]*	Grab *[GR]*
Total Kjeldahl Nitrogen *[00625]*	---	Report mg/L *[19]*	3/year[(14)] *[03/YR]*	Grab *[GR]*
Specific Conductance *[00095]*	---	Report umhos/cm[(15)] *[11]*	3/year[(14)] *[03/YR]*	Grab *[GR]*
Sodium (Total, as Na) *[00929]*	---	120 mg/L[(16)] *[19]*	3/year[(14)] *[03/YR]*	Grab *[GR]*
Sulfate (SO_4) *[00945]*	---	250 mg/L[(16)] *[19]*	3/year[(14)] *[03/YR]*	Grab *[GR]*
Temperature (ºF) *[00011]*	---	Report ºF[(15)] *[15]*	3/year[(14)] *[03/YR]*	Grab *[GR]*
pH (Standard Units) *[00400]*	---	6.0 – 9.0 SU[(15)] *[12]*	3/year[(14)] *[03/YR]*	Grab *[GR]*

The italicized numeric values bracketed in the table and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports.

FOOTNOTES: See Pages 14-19 of this permit for the applicable footnotes.

SPECIAL CONDITIONS

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

FOOTNOTES:

1. **Sampling** – Sampling and analysis must be conducted in accordance with; a) methods approved by 40 Code of Federal Regulations (CFR) Part 136, b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136, or c) as otherwise specified by the Department. Samples that are sent out for analysis shall be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services. Samples that are sent to a POTW licensed pursuant to *Waste discharge licenses*, 38 M.R.S.A. § 413 are subject to the provisions and restrictions of *Maine Comprehensive and Limited Environmental Laboratory Certification Rules*, 10-144 CMR 263 (last amended February 13, 2000).

   All detectable analytical test results shall be reported to the Department including results which are detected below the respective reporting limits (RLs) specified by the Department. See Attachment A of this permit for a list of the Department's current RLs. If a non-detect analytical test result is below the respective RL, the concentration result shall be reported as <Y where Y is the actual detection limit achieved by the laboratory for each respective parameter. Reporting a value of <Y that is greater than an established RL is not acceptable and will be rejected by the Department. For mass, if the analytical result is reported as <Y or if a detectable result is less than a RL, report a <X lbs/day, where X is the parameter specific limitation established in the permit. Compliance with this permit will be evaluated based on whether or not a compound is detected at or above the Department's RL.

2. **Total Phosphorus –** Total phosphorus monitoring shall be performed in accordance with Attachment B of this permit entitled, *Protocol For Total P Sample Collection and Analysis for Waste Water and Receiving Water Monitoring Required by Permits – Finalized May 2006*, and dated unless otherwise specified by the Department.

3. **River Flow Monitoring** – The permittee shall monitor and record flow in the Meduxnekeag River each day from June 1 through September 15 when Tate & Lyle discharges or intends to discharge via Outfall #001A. **The permittee is not authorized to discharge via Outfall #001A when the flow in the Meduxnekeag River at Outfall #001A is less than 15 cubic feet per second (cfs) during the period of June 1 through September 15 at the permittee's river flow gauge located in the immediate vicinity of Outfall #001A, unless otherwise restricted through modification of this permit based on new information**. The permittee shall submit a monthly average value, along with a monthly maximum and minimum value on the Discharge Monitoring Report, expressed as cfs. The river flow gauge shall be calibrated at least once annually and calibration records shall be retained for Department inspection for a period of at least three years.

SPECIAL CONDITIONS

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

FOOTNOTES:

4. **Ambient Dissolved Oxygen Monitoring** – The permittee shall monitor and record in-stream dissolved oxygen (DO) concentrations daily during the period of June 1 through September 15 when Tate & Lyle discharges or intends to discharge via Outfall #001A. The first DO monitoring site is located at the Cary's Mills Bridge upriver of the confluence of the main stem of the Meduxnekeag and its South Branch. The second DO monitoring site is located immediately upriver of the Houlton publicly owned wastewater treatment works (POTW) outfalls. **Sampling for dissolved oxygen shall begin within ½ hour of sunrise, provided there is enough light to safely sample, and end no later than 8:00 AM**. **The permittee is not authorized to discharge via Outfall #001A when DO concentrations fall below 7 ppm at the Cary's Mills Bridge monitoring site or below 7.3 ppm at the Houlton POTW monitoring site during the period of June 1 through September 15, unless otherwise specified through modification of this permit based on new information.**

5. **Arsenic (Total) – Beginning upon issuance of this permit and lasting through a date on which the USEPA approves a test method for inorganic arsenic,** the permittee shall sample and analyze the discharge from the facility for total arsenic. The Department's most current reporting limit (RL) for total arsenic is 5 ug/L but may be subject to revision during the term of this permit. All detectable analytical test results shall be reported to the Department, including results which are detected below the Department's most current RL at the time of sampling and reporting. Only the detectable results greater than the total arsenic threshold of 2.6 ug/L (See page 25 of the Fact Sheet attached to this permit) or the Department's RL at the time (whichever is higher) will be considered as a possible exceedence of the ambient water quality criteria. If a test result is determined to be a possible exceedence, the permittee shall submit a toxicity reduction evaluation (TRE) to the Department for review and approval within 45 days of receiving the test result of concern from the laboratory.

6. **Arsenic (Inorganic)** – The limitations and monitoring requirements for inorganic arsenic are not in effect until the USEPA approves of a test method for inorganic arsenic. See Special Condition H, *Schedule of Compliance – Inorganic Arsenic*, of this permit. Compliance with the monthly average limitation shall be based on a 12-month rolling average calculation.

7. **Whole effluent toxicity (WET) testing** – Definitive WET testing is a multi-concentration testing event [a minimum of five dilutions bracketing the applicable critical acute and chronic summer season (June 1 – September 15) thresholds of 2.3% and 2.0%, respectively, or applicable critical acute and chronic winter season (September 16 – May 31) thresholds of 0.41%], which provides a point estimate of toxicity in terms of No Observed Effect Level, commonly referred to as NOEL or NOEC. A-NOEL is defined as the acute no observed effect level with survival as the end point. C-NOEL is defined as the chronic no observed effect level with survival, reproduction and growth as the end points. The critical acute and chronic thresholds were derived as the mathematical inverse of the applicable summer season acute and chronic dilution factors of 43:1 and 51:1, respectively, and winter season dilution factor of 243.3:1 for Outfall #001A.

SPECIAL CONDITIONS

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

FOOTNOTES:

a. **Surveillance level testing -** Beginning upon issuance of this permit and lasting through 12 months prior to permit expiration, the permittee shall conduct surveillance level WET testing at a minimum frequency of once per year (default testing) for the water flea (*Ceriodaphnia dubia*) and once every two years (reduced testing) for the brook trout (*Salvelinus fontinalis*). Surveillance tests for the water flea shall alternate from year to year such that results are available for the summer season (June 1 – September 15) and winter season (September 16 – May 31) when possible.

b. **Screening level testing** – Beginning 12 months prior to permit expiration and lasting through permit expiration and every five years thereafter, the permittee shall conduct screening level WET testing at a minimum frequency of twice per year for the water flea (*Ceriodaphnia dubia*) and the brook trout (*Salvelinus fontinalis*). Screening tests shall be conducted with one test in January to June and one test 6 months later pursuant to 06-096 CMR 530(2)(D)(2).

WET test results must be submitted to the Department not later than the next Discharge Monitoring Report (DMR) required by the permit, provided, however, that the permittee may review the toxicity reports for up to 10 business days of their availability before submitting them. The permittee shall evaluate test results being submitted and identify to the Department possible exceedences of the applicable summer season or winter season critical acute and chronic water quality thresholds specified above.

Toxicity tests must be conducted by an experienced laboratory approved by the Department. The laboratory must follow procedures as described in the following USEPA methods manuals.

a. Short Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms, Fourth Edition, October 2002, EPA-821-R-02-013.

b. Methods for Measuring the Acute Toxicity of Effluent and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, October 2002, EPA-821-R-02-012.

Results of WET tests shall be reported on the "Whole Effluent Toxicity Report Fresh Waters" form included as Attachment C of this permit each time a WET test is performed. The permittee is required to analyze the effluent for the five (5) parameters specified in the WET chemistry section and the thirteen (13) parameters specified in the analytical chemistry section on the "WET and Chemical Specific Data Report Form" (including total hardness) included as Attachment A of this permit each time a WET test is performed.

SPECIAL CONDITIONS

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

FOOTNOTES:

8. **Analytical chemistry** – Pursuant to 06-096 CMR 530(2)(C)(4), analytical chemistry refers to a suite of thirteen (13) chemical tests that consist of: ammonia nitrogen (as N), total aluminum, total arsenic, total cadmium, total chromium, total copper, total cyanide, total hardness, total lead, total nickel, total silver, total zinc and total residual chlorine.

    a. **Surveillance level testing** – This facility qualifies for reduced (once every two years) surveillance level analytical chemistry testing pursuant to 06-096 CMR 530(2)(D)(3)(c). However, annual WET testing for the water flea (based on a reasonable potential to exceed the critical chronic water quality threshold) is required and the permittee is required to analyze the effluent for the thirteen analytical chemistry parameters each time a WET test is performed. Unless and until such time that this permit is modified to reduce WET testing to a frequency of once every two years, annual analytical chemistry testing is required. Therefore, beginning upon permit issuance and lasting through 12 months prior to permit expiration, the permittee shall conduct analytical chemistry testing at a minimum frequency of once per year (to coincide with WET testing), except for those analytical chemistry parameters otherwise regulated in this permit. Surveillance tests shall be conducted in a different calendar quarter than the previous test.

    b. **Screening level testing** – Beginning 12 months prior to and lasting through permit expiration and every five years thereafter, the permittee shall conduct analytical chemistry testing at a minimum frequency of once per calendar quarter for four consecutive calendar quarters.

9. **Priority pollutant testing** – Priority pollutants are those parameters specified at *Effluent Guidelines and Standards*, 06-096 CMR 525(4)(IV) (effective January 12, 2001).

    a. **Screening level testing** – Beginning 12 months prior to permit expiration and lasting through permit expiration and every five years thereafter, the permittee shall conduct screening level priority pollutant testing at a minimum frequency of once per year.

    Surveillance level testing is not required pursuant to 06-096 CMR 530.

    Priority pollutant and analytical chemistry testing shall be conducted on samples collected at the same time as those collected for whole effluent toxicity tests when applicable. Priority pollutant and analytical chemistry testing shall be conducted using methods that permit detection of a pollutant at existing levels in the effluent or that achieve minimum reporting levels of detection as specified by the Department.

SPECIAL CONDITIONS

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

FOOTNOTES:

Test results must be submitted to the Department not later than the next Discharge Monitoring Report (DMR) required by the permit, provided, however, that the permittee may review the toxicity reports for up to 10 business days of their availability before submitting them. The permittee shall evaluate test results being submitted and identify to the Department, possible exceedences of the acute, chronic or human health AWQC as established in *Surface Water Quality Criteria for Toxic Pollutants*, 06-096 CMR 584 (effective October 9, 2005). For the purposes of DMR reporting, enter a "1" for yes, testing done this monitoring period or "NODI-9" monitoring not required this period.

All mercury sampling required to determine compliance with interim limitations established pursuant to *Interim Effluent Limitations and Controls for the Discharge of Mercury*, 06-096 CMR 519 (last amended October 6, 2001), shall be conducted in accordance with USEPA's "clean sampling techniques" found in EPA Method 1669, Sampling Ambient Water For Trace Metals At EPA Water Quality Criteria Levels. All mercury analysis shall be conducted in accordance with EPA Method 1631, Determination of Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Fluorescence Spectrometry.

10. **Spray Irrigation of Boiler Blowdown and Process Waste Waters** – Prior to applying boiler blowdown and process waste waters via Outfall #003A to spray irrigation field SF-1, the permittee shall demonstrate to the Department's satisfaction through ground water monitoring results that the ground water levels of sodium, sulfate and nitrate nitrogen are below the specified action levels for these pollutants. **Spray irrigation of blowdown and process waste waters is authorized only following written Department approval**, and specific approval must be requested for each spray irrigation season.

11. **Monitoring Period for Outfall #003A** – The permittee shall monitor for the specified parameters during the period of May 15 – November 15 of each year. For months when the permittee does not discharge via Outfall #003A during the authorized discharge period, the permittee shall enter "NODI-9" on the monthly DMR.

12. **Composite Samples** – Composite samples shall consist of four grab samples collected two hours apart during an eight-hour period in which wastewater is discharged via Outfall #003A.

13. **Weekly Maximum for Spray Irrigation** – "Weekly" is defined as Sunday through Saturday. A field's daily or weekly application rate is the total gallons sprayed over the applicable period of time divided by the size of the area of the field(s) utilized. Note: 27,152 gallons is equivalent to one acre-inch. The permittee shall measure the flow of waste water to the irrigation area by the use of a flow measuring device that is checked for calibration at least once per calendar year. For Discharge Monitoring Report (DMR) reporting purposes, the permittee shall report the highest weekly and daily application rates for the month in the

SPECIAL CONDITIONS

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

FOOTNOTES:

applicable boxes on the form. Compliance with weekly reporting requirements must be reported for the month in which the calendar week ends. It is noted that SF-1 and SF-2 are the same spray irrigation field. The Department has assigned separate identification numbers to differentiate between the spray application of boiler blowdown and process waste waters (SF-1) and non-contact cooling waters (SF-2).

14. **Ground Water Monitoring Period –** Monitoring wells shall be sampled during the months of **April, August and November** of each year, unless otherwise specified by the Department.

15. **Field Measurements** – Specific conductance (calibrated to 25.0° C), temperature, and pH are considered to be "field" parameters, and are to be measured in the field via instrumentation. The permittee is required to test for these parameters whether waste water was disposed of via the spray-irrigation system or not.

16. **Sodium, Sulfate, and Nitrate-Nitrogen Action Levels for Ground Water Monitoring** – Actions levels for sodium, sulfate and nitrate-nitrogen of 120 mg/L, 250 mg/L, and 10 mg/L, respectively, are in effect through the term of this permit. If ground water monitoring well samples indicate levels above any action level, the permittee shall immediately cease the spray irrigation of boiler blowdown and process waste waters on any areas up-gradient of the monitoring well(s) demonstrating the elevated level(s), until such time that ground water monitoring indicates that levels have fallen below the respective action levels. In addition, within 60 days of the occurrence(s), the permittee shall provide a report to the Department documenting the occurrence(s), addressing the cause(s) of the occurrence(s), and a course of action and implementation schedule for resolving the cause(s). This discharge restriction does not apply to the spray irrigation of non-contact cooling waters (SF-2).

B. NARRATIVE EFFLUENT LIMITATIONS

1. The effluent shall not contain a visible oil sheen, foam or floating solids at any time which would impair the usages designated by the classification of the receiving waters.

2. The effluent shall not contain materials in concentrations or combinations which are hazardous or toxic to aquatic life, or which would impair the usages designated by the classification of the receiving waters.

3. The discharge shall not cause visible discoloration or turbidity in the receiving waters, which would impair the usages designated by the classification of the receiving waters.

4. Notwithstanding specific conditions of this permit the effluent must not lower the quality of any classified body of water below such classification, or lower the existing quality of any body of water if the existing quality is higher than the classification.

