STATE OF MAINE

Department of Environmental Protection

Paul R. LePage
GOVERNOR

Patricia W. Aho
COMMISSIONER

June 9, 2015

Mr. Thomas D. Gentner, P.E.
Vice President
Maine Electronics, Inc.
19 Saint Anne Street
Lisbon, ME. 04250
e-mail: thomas.gentner@rockwellcollins.com

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0020427
Maine Waste Discharge License (WDL) #W007759-5S-G-R
Proposed Draft Permit

Dear Mr. Gentner:

Enclosed is a **proposed draft** MEPDES permit and Maine WDL (permit hereinafter) which the Department proposes to issue as a final document after opportunity for your review and comment. By transmittal of this letter you are provided with an opportunity to comment on the proposed draft permit and its conditions (special conditions specific to this permit are enclosed; standard conditions applicable to all permits are available upon request). If it contains errors or does not accurately reflect present or proposed conditions, please respond to this Department so that changes can be considered.

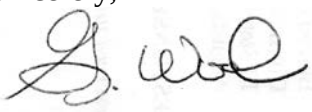
By copy of this letter, the Department is requesting comments on the proposed draft permit from various state and federal agencies, as required by our new regulations, and from any other parties who have notified the Department of their interest in this matter.

All comments must be received in the Department of Environmental Protection office on or before the close of business **Thursday, July 9, 2015.** Failure to submit comments in a timely fashion will result in the final document being issued as drafted. Comments in writing should be submitted to my attention at the following address:

Maine Department of Environmental Protection
Bureau of Land & Water Quality
Division of Water Quality Management
17 State House Station
Augusta, ME 04333

If you have any questions regarding the matter, please feel free to call me at 287-7693.

Sincerely,



Gregg Wood
Division of Water Quality Management
Bureau of Land and Water Quality

Enc.

cc: Denise Behr, DEP/CMRO
James Crowley, DEP/CMRO
David Webster, USEPA
David Pincumbe, USEPA
Alex Rosenberg, USEPA
Olga Vergara, USEPA
Maine Department of Marine Resources
Maine Department of Inland Fisheries & Wildlife
Ivy Frignoca, CLF
Rich Fortin, Drumlin Environmental

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION
AUGUSTA, ME 04333

DEPARTMENT ORDER

IN THE MATTER OF

MAINE ELECTRONICS INC.	)	MAINE POLLUTANT DISCHARGE
LISBON, ANDROSCOGGIN COUNTY, MAINE	)	ELIMINATION SYSTEM PERMIT
GROUND WATER REMEDIATION	)	AND
ME0020427	)	WASTE DISCHARGE LICENSE
W007759-5S-G-R **APPROVAL**	)	**RENEWAL**

Pursuant to the provisions of the Federal Water Pollution Control Act, Title 33 USC, Section 1251, et seq. and Maine Law, 38 M.R.S.A., Section 414-A et seq., and applicable regulations, the Department of Environmental Protection (Department hereinafter) has considered the application of MAINE ELECTRONICS INC., (MEI or permittee hereinafter) with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

APPLICATION SUMMARY

MEI has submitted a timely and complete application to the Department for the renewal of combination Maine Pollutant Discharge Elimination System (MEPDES) permit ME0020427/Maine Waste Discharge License (WDL) #W007759-5S-E-R, (permit hereinafter) which was issued by the Department on May 13, 2010, for a five-year term. The permit authorized a discharge of up to a daily maximum of 79,000 gallons per day (gpd) or 0.079 million gallons per day (MGD) of treated ground water from a former electronic circuit board manufacturing complex to the Sabattus River, Class C, in Lisbon, Maine.

PERMIT SUMMARY

With the exception of inorganic arsenic, this permit is carrying forward all the terms and conditions of the previous permitting action. The May 13, 2010 permit was modified on September 11, 2013, by removing the water quality based limitations and monitoring requirements for inorganic arsenic given the human AWQC was revised on July 29, 2012, and the discharge no longer had a reasonable potential to exceed said revised criteria.

CONCLUSIONS

BASED on the findings in the attached **PROPOSED DRAFT** Fact Sheet dated June 9, 2015, 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 which the Department expects to adopt in accordance with the state law.

3. The provisions of the State's antidegradation policy, 38 M.R.S.A., Section 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 water of the State constitute an outstanding national resource, that water quality will be maintained and protected;

    c. 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 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.

ACTION

THEREFORE, the Department APPROVES the above noted application of MAINE ELECTRONICS INC., to discharge up to a daily maximum of 79,000 gallons per day (gpd) or 0.079 million gallons per day (MGD) of treated ground water to the Sabattus River, Class C, in Lisbon, Maine, and is 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. This permit becomes effective upon the date of signature below and expires at midnight five (5) years after that date. If a renewal application is timely submitted and accepted as complete for processing prior to the expiration of this permit, the terms and conditions of this permit and all subsequent modifications and minor revisions thereto remain in effect until a final Department decision on the renewal application becomes effective. [*Maine Administrative Procedure Act,* 5 M.R.S.A. § 10002 and *Rules Concerning the Processing of Applications and Other Administrative Matters,* 06-096 CMR 2(21)(A