SPECIAL CONDITIONS

C. TREATMENT PLANT OPERATOR

The treatment facility must be operated by a person holding a minimum of a **Grade III** certificate (or Registered Maine Professional Engineer) pursuant to *Sewerage Treatment Operators*, 32 M.R.S.A. §§ 4171-4182 and *Regulations for Wastewater Operator Certification*, 06-096 CMR 531 (effective May 8, 2006). All proposed contracts for facility operation by any person must be approved by the Department before the permittee may engage the services of the contract operator.

D. AUTHORIZED DISCHARGES

The permittee is authorized to discharge only: 1) in accordance with the permittee's General Application for Waste Discharge License, accepted for processing on January 4, 2008; 2) in accordance with the terms and conditions of this permit; and 3) via Outfall #001A, #002A, and to the spray irrigation disposal field identified in the Waste Discharge Permit application [boiler blowdown and process waste waters to SF-1 via Outfall #003A following written Department approval for each spray season and non-contact cooling waters to SF-2]. Discharges of wastewater from any other point source are not authorized under this permit, and shall be reported in accordance with Standard Condition B(5), *Bypasses*, of this permit.

E. MONITORING AND REPORTING

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report (DMR) forms provided by the Department **and shall be postmarked by the thirteenth (13th) day of the month or hand-delivered to a Department Regional Office such that the DMR's are received by the Department by the fifteenth (15th) day of the month following the completed reporting period.** A signed copy of the DMR and all other reports required herein shall be submitted, unless otherwise specified, to the Department's facility inspector at:

Department of Environmental Protection
Northern Maine Regional Office
Bureau of Land and Water Quality
Division of Water Quality Management
1235 Skyway Park
Presque Isle, Maine 04769

SPECIAL CONDITIONS

F. NOTIFICATION REQUIREMENT

In accordance with Standard Condition D, the permittee shall notify the Department of the following:

1. Any substantial change in the volume or character of pollutants being introduced into the waste water collection and treatment system by a source introducing pollutants into the system at the time of permit issuance. For the purposes of this section, notice regarding substantial change shall include information on:
   (a) the quality and quantity of waste water introduced to the waste water collection and treatment system; and
   (b) any anticipated impact caused by the change in the quantity or quality of the waste water to be discharged from the treatment system.

G. 06-096 CMR 530(2)(D)(4) STATEMENT FOR REDUCED/WAIVED TOXICS TESTING

On or before December 31st of each year of the effective term of this permit ***[PCS Code 95799]***, the permittee shall provide the Department with statements describing the following:

(a) Changes in the number or types of non-domestic wastes contributed directly or indirectly to the wastewater treatment works that may increase the toxicity of the discharge;

(b) Changes in the operation of the treatment works that may increase the toxicity of the discharge; and

(c) Changes in industrial manufacturing processes contributing wastewater to the treatment works that may increase the toxicity of the discharge.

Further, the Department may require that annual testing be re-instituted if it determines that there have been changes in the character of the discharge or if annual certifications described above are not submitted.

H. SCHEDULE OF COMPLIANCE – INORGANIC ARSENIC

Beginning upon issuance of this permit modification and lasting through a date on which the USEPA approves a test method for inorganic arsenic, the limitations and monitoring requirements for inorganic are not in effect. During this time frame, the permittee is required by Special Condition A, *Effluent Limitations and Monitoring Requirements*, of this permit to conduct 1/Quarter sampling and analysis for total arsenic.

Upon receiving written notification by the Department that a test method for inorganic arsenic has been approved by the USEPA, the limitations and monitoring requirements for inorganic arsenic become effective and enforceable and the permittee is relieved of their obligation to sample and analyze for total arsenic.

SPECIAL CONDITIONS

I. GENERAL OPERATIONAL CONSTRAINTS

1. All waste waters (except non-contact cooling waters) shall receive biological treatment through a properly designed, operated and maintained lagoon system prior to disposal via spray irrigation.
2. The spray irrigation facilities shall be effectively maintained and operated at all times so that there is no discharge to surface waters (resulting from spray irrigation activities), nor any contamination of ground water which will render it unsatisfactory for usage as a public drinking water supply.
3. The surface waste water disposal system shall not cause the lowering of the quality of the ground water, as measured in the ground water monitoring wells specified by this license, below the State Primary and Secondary Drinking Water Standards specified in the Maine State Drinking Water Regulations pursuant to 22 M.R.S.A. § 2601.
4. In the event the ground water monitoring results indicate adverse effects, the permittee may be required to take immediate remedial action(s), which may include but are not limited to, adjustment of the irrigation schedule or application rates, a reduction of the pollutant loading, or ceasing operation of the system until the ground water attains applicable standards.
5. The permittee shall maintain a file on the location of all system components and relevant features. Each component shall be mapped and field located sufficiently to allow adequate inspections and monitoring by both the licensee and the Department.
6. System components including collection pipes, tanks, manholes, pumps, pumping stations, spray disposal fields, and monitoring wells shall be identified and referenced by a unique system identifier in all logs and reports.
7. The permittee shall at all times maintain in good working order and operate at maximum efficiency all waste water collection, treatment and/or control facilities. **Within one hour after start-up of the spray-irrigation system**, the permittee shall inspect the spray-irrigation site or have other means to check the system for leakage in the piping system and determine if individual sprayheads and pump(s) are functioning as designed, and verify that application rates are appropriate for the existing site conditions. The procedures used to determine the system is functioning as designed shall be described in the facility's Operations and Maintenance (O&M) manual. Should significant malfunctions or leaks be detected, the permittee must shut down the malfunctioning/leaking sections of the spray system and make necessary repairs before resuming operation. The permittee shall cease irrigation if runoff is observed outside the designated boundaries of the spray field(s). The permittee shall field calibrate equipment to ensure proper and uniform spray applications when operating. Calibration involves collecting and measuring application rates at different locations within the application area. Spray nozzles must be calibrated annually in order to assure proper spray irrigation rates. A description of the calibration procedures and a log sheet that has been used for recording calibration results shall be included as part of the Operations & Maintenance manual.

SPECIAL CONDITIONS

I. GENERAL OPERATIONAL CONSTRAINTS (cont'd)

8. **The permittee shall maintain a daily log** of all spray irrigation which records the date, weather, rainfall, areas irrigated, volume sprayed (gallons), application rates (daily and weekly), and other relevant observations/comments from daily inspections. The log shall be in accordance with the general format of the *"Monthly Operations Log"* form provided as Attachment D of this permit, or other format approved by the Department. Weekly application rates shall be reported in accordance with the general format of the *"Spray Application Report by Week"* form provided as Attachment E of this permit or other format as approved by the Department. The *Monthly Operations Log and Spray Application Report by Week* for each month shall be submitted to the Department as an attachment to the monthly Discharge Monitoring Reports (DMRs) in a format approved by the Department. Copies will also be maintained on site for Department review.

J. SPRAY IRRIGATION OPERATIONAL CONSTRAINTS, LOGS AND REPORTS

1. Suitable vegetative cover shall be maintained. Waste water (as liquid spray irrigation) shall not be applied to areas without sufficient vegetation or ground cover as to prevent erosion or surface water runoff outside the designated boundaries of the spray fields. The permittee shall have an updated facilities management plan that includes provisions for maintaining the spray irrigation area in optimum condition for the uptake of nutrients and moisture holding capacity.
2. At least 10 inches of separation from the ground surface to the ground water table shall be present prior to spray irrigation.
3. No waste water shall be spray irrigated as liquid following a rainfall accumulation exceeding 1.0 inch within the previous 24-hour period. A rain gauge shall be located on site to monitor daily precipitation. The permittee shall also manage application rates by taking into consideration the forecast for rain events in the 48-hour period in the future.
4. No waste water shall be applied as spray irrigation (liquid) where there is snow present on the surface of the ground or when there is any evidence of frost or frozen ground within the upper 10 inches of the soil profile.
5. No traffic or equipment shall be allowed in the spray-irrigation field area except where installation occurs or where normal operations and maintenance are performed (this shall include forest management operations).
6. Prior to the commencement of spray irrigation for the season, the permittee shall notify the Department's compliance inspector that they have verified that soil conditions are appropriate (absence of frozen ground, soil conditions, moisture, etc.) for spray irrigation.
7. The permittee shall install the equivalent of one ground water level inspection well per spray field to verify that 10 inches of separation from the ground surface to the observed ground water level is present prior to spraying. Depth to ground water shall be reported in accordance with the general format of the *"Depth to Groundwater"* form provided as Attachment F of this permit or other format as approved by the Department.

SPECIAL CONDITIONS

K. VEGETATION MANAGEMENT

1. The permittee shall remove grasses and other vegetation, such as shrubs and trees, if necessary so as not to impair the operation of the spray-irrigation system, ensure uniform distribution of waste water over the desired application area and to optimize nutrient uptake and removal.
2. The vegetative buffer zones along the perimeter of the site shall be maintained to maximize vegetation and forest canopy density in order to minimize off-site drift of spray.

L. GROUND WATER MONITORING WELLS AND WATER QUALITY MONITORING PLAN DETAILS

1. The permittee shall maintain an approved ground water quality monitoring plan prepared by a professional qualified in water chemistry. The plan shall include historical current monitoring data for each monitoring point, represented in tabular and graphical form.

2. All monitoring wells shall be equipped with a cap and lock to limit access and shall be maintained in a secured state at all times. The integrity of the monitoring wells shall also be verified annually in order to insure representative samples of ground water quality.
2. The Department reserves the right to require increasing the depth of and/or relocating any of the ground water monitoring wells if the well is perennially dry or is determined not to be representative of ground water conditions.
3. Ground water samples shall be obtained using low flow sampling techniques.

M. OPERATIONS AND MAINTENANCE (O&M) PLAN

This facility shall have a current written comprehensive Operation & Maintenance (O&M) Plan. The plan shall provide a systematic approach by which the permittee shall at all times, properly 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 this permit.

By December 31 of each year, **or within 90 days of any process changes or minor equipment upgrades,** the permittee shall evaluate and modify the O&M Plan including site plan(s) and schematic(s) for the waste water treatment facility to ensure that it is up-to-date. The O&M Plan shall be kept on-site at all times and made available to Department and EPA personnel upon request.

Within 90 days of completion of new and or substantial upgrades of the waste water treatment facility, the permittee shall submit the updated O&M Plan to their Department inspector for review and comment.

SPECIAL CONDITIONS

N. REOPENING OF PERMIT FOR MODIFICATION

Upon evaluation of the tests results in the Special Conditions of this permitting action, new site specific information, or any other pertinent test results or information obtained during the term of this permit, the Department may, at any time and with notice to the permittee, modify this permit to: (1) include effluent limits necessary to control specific pollutants or whole effluent toxicity where there is a reasonable potential that the effluent may cause water quality criteria to be exceeded; (2) require additional monitoring if results on file are inconclusive; or (3) change monitoring requirements or limitations based on new information.

O. SEVERABILITY

In the event that any provision, or part thereof, of this permit is declared to be unlawful by a reviewing court, the remainder of the permit shall remain in full force and effect, and shall be construed and enforced in all aspects as if such unlawful provision, or part thereof, had been omitted, unless otherwise ordered by the court.

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
AND
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

DATE: **JUNE 16, 2008**

MEPDES PERMIT NUMBER: **#ME0002216**
WASTE DISCHARGE LICENSE: **#W000940-5N-E-R**

NAME AND ADDRESS OF APPLICANT:

TATE & LYLE INGREDIENTS AMERICAS, INC.
2200 EAST ELDORADO STREET
DECATUR, ILLINOIS 62525

COUNTY: **AROOSTOOK**

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

TATE & LYLE INGREDIENTS AMERICAS, INC.
48 MORNINGSTAR ROAD
HOULTON, MAINE 04730

RECEIVING WATER / CLASSIFICATION: **MEDUXNEKEAG RIVER / CLASS B**
GROUND WATERS / CLASS GW-A

COGNIZANT OFFICIAL AND TELEPHONE NUMBER:

MR. RICHARD DICKINSON
(217) 421-2152

MR. ROBB TATUM
(207) 532-9523

1. APPLICATION SUMMARY

a. Application: Tate & Lyle Ingredients Americas, Inc. (Tate & Lyle) has applied to the Department of Environmental Protection (Department) for renewal of Waste Discharge License (WDL) #W000940-5N-D-R / Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME01002216, which was issued on June 26, 2003, and is scheduled to expire on June 26, 2008. The 6/26/03 permit authorized the discharge of: (1) 0.04 million gallons per day (MGD) of boiler blowdown and process waste waters to the Meduxnekeag River, Class B, via Outfall #001; (2) 0.05 MGD of non-contact cooling waters to the Meduxnekeag River, Class B, via Outfall #002; and (3) boiler blowdown and process waste waters to ground water, Class GW-A, via a surface wastewater disposal system (spray irrigation) at a weekly average rate of up to 40,728 gallons per acre per week and a daily maximum rate of up to 20,362 gallons per acre per day. All discharges are located in Houlton, Maine.. Tate & Lyle has applied for authorization to spray irrigate non-contact cooling waters via the spray irrigation system.

On April 10, 2006, the Department amended the 6/29/03 permit by incorporating the whole effluent toxicity (WET), analytical chemistry and priority pollutant testing requirements of *Surface Water Toxics Control Program*, 06-096 CMR 530 (effective October 9, 2005).

2. PERMIT SUMMARY

a. Terms and Conditions **This permitting action is similar to the 6/29/03 permitting action and 4/10/06 permit amendment in that it is:**

For Outfall #001A:

1. Carrying forward the monthly average discharge flow limit of 0.04 MGD and the daily maximum discharge flow reporting requirement;

2. Carrying forward the separate winter season and summer season monthly average and daily maximum concentration and mass limitations for biochemical oxygen demand (BOD_5);

3. Carrying forward the monthly average and daily maximum concentration and mass limitations for and total suspended solids (TSS);

4. Carrying forward the seasonal, water quality-based monthly average concentration and mass limitations and the daily maximum concentration and mass reporting requirements for total phosphorous (total-P);

5. Carrying forward the seasonal river flow monitoring requirements and restriction on discharging when river flow is below 15 cubic feet per second;

6. Carrying forward ambient dissolved oxygen (DO) monitoring requirements and discharge restrictions when DO is below certain thresholds;

7. Carrying forward whole effluent toxicity (WET) and priority pollutant testing requirements consistent with 06-096 CMR 530;

2. PERMIT SUMMARY (cont'd)

8. Carrying forward an annual certification statement requirement as Special Condition G, *Statement for Reduced/Waived Toxics Testing* of this permit (a requirement imposed in the 4/10/06 permit amendment);

9. Carrying forward the minimum monitoring frequency requirements for all monitored parameters;

For Outfall #002A:

10. Carrying forward the monthly average discharge flow limit of 0.05 MGD and the daily maximum discharge flow reporting requirement;

11. Carrying forward the minimum monitoring frequency requirements for all monitored parameters;

For Spray Irrigation Wastewater Outfall #003A:

12. Carrying forward daily maximum monitoring and reporting requirements for discharge flow, BOD_5, total sodium, sulfate, and nitrate- nitrogen, total Kjeldahl nitrogen (TKN), and total ammonia nitrogen;

For Spray Irrigation Field SF-1:

13. Carrying forward the daily maximum spray limitation of 20,362 gallons per acre per day;

For Ground Water Monitoring Wells (MW-1, MW-2, MW-2B, MW-3A, MW-3B, MW-4, MW-5A, MW5B, TW-A, TW-6, AND TW-8):

14. Carrying forward the monitoring and reporting requirements for nitrate- nitrogen, TKN, total ammonia nitrogen, specific conductance, temperature, total sodium, and sulfate;

15. Carrying forward the daily maximum concentration limits ("action levels") for sodium and sulfate; and

16. Carrying forward the minimum monitoring frequency requirements for all monitored parameters.

This permitting action is different from the 6/29/03 permitting action and 4/10/06 permit amendment in that it is:

For Outfall #001A:

1. Establishing a year-round daily maximum temperature limit of 90˚F and minimum monitoring frequency requirement of once per day;

2. Establishing separate summer season (June 1 – September 15) and winter season (September 16 – May 31) dilution factors associated with the discharge based on the stream flow discharge restriction (guaranteed flow);

3. Establishing a critical chronic water quality-based limit of 2.0% for the water flea based on the results of facility testing;

4. Revising the surveillance level analytical chemistry testing requirement from once every two years to once per year to satisfy the testing requirements associated with annual WET testing on the water flea;

5. Utilizing site-specific receiving water hardness criteria for priority pollutant reasonable potential evaluations;

6. Establishing a daily maximum concentration reporting requirement for total arsenic;

7. Establishing monthly average, water quality-based effluent limitations for inorganic arsenic and a schedule of compliance (Special Condition H) for implementation of these limitations;

8. Revising the pH range limitation from 6.0 to 8.5 standard units (SU) to 6.0 to 9.0 SU;

For Outfall #002A:

9. Eliminating the monthly average effluent temperature reporting requirement and revising the year-round daily maximum temperature limit from 75˚F to 90˚F based on revised calculations of allowable thermal loadings;

10. Revising the pH range limitation from 6.0 to 8.5 SU to 6.0 to 9.0 SU;

For Spray Irrigation Wastewater Outfall #003A:

11. Eliminating the daily maximum monitoring and reporting requirements for total-P, total, chemical oxygen demand (COD), and specific conductance;

12. Revising the minimum monitoring frequency requirement for discharge flow from once per month to daily when discharging;

13. Revising the pH range limitation from 6.0 to 8.5 SU to 6.0 to 9.0 SU;

2. PERMIT SUMMARY (cont'd)

14. Eliminating the requirement to submit an annual report summarizing the overall performance of the spray system [previous Special Condition F(d)(2)];

15. Establishing a condition (Special Condition A, Footnote # 10) requiring the permittee to obtain written Department approval prior to commencing spray irrigation (*i.e.*, discharge via Outfall #003A) of boiler blowdown and process waste waters to SF-1;

For Spray Irrigation Field SF-1:

16. Correcting the weekly spray irrigation application rate from an average rate to a maximum rate of 40,728 gallons per acre per week;

17. Establishing a monthly total gallons applied reporting requirement;

For Ground Water Monitoring Wells (MW-1, MW-2, MW-2B, MW-3A, MW-3B, MW-4, MW-5A, MW5B, TW-A, TW-6, AND TW-8):

18. Eliminating the daily maximum concentration reporting requirements for COD, and total-P;

19. Revising the pH range limitation from 6.0 to 8.5 SU to 6.0 to 9.0 SU; and

For Soil Sampling:

20. Eliminating the soils monitoring requirements established in the previous permitting action as Special Conditions A.10 and D.c.3; and;

For Spray Irrigation Field SF-2 (new):

21. Authorizing the application of non-contact cooling water to the spray irrigation field identified as SF-1.

b. History: This section provides a summary of recent, relevant licensing/permitting actions that have been completed for Tate & Lyle's Houlton facility.

September 19, 2000 – The U.S. Environmental Protection Agency (USEPA) issued National Pollutant Discharge Elimination System (NPDES) permit #ME0002216 for the Staley facility, superseding an earlier NPDES permit issued on August 12, 1996.

November 17, 2000 – Pursuant to *Certain deposits and discharges prohibited*, 38 M.R.S.A. § 420 and *Waste discharge licenses*, 38 M.R.S.A. § 413 and *Interim Effluent Limitations and Controls for the Discharge of Mercury*, 06-096 CMR 519 (last amended October 6, 2001), the Department issued a *Notice of Interim Limits for the Discharge of Mercury* to the permittee thereby administratively modifying WDL #W000940-5N-D-R by establishing interim monthly average and daily maximum effluent concentration limits of 11.8 parts per trillion (ppt) and 17.6 ppt, respectively, and a minimum monitoring frequency requirement of two (2) tests per

2. PERMIT SUMMARY (cont'd)

year for mercury. It is noted the limitations have not been incorporated into Special Condition A, *Effluent Limitations And Monitoring Requirements*, of this permit as limitations and monitoring frequencies are regulated separately through 38 M.R.S.A. § 413 and 06-096 CMR 519. However, the interim limitations remain in effect and enforceable and any modifications to the limits and or monitoring requirements will be formalized outside of this permitting document.

January 12, 2001 – The Department received authorization from the USEPA to administer the NPDES permit program in Maine, excluding areas of special interest to Maine Indian Tribes. From that point forward, the program has been referred to as the Maine Pollutant Discharge Elimination System (MEPDES) program, and MEPDES permit #ME0002216 has been utilized as the primary reference number for Tate & Lyle's Houlton facility.

June 26, 2003 – The Department issued combined MEPDES permit #ME0002216 / WDL #W000940-5N-D-R to A.E. Staley Manufacturing Company for discharges of process wastewater and non-contact cooling waters to both the Meduxnekeag River and to ground water via spray irrigation. The 6/29/03 permit superseded WDL #W000940-5N-D-R issued on November 17, 1995, and WDL #W000940-44-A-N and #W003230-44-A-N, both of which expired on August 1, 1985.

April 10, 2006 – The Department amended the 6/29/03 permit to incorporate testing requirements of 06-096 CMR 530.

December 26, 2007 – Tate & Lyle submitted a timely and complete General Application to the Department for renewal of the 6/26/03 MEPDES permit. The application was accepted for processing on January 4, 2008, and was assigned WDL #W000940-5N-E-R / MEPDES #ME0002216.

c. Source Description: Tate & Lyle, formerly doing business as A.E. Staley Manufacturing Company, is located in Houlton, Maine. A map created by the Department showing the location of the facility is included as Attachment A of this fact sheet. The facility utilizes approximately 94,000 GPD of municipal water from the Houlton Water Company for use in its manufacturing processes. The facility receives tapioca, potato, and corn starches, which it chemically modifies, dewaters, and redries. Wastewater is generated during Tate & Lyle's manufacturing process through starch washing, clean-outs at the end of batch processing, and through general process losses through mechanical seal leakage.

Sanitary wastewater is disposed of through a subsurface disposal system designed and approved in accordance with the Maine Department of Health and Human Services' rules.

2. PERMIT SUMMARY (cont'd)

d. Wastewater Treatment: Based on a water balance diagram provided by Tate & Lyle and included as Attachment B of this fact sheet, the facility generates approximately 33,000 GPD of process waste waters and blowdown. Treatment units for this waste stream consist of a 40,000-gallon capacity primary clarifier, a sludge dewatering centrifuge, a 75,000-gallon capacity #1 equalization/pre-aeration tank, a 218,000-gallon capacity #2 equalization/pre-aeration tank, a 335,000-gallon capacity diffused air activated sludge basin, a 38,000-gallon traveling bridge suction clarifier, a 250,000-gallon capacity sludge storage tank and another 200,000-gallon capacity tank held in reserve for sludge storage or other uses, and a new enhanced dissolved air flotation unit. Tate & Lyle have constructed a new reed bed system consisting of three 5,500 square foot reed beds for sludge treatment.

Final effluent is conveyed for discharge via Outfall #001A to the Meduxnekeag River. Outfall #001A is a 4-inch HDPE pipe that extends into the river approximately 10 feet. The pipe contains eight alternating ¾" diameter holes to disperse effluent with the receiving water. During the period of June 1 through September 15, discharges via Outfall #001A are prohibited if the river flow is less than 15 cfs at the Tate & Lyle outfall or if the dissolved oxygen (DO) concentration is less than 7 ppm at Cary's Mills Bridge or 7.3 ppm above the Houlton publicly owned wastewater treatment works (POTW). During these conditions, wastewater that would be discharged through Outfall #001A may be disposed of through spray irrigation (administrative Outfall #003A, SF-1) during the period of May 15 through November 1 provided all other terms and conditions established for spray irrigation are met.

Tate & Lyle also generates approximately 39,000 GPD of non-contact cooling water in its processes, which is discharged to the Meduxnekeag River via Outfall #002A. Outfall #002A is an 8-inch diameter pipe that terminates approximately 15 feet above the surface of the river (bank discharge). The non-contact cooling water receives no treatment, as it is uncontaminated except for heat. This permitting action authorizes the permittee to spray irrigate non-contact cooling waters to the spray irrigation field (the same spray irrigation fields as SF-1, disposal of non-contact cooling waters via spray irrigation has been assigned a separate identifier of SF-2 for data management purposes).

e. Spray Area Site Conditions: In December 1994, Certified Soil Scientist William K. Hersey performed a Medium High Intensity Soil Survey on the portion of gently sloping pastureland used for spray irrigation on the 100-acre farm site owned by Tate & Lyle. The soils on the irrigation site consist of well-drained, Caribou gravelly, sandy loam and moderately well-drained, Conant silt loam soils. Both are till derived and moderately permeable. The Caribou soil is deep, with a seasonal high water table of greater than 5 feet. The Lawrence Gough site consists of gently sloping pasture land containing well drained Caribou soils and moderately well drained Conant soils.

Based on a November 22, 2002 report by Wright-Pierce on 2002 monitoring well and soil sampling results, Tate & Lyle's past spray irrigation practices have resulted in creation of sodic soil conditions and a breakdown of soil structure. Further, Tate & Lyle's spray practices have caused sodium and sulfate ground water levels on the existing spray site to exceed action levels established in this permit. .

2. PERMIT SUMMARY (cont'd)

f. Surface Wastewater Disposal System: Tate & Lyle utilizes a 1,200-foot retractable spray irrigation reel. The moveable reel allows wastewater application to be directed to areas of the field with optimal spray conditions. This equipment sprays effluent in a 180 degree arc on a 90-foot radius while retracting. The spray irrigation area is approximately 57 acres in size.

g. Ground Water Monitoring Wells: Ground water monitoring is accomplished through the following wells: MW-1, MW-2A, MW-2B, MW-3A, MW-3B, MW-4, MW-5A, MW-5B, TW-1, TW-5, TW-6, and TW-8. A map showing the location of the monitoring wells, prepared by Hillier & Associates, Inc. and dated June 2002, is included as Attachment C of this fact sheet.

3. CONDITIONS OF PERMITS

Conditions of licenses, 38 M.R.S.A. § 414-A, requires that the effluent limitations prescribed for discharges, including, but not limited to, effluent toxicity, require application of best practicable treatment (BPT), 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., § 420 and 06-096 CMR 530 require the regulation of toxic substances not to exceed levels set forth in *Surface Water Quality Criteria for Toxic Pollutants*, 06-096 CMR 584 (effective October 9, 2005), and that ensure safe levels for the discharge of toxic pollutants such that existing and designated uses of surface waters are maintained and protected.

4. RECEIVING WATER QUALITY STANDARDS

Classification of major river basins, 38 M.R.S.A. § 467(15)(E)(1)(a) classifies the Meduxnekeag River, main stem, as Class B waters. *Standards for classification of fresh surface waters*, 38 M.R.S.A. § 465(3) describes the standards for Class B waters.

Classification of ground water, 38 M.R.S.A. § 470 states *"All ground water shall be classified as not less than Class GW-A, except as otherwise provided in this section." Standards of classification of ground* water, 38 M.R.S.A. § 465-C(1) contains the standards for the classification of ground waters. *"Class GW-A shall be the highest classification and shall be of such quality that it can be used for public drinking water supplies. These waters shall be free of radioactive matter or any matter that imparts color, turbidity, taste or odor which would impair usages of these waters, other than that occurring from natural phenomena."*

5. RECEIVING WATER QUALITY CONDITIONS

The State of Maine 2006 Integrated Water Quality Monitoring and Assessment Report, (Report) prepared by the Department pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act, lists a 243.63-mile reach of the Meduxnekeag River as *"Category 2: Rivers and Streams Attaining Some Designated Uses - Insufficient Information for Other Uses"* and of that 243.63 miles, it lists an eleven (11)-mile reach as *"Category 4-A: Rivers and Streams with Impaired Use, TMDL Completed."* On March 8, 2001, the USEPA approved a Total Maximum Daily Load (TMDL) analysis for the Meduxnekeag River. The TMDL classifies a 6-mile stretch of river below Houlton as not attaining Class B standards for dissolved oxygen. The TMDL states,

5. RECEIVING WATER QUALITY CONDITIONS (cont'd)

"The survey data as well as model runs indicate that the Meduxnekeag River is not attaining standards for dissolved oxygen (DO) concentration below the Houlton outfall. Occasional, marginal non-attainment of DO standards was also measured above the Houlton outfall. The major factor in this non-attainment is the diurnal DO effect from the respiration of attached plant growth as a result of phosphorous enrichment." The executive summary of the TMDL report recommends maintenance of the *"…current A.E. Staley permit limits and conditions, although this discharge is located above the listed river segment."* This permitting action is carrying forward the phosphorous, BOD_5, TSS and discharge restrictions consistent with the recommendations of the TMDL.

The Report lists all of Maine's fresh waters as, *"Category 5-C: Waters Impaired by Atmospheric Deposition of Mercury. Regional or National TMDL May Be Required."* Impairment in this context refers to a statewide fish consumption advisory due to elevated levels of mercury in some fish tissues. The Report states, "*Maine has a fish consumption advisory for fish taken from all freshwaters due to mercury. Many waters, and many fish from any given water, do not exceed the action level for mercury. However, because it is impossible for someone consuming a fish to know whether the mercury level exceeds the action level, the Maine Department of Human Services decided to establish a statewide advisory for all freshwater fish that recommends limits on consumption. Maine has already instituted statewide programs for removal and reduction of mercury sources. The State of Maine is participating in the development of regional scale TMDLs for the control of mercury."* Pursuant to 38 M.R.S.A. § 420(1-B)(B), *"a facility is not in violation of the ambient criteria for mercury if the facility is in compliance with an interim discharge limit established by the Department pursuant to section 413 subsection 11."* The Department has established interim monthly average and daily maximum mercury concentration limits and reporting requirements for this facility pursuant to 06-096 CMR 519.

Ground water monitoring data from Tate & Lyle's spray irrigation site collected in May, August, and December 2002 indicated sodium levels in ground water of up to 1,346 ppm, or 11.2 times the 120 ppm sodium action level of 120 mg/L established in Special Condition A of the permit. Ground water monitoring in several areas of the site showed a continuation of readings above action level and a further increase in sodium levels during 2002. During the same sampling events, results indicated sulfate levels in groundwater of up to 2,716 ppm, or 10.8 times the 250 ppm sulfate action level established in Special Condition A of the permit. Ground water monitoring in several areas of the site showed a continuation of readings above action level and a further increase in sulfate levels during 2002.

During the period of August 2003 through August 2007, ground water levels of sodium have exceeded the action level threshold value of 120 mg/L in one or more samples in all monitoring wells except MW1, MW4, and MW5A. Ground water levels of sulfate have exceeded the action level threshold value of 250 mg/L in all monitoring wells except MW4 and MW5A. Ground water levels of nitrate-nitrogen have exceeded the numeric limit of 10 mg/L in monitoring wells MW1, MW2B, and MW3A. Monitoring during the aforementioned period does not indicate a definitive upward or downward trend in ground water concentration of these pollutants of concern. This permitting action is carrying forward a prohibition on spray irrigation of boiler blowdown and process waste waters when the action levels specified above for sodium, sulfate, and

5. RECEIVING WATER QUALITY CONDITIONS (cont'd)

nitrate-nitrogen are exceeded and is requiring specific written Department approval to commence spray irrigation of boiler blowdown and process wastewaters each spray season. Additionally, this permitting action is authorizing the permittee's proposal to spray irrigate using non-contact cooling waters in an effort to reduce ground water salt concentrations. The permittee asserts that spray irrigating unpolluted non-contact cooling water (obtained from the Medunexkeag River) on the spray irrigation field will assist in flushing accumulated salts (sodium and sulfate specifically) out of the soil medium and into the underlying ground water. Ground water below the spray irrigation field discharges to the near-by Medunexkeag River and is not anticipated to have an adverse impact on surface water quality. Spray irrigating non-contact cooling water is also anticipated to allow the permittee to maintain a productive crop cover on the field, further assisting in the uptake of nutrients from the soil.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES

a. Applicability of Effluent Guideline Limitations (EGLs): Tate & Lyle processes tapioca, potato, and corn starches at its Houlton facility to create a variety of processed products. The Department is making a best professional judgment determination to consider the best practicable treatment (BPT)-based effluent guidelines for the *Canned and Preserved Fruits and Vegetables Processing Point Source Category, Dehydrated Potato Products Subcategory* established at 40 CFR Part 407 Subpart E for this facility. 40 CFR Part 407.52 establishes BPT-based effluent guidelines for biochemical oxygen demand (BOD_5), total suspended solids (TSS) and pH.

b. Flow: The previous permitting action established, and this permitting action is carrying forward, monthly average discharge flow limitations of 0.04 MGD for Outfall #001 and 0.05 MGD for Outfall #002. These flows are considered representative of the design flows for the facility. Discharge from Outfall #001A during the period of June 1 through September 15 is limited to times when river flow is greater than 15 cfs at the Tate & Lyle outfall and when the ambient dissolved oxygen concentration is greater than 7 ppm at Cary's Mills Bridge and 7.3 ppm above the Houlton POTW.

A summary of the discharge flow data as reported on the Discharge Monitoring Reports (DMRs) submitted to the Department for the period January 2005 through February 2008 is as follows:

Outfall #	Discharge Flow	Minimum	Maximum	Arithmetic Mean	# DMRs
#001A	Monthly Average	0.01 MGD	0.03 MGD	0.02 MGD	36
	Daily Maximum	0.02 MGD	0.08 MGD	0.04 MGD	36
#002A	Monthly Average	0.01 MGD	0.04 MGD	0.02 MGD	39
	Daily Maximum	0.03 MGD	0.11 MGD	0.04 MGD	39

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

c. Dilution Factors: This permitting action is carrying forward a discharge prohibition for Outfall #001A during the period of June 1 through September 15 when river flow is less than 15 cfs. 06-096 CMR 530(4)(A) states, in pertinent part,

> *With a non-continuous discharge (such as a lagoon which can be impounded or a continuous discharge prohibited from discharging under specified conditions), the dilution factors can be based on a guaranteed minimum stream flow or tidal stage below which a discharge will not occur. The discharger must submit a request for a license modification that reflects a different minimum stream flow. If the Department approves an alternate stream flow, the license must include a monitoring and reporting requirement, and must include an accurate means of measuring stream flow that is calibrated annually.*

The permittee has installed a flow monitoring gauge in the river to provide an accurate means of measuring stream flow. Therefore, this permitting action is establishing separate summer season (June 1 – September 15) and winter season (September 16 – May 31) dilution factors associated with the discharge via Outfall #001A. Dilution factors associated with the permitted discharge flow of 0.04 MGD via Outfall #001A were derived in accordance with 06-096 CMR 530(4)(A) as follows:

Summer Season (June 1 - September 15)

Acute /Chronic/Harmonic Mean: = 15 cfs $\Rightarrow \frac{(15 \text{ cfs})(0.6464) + 0.04 \text{ MGD}}{0.04 \text{ MGD}} = 243.4{:}1$

Winter Season (September 16 – May 31)

Acute: 1Q10 = 2.6 cfs $\Rightarrow \frac{(2.6 \text{ cfs})(0.6464) + 0.04 \text{ MGD}}{0.04 \text{ MGD}} = 43.0{:}1$

Chronic: 7Q10 = 3.1 cfs $\Rightarrow \frac{(3.1 \text{ cfs})(0.6464) + 0.04 \text{ MGD}}{0.04 \text{ MGD}} = 51.0{:}1$

Harmonic Mean[1] = 9.2 cfs $\Rightarrow \frac{(9.2 \text{ cfs})(0.6464) + 0.04 \text{ MGD}}{0.04 \text{ MGD}} = 149.7{:}1$

[1] The harmonic mean dilution factor is approximated by multiplying the chronic dilution factor by three (3). This multiplying factor is based on guidelines for estimation of human health dilution presented in the U.S. EPA publication, "*Technical Support Document for Water Quality-Based Toxics Control"* (Office of Water; EPA/505/2-90-001, page 88), and represents an estimation of harmonic mean flow on which human health dilutions are based in a riverine 7Q10 flow situation.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

06-096 CMR 530(4)(B)(1) states,

> *Analyses using numerical acute criteria for aquatic life must be based on 1/4 of the 1Q10 stream design flow to prevent substantial acute toxicity within any mixing zone and to ensure a zone of passage of at least 3/4 of the cross-sectional area of any stream as required by Chapter 581. Where it can be demonstrated that a discharge achieves rapid and complete mixing with the receiving water by way of an efficient diffuser or other effective method, analyses may use a greater proportion of the stream design flow, up to and including all of it, as long as the required zone of passage is maintained.*

The Department's Division of Environmental Assessment (DEA) has determined that mixing of the effluent with the receiving water is complete and rapid and recommends that acute evaluations be based on the full 1Q10 value rather than the default stream design flow of ¼ of the 1Q10 in accordance with 06-096 CMR 530(4)(B)(1). Water quality-based compliance evaluations performed for discharges occurring during the summer season shall utilize the dilution factor of 243.4:1; compliance evaluations performed for discharges occurring during the winter season shall utilize the acute, chronic and harmonic mean dilution factors calculated above.

d. Biochemical Oxygen Demand (BOD_5): 40 CFR Part 407.52 establishes monthly average and daily maximum BPT-based effluent guideline limitations for BOD_5 of 1.20 pounds per 1,000 pounds of final product and 2.40 pounds per 1,000 pounds of final product, respectively. The previous permitting action established seasonal effluent limitations for BOD_5 for Outfall #001A as follows:

BOD_5	**Monthly Average (lbs./day)**	**Daily Maximum (lbs./day)**	**Monthly Average (mg/L)**	**Daily Maximum (mg/L)**
Summer Season June 1 – Sept 30	54 lbs./day	67 lbs./day	243 mg/L	300 mg/L
Winter Season October 1 – May 31	75 lbs./day	133 lbs./day	338 mg/L	599 mg/L

The winter season limits have been carried forward in Department Orders from the 1990 NPDES permit and are technology-based limits that were developed through the facility's past demonstrated performance (best professional judgment of best practicable treatment). The summer season limits are water quality-based and were developed based on river modeling conducted by the Department.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

The Department has determined that the winter season monthly average and daily maximum effluent limits for BOD_5 established in the previous permitting action are more stringent than technology-based limits calculated using the effluent guidelines at 40 CFR Part 407.52 and the facility's long-term average production rate. The Department's DEA recommends carrying forward the summer season BOD_5 limits established in the previous permitting action based on continued water quality concerns in the receiving water. Therefore, this permitting action is carrying forward both the winter season and summer season concentration and mass limits for BOD_5. It is noted that the concentration limits were derived by back-calculating from the mass limits and applying a 1.5X multiplier to account for production-based effluent variability.

Example: $\frac{54 \text{ lbs./day}}{(0.04 \text{ MGD})(8.34 \text{ lbs./gallon})} \times 1.5 = 243 \text{ mg/L}$

A summary of the effluent BOD_5 data as reported on the DMRs submitted to the Department for the period January 2005 through February 2008 is as follows:

BOD_5	Minimum	Maximum	Arithmetic Mean	# DMRs
Summer Season Monthly Average	0.81 lbs./day	9.0 lbs./day	2 lbs./day	11
	3.1 mg/L	58 mg/L	13 mg/L	11
Summer Season Daily Maximum	1.5 lbs./day	28 lbs./day	6 lbs./day	11
	5.7 mg/L	204 mg/L	33 mg/L	11
Winter Season Monthly Average	2 lbs./day	57.09 lbs./day	21 lbs./day	26
	7 mg/L	379 mg/L	142 mg/L	26
Winter Season Daily Maximum	3.2 lbs./day	127 lbs./day	45 lbs./day	26
	14 mg/L	570 mg/L	252 mg/L	26

This permitting action is carrying forward the minimum monitoring frequency requirement of twice per week for BOD_5 based on Department best professional judgment.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

e. Total Suspended Solids (TSS): 40 CFR Part 407.52 establishes monthly average and daily maximum BPT-based effluent guideline limitations for TSS of 1.40 pounds per 1,000 pounds of final product and 2.80 pounds per 1,000 pounds of final product, respectively. The previous permitting action established effluent limitations for TSS for Outfall #001A as follows:

TSS	Monthly Average (lbs./day)	Daily Maximum (lbs./day)	Monthly Average (mg/L)	Daily Maximum (mg/L)
	63 lbs./day	126 lbs./day	284 mg/L	567 mg/L

The TSS limits have been carried forward in Department Orders from the 1990 NPDES permit and are technology-based limits that were developed through the facility's past demonstrated performance (best professional judgment of best practicable treatment).

The Department has determined that the effluent limits for TSS established in the previous permitting action are more stringent than technology-based limits calculated using the effluent guidelines at 40 CFR Part 407.52 and the facility's long-term average production rate. The Department's DEA has not recommended water quality-based limits for TSS. Therefore, this permitting action is carrying forward the concentration and mass limits for TSS. It is noted that the concentration limits were derived by back-calculating from the mass limits and applying a 1.5X multiplier to account for production-based effluent variability.

Example: $\frac{63 \text{ lbs./day}}{(0.04 \text{ MGD})(8.34 \text{ lbs./gallon})} \times 1.5 = 284 \text{ mg/L}$

A summary of the effluent TSS data as reported on the DMRs submitted to the Department for the period January 2005 through February 2008 is as follows:

TSS	Minimum	Maximum	Arithmetic Mean	# DMRs
Monthly Average	2 lbs./day	55 lbs./day	22 lbs./day	37
	22 mg/L	376 mg/L	133 mg/L	37
Daily Maximum	7 lbs./day	114.9 lbs./day	44 lbs./day	37
	3 mg/L	650 mg/L	250 mg/L	37

This permitting action is carrying forward the minimum monitoring frequency requirement of twice per week for TSS based on Department best professional judgment.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

f. Total Phosphorous (total-P): The previous permitting action established, and this permitting action is carrying forward, seasonal (June 1 – September 15) water quality-based monthly average concentration and mass limits of 0.5 mg/L and 0.17 lbs./day, respectively, and daily maximum reporting requirements for total-P. (It is noted that these limits became effective three years following issuance of the 6/26/03 permit. Prior to 6/26/06, a monthly average mass limit of 1.14 lbs./day was in effect.) These limitations are based on recommendations by the Department's Division of Environmental Assessment and the September 2000 Meduxnekeag River TMDL. Discharges via Outfall #001A that are in compliance with the total-P and other effluent limitations established in this permitting action will not cause or contribute to non-attainment of the dissolved oxygen criteria for Class B waters.

A summary of the effluent total-P data as reported on the DMRs submitted to the Department for the period June 2006 through September 2007 (applicable summer period only following effective date of new limits) is as follows:

Total-P	Minimum	Maximum	Arithmetic Mean	# DMRs
Monthly Average	0.04 lbs./day	0.12 lbs./day	0.07 lbs./day	7
	0.24 mg/L	0.47 mg/L	0.34 mg/L	7
Daily Maximum	0.058 lbs./day	0.182 lbs./day	0.12 lbs./day	7
	0.4 mg/L	0.61 mg/L	0.51 mg/L	7

This permitting action is carrying forward the minimum monitoring frequency requirement of twice per week for total-P based on Department best professional judgment.

g. River Flow: The previous permitting action prohibited discharge from Outfall #001A during the period from June 1 through September 15 if the Meduxnekeag River flow was less than 30 cubic feet per second (cfs) with a three-year schedule of compliance that further restricted the discharge when the river flow was below 15 cfs. The Department's DEA has determined that discharges in compliance with the numeric limitations established in Special condition A of the permit for Outfall #001A would not cause or contribute to non-attainment of dissolved oxygen standards for the Class B river when river flows exceed 15 cfs. The permittee shall submit a monthly average value, along with a monthly maximum and minimum value on the Discharge Monitoring Report, expressed as cfs. Since issuance of the 6/26/03 permit, the permittee has installed a river flow gauge in the immediate area of Outfall #001A which may be utilized to monitor river flows. The gauge shall be calibrated at least once annually and calibration records shall be retained for inspection for a period of at least 3 years.

h. Ambient Dissolved Oxygen Monitoring and Discharge Prohibition: The previous permitting action established, and this permitting action is carrying forward, a prohibition on discharges via Outfall #001A during the period of June 1 through September 15 if the Meduxnekeag River dissolved oxygen (DO) concentration is less than 7 parts per million (ppm) at a DO monitoring location described as the Cary's Mills Bridge upriver of the confluence of the main stem of the Meduxnekeag River and its South Branch or less than 7.3 ppm at a DO monitoring site located immediately upriver of the Houlton Water Company's waste water treatment facility (Houlton

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

POTW) discharge. This provision was also included in the 2001 TMDL analysis. The permittee shall monitor (at the Cary's Mills Bridge site and Houlton POTW site) and record in-stream DO concentrations once per day during the period of June 1 through September 15 when Tate & Lyle discharges or intends to discharge via Outfall #001A. Dissolved oxygen shall be monitored within two hours of sunrise.

i. pH: The previous permitting action established a pH range limitation of 6.0 - 8.5 standard units (SU) for Outfall #001A and Outfall #002A. This permitting action is revising the pH range limitation to 6.0 – 9.0 SU, which is considered best practicable treatment (BPT) and is consistent with the effluent guidelines established at 40 CFR Part 407.52. This permitting action is carrying forward the minimum monitoring frequency requirement of once per day for pH for both outfalls.

j. Temperature: The previous permitting action established a year-round daily maximum effluent temperature limit of 75 degrees Fahrenheit (°F) for Outfall #002A to ensure that the discharge complied with the requirements of *Regulations Relating to Temperature*, 06-096 CMR 582 (last amended February 18, 1989). 06-096 CMR 582 states that no discharge of pollutants shall cause the ambient temperature of any freshwater body, as measured outside a mixing zone, to be raised more than 5 degrees Fahrenheit. The rule also limits a discharger to an in-stream temperature increase (ΔT) of 0.5° F above the ambient receiving water temperature when the weekly average temperature of the receiving water is greater than or equal to 66° F or when the daily maximum temperature is greater than or equal to 73° F. The temperature thresholds are based on USEPA water quality criterion for the protection of brook trout and Atlantic salmon. The weekly average temperature of 66° F was derived to protect for normal growth of the brook trout and the daily maximum threshold temperature of 73° F protects for the survival of juveniles and adult Atlantic salmon during the summer months. As a point of clarification, the Department interprets the term "weekly average temperature" to mean a seven (7) day rolling average. To promote consistency, the Department also interprets the ΔT of 0.5° F as a weekly rolling average criterion when the receiving water temperature is $\geq$66° F and <73° F. When the receiving water temperature is $\geq$73°F, compliance with the ΔT of 0.5° F is evaluated on a daily basis.

Classification of Maine waters, 38 M.R.S.A. § 464 (4)(D), states that the assimilative capacity of a receiving water shall be calculated utilizing a seven-day low event with a recurrence interval of ten years that is often referred to as the 7Q10. The Department has determined that the 7Q10 flow of the Meduxnekeag River is 3.11 cfs (2.0 MGD) and is applicable during the winter season of September 16 - May 31 when the discharge via Outfall #001A is not river flow restricted.

During the summer season of June 1 – September 15, **three discharge scenarios** are possible:

1) discharge via Outfall #001A only when river flow is $\geq$15 cfs;
2) discharge via Outfall #002 only in which case the 7Q10 flow of 3.11 cfs is applicable; and
3) discharge via Outfall #001A and #002A when river flow is $\geq$15 cfs.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

The assimilative capacity of the Meduxnekeag River (thermal load that would cause the stream to increase by 0.5°F) at the three discharge scenarios described above are as follows:

Scenario #1 - Outfall #001A only when river flow is ≥15 cfs

$$(15 \text{ cfs})(0.6464)(0.5°F)(8.34 \text{ lbs./gallon})(10^6 \text{ gallons}) = 4.0 \times 10^7 \text{ BTU/day}$$

The maximum effluent temperature (XºF) that at the full permitted flow rate of 50,000 GPD for Outfall #001A will, by itself, comply with the weekly rolling average limit of 0.5°F (when the receiving water is ≥66°F and <73°F) and not exceed the assimilative capacity of the Meduxnekeag River (4.0×10^7 BTU/day) may be calculated as follows:

$$(50{,}000 \text{ GPD})(X°F - 66°F)(8.34 \text{ lbs/gal}) = 4.0 \times 10^7 \text{ BTU/day}$$

$$\frac{4.0 \times 10^7 \text{ BTU/day}}{(50{,}000 \text{ GPD})(8.34 \text{ lbs./gal})}$$

$$= 96°F$$

$$X = 66°F + 96°F$$

Maximum Effluent Temperature, XºF, = 162°F

When the receiving water is >73°F, the temperature difference of 0.5°F is a daily maximum limit and the maximum allowable effluent temperature for Outfall #001A is 73ºF + 96°F = 169°F.

Scenario #2 - Outfall #002A only when the 7Q10 flow of 3.11 cfs is applicable

$$(3.11 \text{ cfs})(0.6464)(0.5°F)(8.34 \text{ lbs./gallon})(10^6 \text{ gallons}) = 8.4 \times 10^6 \text{ BTU/day}$$

$$\frac{8.4 \times 10^6 \text{ BTU/day}}{(40{,}000 \text{ GPD})(8.34 \text{ lbs./gal})}$$

$$= 25°F$$

$$X = 66°F + 25°F$$

Maximum Effluent Temperature, XºF, = 91°F

When the receiving water is >73°F, the temperature difference of 0.5°F is a daily maximum limit and the maximum allowable effluent temperature for Outfall #002A is 73ºF + 25°F = 98°F.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

Scenario #3 – Both Outfall #001A and #002A when river flow is ≥15 cfs

$$(15 \text{ cfs})(0.6464)(0.5°F)(8.34 \text{ lbs./gallon})(10^6 \text{ gallons}) = 4.0 \times 10^7 \text{ BTU/day}$$

The maximum effluent temperature (XºF) that at the combined full permitted flow rate of 90,000 gallons per day (50,000 GPD from Outfall #001A + 40,000 GPD from Outfall #002A) will, by itself, comply with the weekly rolling average limit of 0.5°F (when the receiving water is ≥66°F and <73°F) and not exceed the assimilative capacity of the Meduxnekeag River (4.0×10^7 BTU/day) may be calculated as follows:

$$\frac{4.0 \times 10^7 \text{ BTU/day}}{(90{,}000 \text{ GPD})(8.34 \text{ lbs./gal})}$$

$$= 54°F$$

$$X = 66ºF + 54°F$$

Maximum Effluent Temperature, XºF, = 120°F

When the receiving water is >73°F, the temperature difference of 0.5°F is a daily maximum limit and the maximum allowable effluent temperature for both Outfall #001A and #002A is 73ºF + 54°F = 127°F.

During the winter season of September 16 – May 31 when the receiving water temperature is less than 66ºF, the ambient temperature cannot be raised by more than 5°F. Based on the 7Q10 flow of the Meduxnekeag River and an assumed receiving water temperature of 30°F during the winter months, the thermal load that would cause the stream to increase by 5°F may be calculated as follows:

$$(3.11 \text{ cfs})(0.6464)(5°F)(8.34 \text{ lbs./gallon})(10^6 \text{ gallons}) = 8.4 \times 10^7 \text{ BTU/day}$$

$$\frac{8.4 \times 10^7 \text{ BTU/day}}{(90{,}000 \text{ GPD})(8.34 \text{ lbs./gal})}$$

$$= 112°F$$

Maximum Effluent Temperature = Receiving Water Temperature + Calculated Threshold

30ºF + 112 ºF, = 142°F

Thus, of the winter season calculated thresholds and three possible discharge scenarios during the summer season and the maximum effluent temperature threshold of 91°F is the most stringent water quality-driven limitation. The permittee has indicated a maximum effluent temperature of 81°F for Outfall #001A (on USEPA Form 2C) and the maximum temperature reported for Outfall #002A since January 2003 was 80.6°F. In consideration of the anticipated and actual effluent temperatures for Outfall #001A and #002A, the Department is making a best professional judgment determination to establish a year-round daily maximum effluent temperature limit of 90°F for both Outfall #001A and #002A. This action will ensure that under all discharge conditions, the discharge will not cause or contribute to violations of the temperature criteria established by 06-096 CMR 582.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

This permitting action is establishing minimum monitoring frequency requirements once per day for temperature for both outfalls, which is consistent with the monitoring requirements established in other MEPDES permits regulating thermal discharges.

k. Whole Effluent Toxicity (WET), Priority Pollutant, and Analytical Chemistry Testing: 38 M.R.S.A. § 414-A and 38 M.R.S.A. § 420 prohibit the discharge of effluents containing substances in amounts that would cause the surface waters of the State to contain toxic substances above levels set forth in Federal Water Quality Criteria as established by the USEPA. 06-096 CMR 530 sets forth effluent monitoring requirements and procedures to establish safe levels for the discharge of toxic pollutants such that existing and designated uses of surface waters are maintained and protected and narrative and numeric water quality criteria are met. 06-096 CMR 584 sets forth ambient water quality criteria (AWQC) for toxic pollutants and procedures necessary to control levels of toxic pollutants in surface waters.

WET, priority pollutant and analytical chemistry testing, as required by 06-096 CMR 530, is included in this permit in order to characterize the effluent. WET monitoring is required to assess and protect against impacts upon water quality and designated uses caused by the aggregate effect of the discharge on specific aquatic organisms. Acute and chronic WET tests are performed on invertebrate water flea (*Ceriodaphnia dubia*) and vertebrate brook trout (*Salvelinus fontinalis*). Chemical-specific monitoring is required to assess the levels of individual toxic pollutants in the discharge, comparing each pollutant to acute, chronic, and human health water quality criteria. Priority pollutant testing refers to the analysis for levels of priority pollutants listed in 06-096 CMR 525(4)(VI). Analytical chemistry refers to a suite of thirteen (13) chemical tests consisting of: ammonia-nitrogen, total aluminum, total cadmium, total chromium, total copper, total hardness (fresh water only), total lead, total nickel, total silver, total zinc, total arsenic, total cyanide and total residual chlorine.

06-096 CMR 530(2)(A) specifies the dischargers subject to the rule as, *"all licensed dischargers of industrial process wastewater or domestic wastes discharging to surface waters of the State must meet the testing requirements of this section. Dischargers of other types of wastewater are subject to this subsection when and if the Department determines that toxicity of effluents may have reasonable potential to cause or contribute to exceedences of narrative or numerical water quality criteria."* Tate & Lyle discharges industrial process waste waters to surface waters via Outfall #001A and is therefore subject to the testing requirements of the toxics rule. Note: discharges via Outfalls #002A (non-contact cooling water) and #003A (spray irrigation) are not subject to the rule. The remainder of this section addressed discharges via Outfall #001A only.

06-096 CMR 530(4)(C) states "*The background concentration of specific chemicals must be included in all calculations using the following procedures. The Department may publish and periodically update a list of default background concentrations for specific pollutants on a regional, watershed or statewide basis. In doing so, the Department shall use data collected from reference sites that are measured at points not significantly affected by point and non-point discharges and best calculated to accurately represent ambient water quality conditions."*

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

"The Department shall use the same general methods as those in section 4(D) to determine background concentrations. For pollutants not listed by the Department, an assumed concentration of 10% of the applicable water quality criteria must be used in calculations." The Department has no information on the background levels of metals in the water column in the Meduxnekeag River. Therefore, a default background concentration of 10% of applicable water quality criteria is being used in the calculations of this permitting action.

06-096 CMR 530(4)(E) states "*In allocating assimilative capacity for toxic pollutants, the Department shall hold a portion of the total capacity in an unallocated reserve to allow for new or changed discharges and non-point source contributions. The unallocated reserve must be reviewed and restored as necessary at intervals of not more than five years. The water quality reserve must be not less than 15% of the total assimilative quantity."*

Therefore, the Department is reserving 15% of the applicable water quality criteria used in the calculations of this permitting action.

06-096 CMR 530(4)(F) requires evaluation of toxic pollutant impacts on a watershed basis. This section of the rule states, "*Where there is more than one discharge into the same fresh or estuarine receiving water or watershed, the Department shall consider the cumulative effects of those discharges when determining the need for and establishment of the level of effluent limits. The Department shall calculate the total allowable discharge quantity for specific pollutants, less the water quality reserve and background concentration, necessary to achieve or maintain water quality criteria at all points of discharge, and in the entire watershed."* The Department is currently working to construct a computer program model to conduct this analysis. Until such time the model is complete and a multi-discharger statistical evaluation can be conducted, the Department is evaluating the impact of Tate & Lyle's discharge assuming it is the only discharger to the river. Should the multi-discharger evaluation indicate there are parameters that exceed or have a reasonable potential to exceed applicable AWQC, this permit may be reopened this permit may be reopened pursuant to Special Condition N, *Reopening of Permit For Modifications*, to incorporate additional limitations and or revise monitoring requirements.

This permit provides for reconsideration of effluent limits and monitoring schedules after evaluation of toxicity testing results. The monitoring schedule includes consideration of results currently on file, the nature of the wastewater, existing treatment, and receiving water characteristics.

On October 9, 2005, a new Department rule, 06-096 CMR 530, became effective and replaced the previous toxics rule, Chapter 530.5. On April 10, 2006, the Department amended WDL#W000940-5N-D-R by issuing a Surface Waters Toxics Control Program fact sheet for this facility and establishing or revising test frequencies to be consistent with 06-096 CMR 530 requirements and provisions for reduced testing. With regard to whole effluent toxicity, the 4/10/06 fact sheet established reduced surveillance level WET testing for the brook trout (based on a statistical evaluation of the most recent 60 months of data on file with the Department as of April 2006, which indicated there was no RP for the brook trout) and routine (default) testing for the water flea (based on a RP test result from 12/7/03).

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

06-096 CMR 530(2)(B) categorizes dischargers subject to the toxics rule into one of four levels (Levels I through IV). Level II dischargers are *"Those dischargers having a chronic dilution factor of at least 20 but less than 100 to 1."* The chronic dilution factor associated with the discharge from Tate & Lyle is 51:1; therefore, this facility is considered a Level II facility for purposes of toxics testing.

06-096 CMR 530(2)(D) specifies default WET, priority pollutant, and analytical chemistry test schedules for Level II dischargers as follows:

Screening level testing – Beginning 12 months prior to permit expiration and lasting through permit expiration and every five years thereafter.

Level	WET Testing	Priority pollutant testing	Analytical chemistry
II	2 per year	1 per year	4 per year

Surveillance level testing – Beginning upon issuance of the permit and lasting until 12 months prior to permit expiration.

Level	WET Testing	Priority pollutant testing	Analytical chemistry
II	1 per year	None required	2 per year

WET Evaluation

06-096 CMR 530(3)(E) states:

> *For effluent monitoring data and the variability of the pollutant in the effluent, the Department shall apply the statistical approach in Section 3.3.2 and Table 3-2 of USEPA's "Technical Support Document for Water Quality-Based Toxics Control" (USEPA Publication 505/2-90-001, March, 1991, EPA, Office of Water, Washington, D.C.) to data to determine whether water-quality based effluent limits must be included in a waste discharge license. Where it is determined through this approach that a discharge contains pollutants or WET at levels that have a reasonable potential to cause or contribute to an exceedence of water quality criteria, appropriate water quality-based limits must be established in any licensing action.*

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

This permitting action is establishing separate dilution ratios for the summer season period (June 1 – September 15) based on the minimum (guaranteed) river flow requirement of 15 cfs. As a result, acute, chronic and human health toxicity evaluations shall be based on a dilution ratio of 243.3:1 during the summer season and based on the 1Q10, 7Q10 and harmonic mean dilutions calculated in section 6.c of this fact sheet. Therefore, the critical acute and chronic ambient water quality threshold applicable during the summer season for WET testing is 0.41% (mathematical inverse of the 243.3:1 dilution factor). The critical acute and chronic ambient water quality thresholds applicable during the winter season for WET testing are 2.3% and 2.0%, respectively (mathematical inverse of the winter season acute and chronic dilution factors).

On May 8, 2008, the Department conducted a statistical evaluation on the most recent 60 months of WET test results on file with the Department for Tate & Lyle in accordance with the statistical approach outlined above. **The 5/8/08 statistical evaluation indicates the discharge from Tate & Lyle has on two occasions demonstrated a reasonable potential to exceed the critical (winter season) chronic ambient water quality threshold for the water flea (minimum test results of 2.0% for sample dates 12/7/03 and 9/26/04) and does not exceed or demonstrate a reasonable potential to exceed the critical acute or chronic ambient water quality thresholds for the brook trout.** See Attachment D of this Fact Sheet for a summary of the WET test results.

06-096 CMR 530(3) states, in part,

> *The Department shall establish appropriate discharge prohibitions, effluent limits and monitoring requirements in waste discharge licenses if a discharge contains pollutants that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an ambient excursion in excess of a numeric or narrative water quality criteria or that may impair existing or designated uses. The licensee must also control whole effluent toxicity (WET) when discharges cause, have a reasonable potential to cause, or contribute to an ambient excursion above the narrative water quality criteria.*

Therefore, this permitting action is establishing a numeric, winter season C-NOEL limit of 2.0% for the water flea and carrying forward routine (default) surveillance level testing for this organism. The minimum test result of 2.0% does not demonstrate reasonable potential to exceed the critical summer season chronic ambient water quality threshold of 0.41% for the water flea.

06-096 CMR 530(2)(D)(3)(c) states, in part, *"Dischargers in Level II may reduce surveillance testing to one WET or specific chemical series every other year provided that testing in the preceding 60 months does not indicate any reasonable potential for exceedence as calculated pursuant to section 3(E)."* Based on the provisions of 06-096 CMR 530 and Department best professional judgment, this permitting action is carrying forward reduced surveillance level testing for the brook trout (based on the results of facility testing). Statistical evaluations to

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

determine whether water-quality based effluent limits must be included in a permit are based on the most recent 60 months of data available. The limitation established for the water flea is based on the 12/7/03 and 9/26/04 test results. Therefore, it is noted that the permittee may request a modification of this permit after September 2009 to eliminate the water flea limit provided all subsequent WET results do not indicate a reasonable potential to exceed the critical water quality thresholds.

06-096 CMR 530(2)(D)(4) states, *"All dischargers having waived or reduced testing must file statements with the Department on or before December 31 of each year describing the following.*

(a) Changes in the number or types of non-domestic wastes contributed directly or indirectly to the wastewater treatment works that may increase the toxicity of the discharge;

(b) Changes in the operation of the treatment works that may increase the toxicity of the discharge; and

(c) Changes in industrial manufacturing processes contributing wastewater to the treatment works that may increase the toxicity of the discharge."

The 4/10/06 fact sheet discussed above specified that the facility must comply with this annual notification statement to continue waived surveillance level testing. This permitting action is formally establishing the notification requirement in this permitting action as Special Condition G, *Statement for Reduced/Waived Toxics Testing*, pursuant to 06-096 CMR 530(2)(D)(4). This permit provides for reconsideration of testing requirements, including the imposition of certain testing, in consideration of the nature of the wastewater discharged, existing wastewater treatment, receiving water characteristics, and results of testing.

Priority Pollutant Evaluation

The previous permitting action did not establish water quality-based effluent limitations for priority pollutants. On May 8, 2008, the Department conducted a statistical evaluation on the most recent 60 months of chemical-specific tests results on file with the Department for Tate & Lyle in accordance with the statistical approach outlined above. It is noted that the statistical evaluation utilized an acute hardness of 74 mg/L and a chronic hardness of 87 ug/L. These site-specific hardness values were derived by the Houlton Water Company (HWC) in accordance with the Department's *Total Hardness Protocol* adopted on March 5, 2001. For a more detailed explanation on the derivation of the site-specific hardness values see a document entitled, *Houlton Water Company, Houlton, Maine, Application to Maine Environmental Protection For Site Specific Limits Hardness Dependent Metals, April 2002* prepared by the HWC. The results of the statistical evaluation were compared to 06-096 CMR 584 and the Ambient Water Quality Criteria (AWQC) specified in Appendix A. **Based on the 5/8/08 statistical evaluation, the Department has identified that the maximum <u>total</u> arsenic effluent concentration result of**

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

6.8 µg/L reported for a priority pollutant test conducted on December 7, 2003 potentially exceeds the human health-based (water and organism) AWQC for inorganic arsenic. The discharge does not exceed or demonstrate a reasonable potential to exceed the critical AWQC for any other parameters tested. Statistical evaluations to determine whether water-quality based effluent limits must be included in a permit are based on the most recent 60 months of data available. The limitation established for inorganic arsenic is based on a 12/7/03 test result. Therefore, it is noted that the permittee may request a modification of this permit after December 2008 to eliminate the inorganic arsenic limit provided all subsequent arsenic test results do not indicate a reasonable potential to exceed the applicable AWQC.

See Attachment E of this fact sheet for a summary of chemical-specific test dates and arsenic test results.

06-096 CMR 530(3) states, *"the Department shall establish appropriate discharge prohibitions, effluent limits and monitoring requirements in waste discharge licenses if a discharge contains pollutants that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an ambient excursion in excess of a numeric or narrative water quality criteria or that may impair existing or designated uses."*

With a monthly average discharge flow limit of 0.04 MGD, water quality-based concentration and mass limits for inorganic arsenic may be calculated may be calculated using the following formulas:

Concentration Limit Formula =

$$[(\text{Dilution Factor})[(0.75)(\text{criterion})] + (0.25)(\text{criterion})$$

Mass Limit Formula =

$$\frac{(\text{Conc. Limit, µg/L})(8.34\ \text{lbs./gallon})(\text{flow limit, MGD})}{1000\ \text{µg/mg}}$$

Inorganic Arsenic:

End-of-pipe (EOP), water quality-based, monthly average concentration and mass limits for inorganic arsenic may be calculated as follows:

Monthly Average Conc. $= [(149.7)[(0.75)(0.012\ \text{µg/L})] + (0.25)(0.012\ \text{µg/L})$
$= 1.3 + 0.003$
$=$ **1.3 µg/L**

Monthly Avg. Mass $= \frac{(1.3\text{µg/L})(8.34\ \text{lbs./gallon})(0.04\ \text{MGD})}{1000\ \text{µg/mg}} =$ **0.0004 lbs./day**

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

The USEPA has not approved a test method for inorganic arsenic as of the date of issuance of this permit. Therefore, there is no way for the permittee to formally demonstrate compliance with the monthly average water quality based mass and concentration limits for inorganic arsenic established in this permitting action. Therefore, beginning upon issuance of this permit and lasting through the date in which the USEPA approves a test method for inorganic arsenic the permittee is being required to monitor for total arsenic. Once a test method is approved, the

Department will notify the permittee in writing and the limitations and monitoring requirements for inorganic arsenic become effective thereafter.

As of the date of this permitting action, the Department has limited data on the percentage of inorganic arsenic (approximately 50%) in total arsenic test results. Based on a literature search conducted by the Department, the inorganic fraction can range from 1% - 99% depending on the source of the arsenic. Generally speaking, ground water supplies derived from bedrock wells will likely tend to have higher fractions of inorganic arsenic (As^{+3}-arsentite and/or As^{+5}-arsenate) than one may find in a food processing facility where the inorganic fraction is low and the organic fraction (arsenobetaine, arsenoribosides) is high. Until the Department and the regulated community in Maine develop a larger database to establish statistically defensible ratios of inorganic and organic fractions in total arsenic test results, the Department is making a rebuttable presumption that the effluent contains a ratio of 50% inorganic arsenic and 50% organic arsenic in total arsenic results.

Being that the only approved test methods for compliance with arsenic limits established in permits is for total arsenic, the Department converted the water quality based end-of pipe monthly average concentration value of 1.3 µg/L for inorganic arsenic calculated on page 23 of this Fact Sheet into an equivalent total arsenic threshold (assuming 50% of the total arsenic is inorganic arsenic). This results in a total arsenic end-of-pipe monthly average concentration threshold of 2.6 µg/L. The calculation is as follows:

$$\frac{\text{1.3 µg/L inorganic arsenic}}{\text{0.5 µg/L inorganic arsenic/ 1.0 µg/L total arsenic}} = \text{2.6 µg/L total arsenic}$$

Therefore, a total arsenic value greater than 2.6 µg/L is potentially exceeding the water quality based end-of pipe monthly average concentration value of 1.3 µg/L for inorganic arsenic.

However, the Department's most current reporting limit (RL) for total arsenic is 5 µg/L and may be subject to revision during the term of this permit. All detectable analytical test results shall be reported to the Department including results which are detected below the Department's most current RL at the time of sampling and reporting. Only the results greater than the total arsenic threshold of 2.6 µg/L or the Department's RL at the time of sampling (whichever is higher) will be considered a potential exceedence of the ambient water quality criteria for inorganic.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

If a test result is determined to be a potential exceedence, the permittee shall submit a toxicity reduction evaluation (TRE) to the Department for review and approval within 45 days of receiving the test result of concern from the laboratory. Contact the Department's compliance inspector for a copy of the Department's December 2007 guidance on conducting a TRE for arsenic.

38 M.R.S.A. § 414-A(2), *Schedules of Compliance*, states

> *Within the terms and conditions of a license, the department may establish a schedule of compliance for a final effluent limitation based on a water quality standard adopted after July 1, 1977. When a final effluent limitation is based on new or more stringent technology-based treatment requirements, the department may establish a schedule of compliance consistent with the time limitations permitted for compliance under the Federal Water Pollution Control Act, Public Law 92-500, as amended. A schedule of compliance may include interim and final dates for attainment of specific standards necessary to carry out the purposes of this subchapter and must be as short as possible, based on consideration of the technological, economic and environmental impact of the steps necessary to attain those standards.*

Special Condition H, *Schedule of Compliance*, of this permit establishes a schedule as follows:

> *Beginning upon issuance of this permit modification and lasting through a date on which the USEPA approves a test method for inorganic arsenic, the limitations and monitoring requirements for inorganic are not in effect. During this time frame, the permittee is required by Special Condition A, Effluent Limitations and Monitoring Requirements, of this permit to conduct 1/Quarter sampling and analysis for total arsenic.*
>
> *Upon receiving written notification by the Department that a test method for inorganic arsenic has been approved by the USEPA, the limitations and monitoring requirements for inorganic arsenic become effective and enforceable and the permittee is relieved of their obligation to sample and analyze for total arsenic.*

The schedule of compliance reserves the final date for compliance with the limit for inorganic arsenic. This reservation stems from the fact the USEPA has no schedule for approving a test method for inorganic arsenic nor does the Department have any authority to require the USEPA to do so. Therefore, the Department considers the aforementioned schedule for inorganic arsenic to be as short as possible given the technological (or lack thereof) issue of not being able to sample and analyze for inorganic arsenic with an approved method.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

Waste Discharge License Conditions, 06-096 CMR 523(7)(a)(3) (effective January 12, 2001), states, in part, "*if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.*

(i) The time between interim dates shall not exceed 1 year, except that in the case of a schedule for compliance with standards for sewage sludge use and disposal, the time between interim dates shall not exceed six months.

(ii) If the time necessary for completion of any interim requirement (such as the construction of a control facility) is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

Special Condition A, *Effluent Limitations and Monitoring Requirements*, of this permit requires that beginning upon issuance of this permit and lasting through USEPA approval of a test method for inorganic arsenic, the permittee shall conduct 1/Quarter monitoring for total arsenic. Should the test method approval for inorganic arsenic extend more than one year from the date of the issuance of this permit, the sampling and analysis for total arsenic will serve to satisfy the interim requirements specified by 06-096 CMR 523(7)(a)(3).

06-096 CMR 530(3)(D)(1) states *"For specific chemicals, effluent limits must be expressed in total quantity that may be discharged and in effluent concentration. In establishing concentration, the Department may increase allowable values to reflect actual flows that are lower than permitted flows and/or provide opportunities for flow reductions and pollution prevention provided water quality criteria are not exceeded. With regard to concentration limits, the Department may review past and projected flows and set limits to reflect proper operation of the treatment facilities that will keep the discharge of pollutants to the minimum level practicable."*

It is noted the calculations for establishing limitations for inorganic arsenic on page 24 do not increase the end-of-pipe (EOP) concentration for inorganic arsenic by a factor of 1.5 due to uncertainty of the ratio between organic and inorganic fractions of total arsenic. However, the Department has given the permittee some flexibility by evaluating possible exceedences using the rebuttable presumption that the effluent contains a ratio of 50% inorganic arsenic and 50% organic arsenic in total arsenic results. In other words, the equivalent total arsenic concentration threshold has been increased by a factor of 2.0. Refer to the discussion and calculations on pages 24-25 of this Fact Sheet. Compliance with the inorganic arsenic limit will be based on a twelve-month rolling average calculation.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS FOR SURFACE WATER DISCHARGES (cont'd)

06-096 CMR 530 does not establish specific monitoring frequencies for parameters that exceed or have a reasonable to exceed AWQC. This permitting action is establishing the monitoring frequencies for arsenic based on a best professional judgment given the timing, frequency and severity of the exceedence or reasonable to exceed AWQC. To be consistent with the default monitoring requirements in 06-096 CMR 530, the Department is establishing a monitoring frequency of 1/Quarter for total arsenic.

This facility qualifies for reduced (once every two years) surveillance level analytical chemistry testing pursuant to 06-096 CMR 530(2)(D)(3)(c). However, annual WET testing for the water flea (based on a reasonable potential to exceed the critical chronic water quality threshold) is required and the permittee is required to analyze the effluent for the thirteen analytical chemistry parameters each time a WET test is performed. Unless and until such time that this permit is modified to reduce WET testing to a frequency of once every two years, annual analytical chemistry testing is required.

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING

Slow rate land irrigation treatment is an environmentally-sound and appropriate technology for best practicable treatment and disposal of wastewater. The theory behind surface wastewater disposal systems is to utilize the top 10-12 inches of organic matter and in-situ soils to attenuate the pollutant loadings in the applied wastewaters. The soils and vegetation within the spray field area are intended to provide adequate filtration and absorption to preserve the integrity of the soil, and both surface and ground water quality in the area.

Tate & Lyle utilizes spray irrigation as a means of wastewater disposal when discharges via Outfall #001A are prohibited (based on ambient river conditions). The previous permitting action established monitoring and reporting requirements for Outfall #003A, which is the same source of wastewater that is conveyed to Outfall #001A but has been assigned a unique outfall number for data management and tracking purposes. The spray irrigation field has been assigned a data management tracking identifier of "SF-1". Spray irrigation is authorized during the period of May 15 through November 15 provided all other terms, conditions and restrictions established in this permit are achieved. In this permitting action, the Department is authorizing the use of the spray irrigation field for the disposal of non-contact cooling waters during the period of May 15 through November 15.

a. Wastewater Application Rate: The previous permitting action established weekly maximum and daily maximum wastewater application rates of 40,728 gallons per acre per week and 20,362 gallons per acre per day, respectively, for spray irrigation fields SF-1, which are being carried forward in this permitting action. These application rates are also applicable for spray irrigation of non-contact cooling waters to this disposal field (identified as SF-2 for data management purposes). The wastewater application rates are established as a margin of safety against hydraulically overloading a spray field and are based on the treatment capabilities of the in-situ soils. Regardless of the calculated rate, the system operator shall monitor each waste application to verify adequate infiltration of the waste into the soil and an irrigation cycle must be stopped if runoff occurs outside the boundary of the designated spray areas. If ground water

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

monitoring well samples indicate levels above the action levels established for sodium, sulfate, and ammonia the permittee shall immediately cease the spray irrigation of boiler blowdown and process waste waters on any areas up-gradient of the monitoring well(s) demonstrating the elevated level(s), until such time that ground water monitoring indicates that levels have fallen below the respective action levels.

Tate and Lyle has applied for authorization to utilize the spray irrigation field for the application of non-contact cooling water to reduce ground water salt concentrations and to maintain a viable crop during periods of insufficient precipitation. Managing the spray irrigation field in this way, Tate & Lyle asserts, will accelerate the recovery of the soil and ground water and will eventually allow Tate & Lyle to utilize the field for wastewater disposal during periods when discharge to the Meduxnekeag River is prohibited. This permitting action authorizes the application of non-contact cooling water at the prescribed application rates on SF-1. For data management purposes, this permitting action is assigning an administrative identifier of SF-2 to differentiate between disposal of boiler blowdown/process wastewater and non-contact cooling water via spray irrigation. At no time shall the application of spray irrigation waters from any source exceed the weekly maximum or daily maximum application rates established in the permit. This permitting action is establishing a monthly total flow reporting requirement for SF-1.

A summary of the spray irrigation data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 is as follows:

Application Rate	Minimum	Maximum	Arithmetic Mean	# DMRs
Weekly Maximum	2,056 gal/ac/week	20,193 gal/ac/week	17,697 gal/ac/week	12
Daily Maximum	16,143 gal/ac/week	39,119 gal/ac/week	24,430 gal/ac/week	13

Tate & Lyle has not utilized the spray irrigation system since June 2006 due to elevated sodium and sulfate levels in ground water monitoring wells. **This permitting action requires the permittee to obtain written Department approval prior to commencing spray irrigation of boiler blowdown and process waste waters each spray irrigation season**.

b. Flow: The previous permitting action established, and this permitting action is carrying forward, a daily maximum effluent flow reporting requirement for Outfall #003A to distinguish the boiler blowdown and process waste waters that are disposed of through spray irrigation from the same waste waters disposed of through Outfall #001A to the Meduxnekeag River. It is noted that discharges via Outfall #003A may occur on during the specified spray irrigation season of May 15 through November 15 of each year. Additionally, this permitting action is establishing a condition requiring the permittee to obtain, for each spray irrigation season, written Department approval prior to commencing spray irrigation of boiler blowdown and process waste waters to spray irrigation field SF-1. Department approval will be provided upon demonstrating to the Department's satisfaction that sodium and sulfate levels in ground water wells located down-gradient of proposed spray irrigation application(s). This permitting action

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

is revising the minimum monitoring frequency requirement from once per month to daily when discharging to ensure monitoring is representative of actual discharge conditions.

A summary of the discharge flow data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for Outfall #003A (#DMRs = 13) indicates the flow has ranged from 33,900 GPD to 158,200 GPD with an arithmetic mean of 101,700 GPD.

c. BOD_5: The previous permitting action established a daily maximum concentration reporting requirement for BOD_5 for Outfall #003A. Monitoring for BOD_5 yields an indication of the condition of the waste water being applied, of the degree of loading of organic material and the effectiveness of the spray irrigation treatment process. A summary of the effluent BOD_5 data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for Outfall #003A (#DMRs = 13) indicates the BOD_5 has ranged from 137 mg/L to 885 mg/L with an arithmetic mean of 470 mg/L. This permitting action is carrying forward the daily maximum BOD_5 concentration monitoring and reporting requirement for Outfall #003A to provide information on organic loading of the spray irrigation field, and is carrying forward the minimum monitoring frequency requirements of once per month (when discharging during the authorized spray irrigation period).

d. Calcium: The previous permitting action established daily maximum concentration monitoring reporting requirements for calcium for soil sampling of SF-1. Calcium is a commonly occurring element in soils and ground water monitoring for calcium may indicate leaching of this element from the soil, which could indicate overloading of a spray irrigation site. Calcium levels in annual soil samples collected in calendar years 2003 through 2006 have ranged from 1,376 mg/kg to 2,317 mg/kg with an arithmetic mean of 1,836 mg/kg. The Department is making a best professional judgment determination to eliminate soils monitoring as the pollutants of concern are being monitored in both the effluent applied and in ground water monitoring wells.

e. Cation Exchange Capacity (CEC): The previous permitting action established daily maximum monitoring reporting requirements for CEC for soil sampling of SF-1. CEC is a measure of the exchangeable cations that can be held by soil, providing an indication of the soil attenuation capacity. CEC levels in annual soil samples collected in calendar years 2003 through 2006 have ranged from 9.4 meq/100 g to 14.0 meq/100 g with an arithmetic mean of 11.5 meq/100 g. The Department is making a best professional judgment determination to eliminate soils monitoring as the pollutants of concern are being monitored in both the effluent applied and in ground water monitoring wells.

f. Chemical Oxygen Demand (COD): The previous permitting action established daily maximum concentration monitoring and reporting requirements for COD for Outfall #003A and the ground water monitoring wells. COD is a measure of the oxygen consuming capacity of organic matter present in wastewater. A summary of the COD data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for Outfall #003A (#DMRs = 13) indicates the COD has ranged from 1,240 mg/L to 33,000 mg/L with an arithmetic mean of 12,388 mg/L. COD in ground water monitoring wells is summarized as follows:

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

COD in Ground Water Monitoring Wells August 2003 – June 2006				
Ground Water Monitoring Well	Minimum	Maximum	Arithmetic Mean	# DMRs
MW1	5 mg/L	9 mg/L	5.8 mg/L	12
MW2A	5 mg/L	8 mg/L	5 mg/L	12
MW2B	5 mg/L	12 mg/L	7 mg/L	12
MW3A	5 mg/L	31 mg/L	21 mg/L	11
MW3B	20 mg/L	45 mg/L	33 mg/L	11
MW4	5 mg/L	7 mg/L	5 mg/L	11
MW5A	5 mg/L	5 mg/L	5 mg/L	11
MW5B	5 mg/L	5 mg/L	5 mg/L	11
TW1	5 mg/L	38 mg/L	12 mg/L	11
TW5	46 mg/L	552 mg/L	375 mg/L	11
TW6	12 mg/L	122 mg/L	33 mg/L	10
TW8	5 mg/L	8 mg/L	7 mg/L	4

The Department concludes that continued monitoring for COD in Outfall #003A effluent and ground waer monitoring wells will not yield any new information that will result in a decision to develop numeric limitations and is not necessary (in consideration of other pollutants required to be monitored by the permit) to assess the efficiency of the soil treatment system. Therefore, the COD monitoring requirements for Outfall #003A and the ground water monitoring wells are being eliminated in this permitting action.

g. Magnesium: The previous permitting action established daily maximum concentration monitoring reporting requirements for magnesium for soil sampling of SF-1. Magnesium is a commonly occurring element in soils and ground water monitoring for magnesium may indicate leaching of this element from the soil, which could indicate overloading of a spray irrigation site. Magnesium levels in annual soil samples collected in calendar years 2003 through 2006 have ranged from 307mg/kg to 341 mg/kg with an arithmetic mean of 317 mg/kg. The Department is making a best professional judgment determination to eliminate soils monitoring as the pollutants of concern are being monitored in both the effluent applied and in ground water monitoring wells.

h. Nitrate-nitrogen, total Kjeldahl nitrogen (TKN), total ammonia nitrogen (as N): The previous permitting action established daily maximum concentration monitoring reporting requirements for nitrate nitrogen, TKN, and total ammonia nitrogen for Outfall #003A and for soil sampling of SF-1 and established a daily maximum concentration limit of 10 mg/L for nitrate nitrogen in the ground water monitoring wells, which is the National Primary Drinking Water standard for this compound. Nitrate-nitrogen is weakly absorbed by soil and functions as a reliable indicator of contamination from waste disposal sites. Elevated levels of nitrate-nitrogen in ground water is a human health concern with respect to its use as a drinking water supply.

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

A summary of the nitrate-nitrogen, TKN, and total ammonia nitrogen data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for Outfall #003A (#DMRs = 13) is as follows:

Nitrate-Nitrogen, TKN, and Total Ammonia Nitrogen in Outfall #003A			
Effluent Characteristic	Minimum	Maximum	Arithmetic Mean
Nitrate-Nitrogen (NO_3)	34 mg/L	152 mg/L	85 mg/L
Total Kjeldahl-Nitrogen	76 mg/L	986 mg/L	548 mg/L
Total Ammonia Nitrogen	0.2 mg/L	45 mg/L	10.8 mg/L

A summary of the nitrate nitrogen data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for ground water monitoring wells is as follows:

Nitrate-Nitrogen in Ground Water Monitoring Wells August 2003 – June 2006 Limit = 10 mg/L				
Ground Water Monitoring Well	Minimum	Maximum	Arithmetic Mean	# DMRs
MW1	0.89 mg/L	10.8 mg/L	2.9 mg/L	12
MW2A	0.23 mg/L	3.5 mg/L	1.2 mg/L	12
MW2B	0.05 mg/L	16.2 mg/L	2.2 mg/L	12
MW3A	1.31 mg/L	15.95 mg/L	4.2 mg/L	11
MW3B	2.0 mg/L	2.0 mg/L	2.0 mg/L	11
MW4	0.05 mg/L	2 mg/L	0.4 mg/L	11
MW5A	0.05 mg/L	1.0 mg/L	0.3 mg/L	12
MW5B	0.05 mg/L	4.02 mg/L	0.7 mg/L	11
TW1	0.05 mg/L	2.69 mg/L	0.6 mg/L	11
TW5	0.05 mg/L	2.42 mg/L	0.6 mg/L	11
TW6	0.05 mg/L	2.73 mg/L	0.8 mg/L	10
TW8	0.71 mg/L	1.6 mg/L	1.0 mg/L	4

With one exception (3.0 mg/L for TW6A), total ammonia nitrogen in all ground water monitoring wells has been 2.0 mg/L or less 100% of the time during August 2003 through June 2006.

TKN in all ground water monitoring wells, except TW6A, has been 2.0 mg/L or less 100% of the time during August 2003 through June 2006. For TW6A, the results have ranged from 2.0 mg/L to 7.4 mg/L with an arithmetic mean of 3.2 mg/L (#DMRs = 10).

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

Nitrate-nitrogen, TKN, and total ammonia nitrogen levels in annual soil samples collected in calendar years 2003 through 2006 is as follows:

Nitrate-Nitrogen, TKN, and Total Ammonia Nitrogen in Soil Samples			
Soil Characteristic	Minimum	Maximum	Arithmetic Mean
Nitrate-Nitrogen	4 mg/kg	6 mg/kg	5 mg/kg
TKN	2,500 mg/kg	3,400 mg/kg	2,948 mg/kg
Total Ammonia Nitrogen	3 mg/kg	5 mg/kg	4 mg/kg

The ground water monitoring well data indicate nitrate-nitrogen at levels that exceed the National Primary Drinking Water Standard of 10 mg/L in some wells and therefore remains a pollutant of concern in this permitting action. Similarily, the Outfall #003A effluent levels of nitrate-nitrogen are significantly higher than the 10 mg/L drinking water standard. This permitting action is carrying forward the daily maximum concentration monitoring and reporting requirement for nitrate-nitrogen for Outfall #003A and the daily maximum limit of 10 mg/L for ground water monitoring wells to ensure ground waters are suitable for the designatged uses ascribed to their water quality classification.

This permitting action is including a prohibition on spray irrigation of boiler blowdown and process waste waters if ground water monitoring well samples indicate levels above the the nitrate-nitrogen limit of 10 mg/L. If ground water monitoring well samples indicate levels above 10 g/L, the permittee shall immediately cease the spray irrigation of boiler blowdown and process waste waters on any areas up-gradient of the monitoring well(s) demonstrating the elevated level(s), until such time that ground water monitoring indicates that levels have fallen below the action level. In addition, within 60 days of the occurrence(s), the permittee shall provide a report to the Department documenting the occurrence(s), addressing the cause(s) of the occurrence(s), and a course of action and implementation schedule for resolving the cause(s). This permitting action is carrying forward the minimum monitoring frequency requirements of once per month (when discharging during the authorized spray irrigation period) for Outfall #003A and once per month during the months of April, August and November of each year for the ground water monitoring wells.

Based on recommendations by a Deparment hydrogeologist and the permittee, this permitting action is carrying forward monitoring requirements for total ammonia nitrogen and TKN for Outfall #003A and the ground water monitoring wells. The Department is making a best professional judgment determination to eliminate soils monitoring as the pollutants of concern are being monitored in both the effluent applied and in ground water monitoring wells.

i. pH: The previous permitting action established a daily maximum pH range limitation of 6.0 – 8.5 standard units (SU) for Outfall #003A, ground water monitoring wells, and for soil sampling of SF-1. pH is considered a surveillance level monitoring parameter that is used as an early-warning indicator of potential ground water contamination. The soil pH range limitation was referred to as an "action level." The permit stipulated that if soil pH samples indicate pH levels outside of the 6.0 – 8.5 SU range, the permittee shall, within 60 days of the occurrence(s), provide a report to the Department documenting the occurrence(s), addressing the cause(s) of the occurrence(s), and a course of action and implementation schedule for resolving the

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

cause(s). This permitting action is revising the daily maximum pH range limitation for Outfall #003A and ground water monitoring wells from 6.0 – 8.5 SU to 6.0 – 9.0 SU, as the latter specified range is considered a best practicable treatment standard by the Department, and is carrying forward the minimum monitoring frequency requirements of once per month for Outfall #003A and once per month during the months of April, August and November of each year for the ground water monitoring wells. The Department is making a best professional judgment determination to eliminate soils monitoring as the pollutants of concern are being monitored in both the effluent applied and in ground water monitoring wells.

A review of the Outfall #003A effluent pH data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 (#DMRs = 13) indicates the values have ranged from 6.0 SU to 8.4 SU and have been in compliance with the 6.0-9.0 SU range 100% of the time during the aforementioned monitoring period. With two exceptions (5.5 SU for MW4A and 5.2 SU for TW1A), pH values have been in compliance with the 6.0-9.0 SU range 100% of the time during the aforementioned monitoring period. pH levels in annual soil samples collected in calendar years 2003 through 2006 indicates the pH has ranged from 7.2 SU to 7.6 SU.

j. Phosphorous (Total): The previous permitting action established daily maximum concentration reporting requirements for total phosphorous (total-P) for Outfall #003A, the ground water monitoring wells, and for soil sampling of SF-1 to assess the efficiency of the soil treatment system. A summary of the total-P data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for Outfall #003A (#DMRs = 13) indicates the total-P has ranged from 10 mg/L to 76 mg/L with an arithmetic mean of 38 mg/L. Total-P in ground water monitoring wells is summarized as follows:

Total-P in Ground Water Monitoring Wells				
Ground Water Monitoring Well	Minimum	Maximum	Arithmetic Mean	# DMRs
MW1	0.05 mg/L	0.11 mg/L	0.06 mg/L	12
MW2A	0.05 mg/L	0.28 mg/L	0.08 mg/L	12
MW2B	0.05 mg/L	0.09 mg/L	0.06 mg/L	12
MW3A	0.05 mg/L	0.16 mg/L	0.07 mg/L	11
MW3B	0.05 mg/L	0.25 mg/L	0.09 mg/L	11
MW4	0.05 mg/L	0.25 mg/L	0.09 mg/L	11
MW5A	0.05 mg/L	0.44 mg/L	0.10 mg/L	11
MW5B	0.05 mg/L	0.10 mg/L	0.58 mg/L	11
TW1	0.05 mg/L	0.41 mg/L	0.13 mg/L	11
TW5	0.05 mg/L	0.32 mg/L	0.12 mg/L	11
TW6	0.28 mg/L	2.56 mg/L	0.7 mg/L	10
TW8	0.05 mg/L	0.19 mg/L	0.11 mg/L	4

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

Total-P levels in annual soil samples collected in calendar years 2003 through 2006 have ranged from 19.6 mg/kg to 28 kg/mg with an arithmetic mean of 25 mg/kg.

The Department's record contains sufficient information to characterize the phosphorous content in the Outfall #003A discharge, ground water monitoring wells and in the SF-1 soils. There are currently no primary or secondary drinking water standards or surface water nutrient criteria for phosphorous. The Department has determined that additional phosphorus monitoring for Outfall #003A, the ground water monitoring wells, and for soil sampling of SF-1 will not yield any new information that will result in a decision to develop numeric limitations and is not necessary (in consideration of other pollutants required to be monitored in the permit) to assess the efficiency of the soil treatment system. Therefore, the total-P monitoring requirements for Outfall #003A, the ground water monitoring wells, and for soil sampling of SF-1 are being eliminated in this permitting action.

k. Potassium: The previous permitting action established daily maximum concentration monitoring reporting requirements for potassium for soil sampling of SF-1. Potassium is a standard measures of soil fertility. Potassium levels in annual soil samples collected in calendar years 2003 through 2006 have ranged from 62 mg/kg to 155 mg/kg with an arithmetic mean of 117 mg/kg. The Department is making a best professional judgment determination to eliminate soils monitoring as the pollutants of concern are being monitored in both the effluent applied and in ground water monitoring wells.

l. Sodium (Total) and Sulfate: The previous permitting action established daily maximum concentration reporting requirements for total sodium (as Na) and sulfate (as SO_4) for Outfall #003A and for soil sampling of SF-1, and established daily maximum limits (previously referred to as "action levels") of 120 mg/L and 250 mg/L for sodium and sulfate, respectively, for the ground water monitoring wells. There are currently no primary or secondary drinking water standards for sodium; however, the USEPA has utilized National Research Council recommended daily intake values for sodium to develop a proposed health-based benchmark value of 120 mg/L. Sulfate has a current secondary drinking water standard (Maximum Contaminant Level) of 250 mg/L, which is an aesthetic-based standard.

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

A summary of the total sodium data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for Outfall #003A (#DMRs = 13) indicates the total sodium has ranged from 1,397 mg/L to 4,012 mg/L with an arithmetic mean of 2,551 mg/L. Sodium in ground water monitoring wells is summarized as follows:

Sodium in Ground Water Monitoring Wells August 2003 – June 2006 Action Level = 120 mg/L				
Ground Water Monitoring Well	Minimum	Maximum	Arithmetic Mean	# DMRs
MW1	1.8 mg/L	115 mg/L	36.4 mg/L	12
MW2A	20 mg/L	183 mg/L	94 mg/L	12
MW2B	20 mg/L	316 mg/L	126 mg/L	12
MW3A	406 mg/L	1,095 mg/L	746 mg/L	11
MW3B	504 mg/L	1,272 mg/L	941 mg/L	11
MW4	25 mg/L	52 mg/L	32 mg/L	11
MW5A	6.7 mg/L	8.5 mg/L	7.6 mg/L	11
MW5B	77 mg/L	132 mg/L	114 mg/L	11
TW1	44 mg/L	209 mg/L	121 mg/L	11
TW5	30 mg/L	282 mg/L	203 mg/L	11
TW6	25 mg/L	628 mg/L	327 mg/L	10
TW8	290 mg/L	629 mg/L	461 mg/L	4

Sodium levels in annual soil samples collected in calendar years 2003 through 2006 have ranged from 448 mg/kg to 943 kg/mg with an arithmetic mean of 625 mg/kg.

A summary of the sulfate data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for Outfall #003A (#DMRs = 13) indicates the sulfate has ranged from 4,015 mg/L to 85,087 mg/L with an arithmetic mean of 12,901 mg/L. Sulfate in ground water monitoring wells is summarized as follows:

Sulfate in Ground Water Monitoring Wells August 2003 – June 2006 Action Level = 250 mg/L				
Ground Water Monitoring Well	Minimum	Maximum	Arithmetic Mean	# DMRs
MW1	15 mg/L	328 mg/L	117 mg/L	12
MW2A	23 mg/L	476 mg/L	224 mg/L	12
MW2B	85 mg/L	810 mg/L	306 mg/L	12
MW3A	141 mg/L	2,412 mg/L	1,273 mg/L	11
MW3B	131 mg/L	2,268 mg/L	1,402 mg/L	11
MW4	5 mg/L	237 mg/L	133mg/L	11
MW5A	5 mg/L	8 mg/L	5 mg/L	11
MW5B	199 mg/L	483 mg/L	326 mg/L	11
TW1	57 mg/L	349 mg/L	132 mg/L	11
TW5	46 mg/L	552 mg/L	375 mg/L	11
TW6	127 mg/L	1,542 mg/L	763 mg/L	10
TW8	327mg/L	1,542 mg/L	819 mg/L	4

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

Sulfate levels in annual soil samples collected in calendar years 2003 through 2006 have ranged from 60 mg/kg to 348 kg/mg with an arithmetic mean of 163 mg/kg. The Department is making a best professional judgment determination to eliminate soils monitoring as the pollutants of concern are being monitored in both the effluent applied and in ground water monitoring wells.

This permitting action is carrying forward the daily maximum limit of 120 mg/L for sodium in ground water and the daily maximum limit of 250 mg/L for sulfate as an action levels based on best professional judgment. If ground water monitoring well samples indicate levels above the respective limits of 120 mg/L and 250 mg/L for sodium and sulfate, the permittee shall immediately cease the spray irrigation of boiler blowdown and process waste waters on any areas up-gradient of the monitoring well(s) demonstrating the elevated level(s), until such time that ground water monitoring indicates that levels have fallen below the action level. In addition, within 60 days of the occurrence(s), the permittee shall provide a report to the Department documenting the occurrence(s), addressing the cause(s) of the occurrence(s), and a course of action and implementation schedule for resolving the cause(s). This permitting action is carrying forward the daily maximum total sodium and sulfate monitoring and reporting requirements for Outfall #003A to provide information on the levels of these pollutants conveyed to the spray irrigation field for disposal. This permitting action is carrying forward the minimum monitoring frequency requirements of once per month (when discharging during the authorized spray irrigation period) for Outfall #003A and once per month during the months of April, August and November of each year for the ground water monitoring wells.

m. Specific Conductance: The previous permitting action established daily maximum specific conductance monitoring and reporting requirements for Outfall #003A and ground water monitoring wells. Specific conductance is considered a surveillance level monitoring parameter that is used as an early-warning indicator of potential ground water contamination when monitoring indicates values over 275 umhos/cm, consistent trends approaching 275 umhos/cm or sudden spikes from previous levels. A summary of the specific conductance data as reported on the DMRs submitted to the Department for the period August 2003 through June 2006 for Outfall #003A (#DMRs = 13) indicates the specific conductance has ranged from 1,051 umhos/cm to 1,563 umhos/cm with an arithmetic mean of 1,266 umhos/cm. Specific conductance in ground water monitoring wells is summarized as follows:

7. SPRAY IRRIGATION, GROUND WATER AND SOILS MONITORING (cont'd)

Specific Conductance in Ground Water Monitoring Wells August 2003 – June 2006				
Ground Water Monitoring Well	Minimum	Maximum	Arithmetic Mean	# DMRs
MW1	365 umhos/cm	1,290 umhos/cm	690 umhos/cm	12
MW2A	335 umhos/cm	5,472 umhos/cm	1,235 umhos/cm	12
MW2B	220 umhos/cm	1,780 umhos/cm	881 umhos/cm	12
MW3A	1,720 umhos/cm	5,460 umhos/cm	3,770 umhos/cm	12
MW3B	591 umhos/cm	6,380 umhos/cm	3,849 umhos/cm	11
MW4	462 umhos/cm	1,030 umhos/cm	661 umhos/cm	11
MW5A	325 umhos/cm	629 umhos/cm	440 umhos/cm	11
MW5B	777 umhos/cm	1,670 umhos/cm	1,140 umhos/cm	11
TW1	440 umhos/cm	1,780 umhos/cm	913 umhos/cm	11
TW5	93.5 umhos/cm	1,950 umhos/cm	1,409 umhos/cm	11
TW6	601 umhos/cm	3,750 umhos/cm	2,029 umhos/cm	10
TW8	1,530 umhos/cm	3,380 umhos/cm	2,500 umhos/cm	4

In consideration of the specific conductance values reported for ground water monitoring wells, this permitting action is carrying forward the daily maximum monitoring and reporting requirements the ground water monitoring wells. Historical and recent ground water monitoring data collected from this site indicate that spray irrigation activities have adversely impacted ground water quality with respect to elevted sodium and sulfate levels. As a result, the Department established a prohibition on spray irrigation of boiler blowdown and process waste waters if ground water monitoring results for sodium, sulfate or nitrate-nitrogen are above the action levels established in Special Condition A of the permit. Continued monitoring for specific conductance along with other specific parameters will provide information to characterize changes in ground water quality over time. This permitting action is carrying forward the minimum monitoring frequency requirements of once per month during the months of April, August and November of each year for the ground water monitoring wells. The Department has reconsidered specific conductance monitoring of Outfall #003A and concludes that continued monitoring for specific conductance in Outfall #003A will not yield any new information that will result in a decision to develop numeric limitations and is not necessary (in consideration of other pollutants required to be monitored by the permit) to assess the efficiency of the soil treatment system. Therefore, the specific conductance monitoring requirement for Outfall #003A is being eliminated in this permitting action.

n. Temperature: This permitting action is carrying forward a daily maximum temperature reporting requirement for ground water monitoring wells, which is required to properly calibrate specific conductance measurements.

8. DISCHARGE IMPACT ON RECEIVING WATER QUALITY

As permitted, 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 water body to meet standards for Class B (Meduxnekeag River discharge) or Class GW-A (discharges to ground water via spray irrigation) classifications.

9. PUBLIC COMMENTS

Public notice of this application was made in the ***Houlton Pioneer Times*** newspaper on or about December 12, 2007. The Department receives public comments on an application until the date a final agency action is taken on the 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 *Application Processing Procedures for Waste Discharge Licenses,* 06-096 CMR 522 (effective January 12, 2001).

10. DEPARTMENT CONTACTS

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

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Division of Water Quality Management
Bureau of Land & Water Quality
Department of Environmental Protection
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11. RESPONSE TO COMMENTS

During the period of May 14, 2008 through June 13, 2008, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit to be issued to Tate & Lyle Ingredients Americas, Inc. for the proposed discharges. The Department received comments on the draft permit from an interested person, Mr. Jim Peabody, in a letter dated May 25, 2008 that was received by the Department on June 6, 2008, and by the Houlton Band of Maliseet Indians (HBMI) in a letter dated June 13, 2008 and received via fax on June 16, 2008.

Comment #1: Mr. Peabody did not specify any recommended changes to the draft permit. Mr. Peabody asserts that Tate & Lyle was not responsive to discussions involving connection to a public wastewater treatment collection system.

Response #1: Tate & Lyle stated, *"we did give serious consideration to the waste water lift station project to the City of Houlton. The Houlton Water Company had a number of concerns with the treatability of our discharge and our evaluation of the costs to connect indicated that the project was not feasible."* Standard Condition E.4 of *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, states, *"All wastewaters designated by the Department as treatable in a municipal treatment system will be cosigned to that system when it is available. This permit will expire 90 days after the municipal treatment facility becomes available, unless this time is extended by the Department in writing."* Currently, connection to a municipal treatment system is not available.

11. RESPONSE TO COMMENTS (cont'd)

Comment #2: The HBMI stated that the Department failed to provide adequate opportunity for consultation prior to issuance of a proposed draft permit. The HBMI requested that the Department *"consult with the Band and applicable federal government Trial trustees regarding the proposed terms and conditions of the discharge permit/license prior to decision-making and public notice."*

Response #2: Tate & Lyle published a public notice of its intent to submit an application to the Department in the *Houlton Pioneer Times* on December 12, 2007. This requirement of 06-096 CMR 2 is intended to provide the public with an opportunity to notify the Department of his or her interest in the pending application. The Department's Fact Sheet *Public Participation in the Licensing Process* (Doc. #DEPLW0686) states, *"Anyone may submit written comments, including technical information, at any time during the processing of an application. It is to your benefit to submit information early in the licensing process so that it may be considered to the maximum extent."* A copy of the draft permit was provided to the applicant, government agencies, the HBMI, and other interest persons concurrently.

The Department prepares an annual permitting project schedule at the beginning of each calendar year based on the expiration dates of current permits. The Department will provide upon request the list of scheduled projects so that the HBMI can identify and provide early notification of interest in any projects scheduled for that year.

Comment #3: With regard to ambient dissolved oxygen monitoring required by the permit, the HBMI stated that *"a DO measurement window of 2 hours after sunrise is unacceptable as it will not capture significant periods of non-attainment."* The HBMI requested that the permit be revised to require predawn DO measurement.

Response #3: The Department's *Bureau Of Land and Water Quality Division of Environmental Assessment River Assessment Program Standard Operating Procedure Dissolved Oxygen and Temperature Instantaneous Measurement using Electronic Meters*, February 22, 2008 (Doc. #DEP-LW0890), states, in pertinent part;

Timing – Dissolved oxygen and temperature are usually taken twice per day; in the early AM to capture the lowest daily reading and in mid-afternoon to capture the highest daily reading. If data are to be used for assessing attainment status of dissolved oxygen criteria, at a minimum, the early morning data should be collected. The follow guidelines should be followed:

- *The AM data collection should begin at dawn as soon as there is enough light to safely sample. It is preferable to have all data collected before 8 AM. In some situations, this may not be possible. Data collected later than 9 AM may not be useable in attainment assessments.*
- *The PM data should begin in early to mid-afternoon with the goal of trying to capture the maximum daily dissolved oxygen and temperature. It is usually not known when this occurs beforehand. As day-length shortens, the time of the maximum becomes earlier. As guideline sampling shouldn't start earlier than 1 PM and should be completed by 5 PM*

11. RESPONSE TO COMMENTS (cont'd)

The 5/14/08 draft permit stipulated that ambient DO monitoring be conducted within 2 hours of sunrise, whereby sunrise is a specific time as published in an almanac. As a compromise between the HBMI's position and the Department's SOP, Tate & Lyle is willing to accept a revision to the sampling timeframe in Special Condition A, Footnote #4 to state;

> *Sampling for dissolved oxygen shall begin within ½ hour of sunrise, provided there is enough light to safely sample, and end no later than 8:00 AM.*

Therefore, Special Condition A, Footnote #4 of the 5/14/08 draft permit has been revised in this final permit by changing the specified ambient DO monitoring requirement to the timeframe specified above.

Comment #4: The HBMI stated, *"We believe water temperature is a key factor in the algal growth that depresses dissolved oxygen levels in the Meduxnekeag." "Retain the 75 degree Fahrenheit standard."*

Response #4: The previous permitting action established a year-round daily maximum temperature limit of 75° F for Outfall #002A to ensure that the discharge complied with the requirements of 06-096 CMR 582. The basis for this limit was not documented in the fact sheet associated with the permit. In this permitting action, including the 5/14/08 draft permit, the Department identified three possible discharge scenarios that should be considered at the Tate & Lyle facility. The Department provided calculations of maximum effluent temperatures that would comply with the requirements of 06-096 CMR 582 and identified that the maximum effluent temperature threshold of 91°F is the most stringent water quality-driven limitation. In consideration of the anticipated and actual effluent temperatures for Outfall #001A and #002A, the Department made a best professional judgment determination to establish a year-round daily maximum effluent temperature limit of 90°F for both Outfall #001A and #002A. **This action will ensure that under all discharge conditions, the discharge will not cause or contribute to violations of the temperature criteria established by 06-096 CMR 582.** The Department has no information that this limitation will cause or contribute to non-attainment of any designated uses for the receiving water. The Department's Division of Environmental Assessment stated that they did not have concerns or comments on the 5/14/08 draft permit, including the section and limits on temperature. Based on a lack of information indicating that the daily maximum temperature limit of 90°F is not protective, the Department does not have a legal basis to establish a less stringent limitation, including the 75°F limit proposed. Therefore, no changes have been made to the 5/14/08 draft permit based on this comment.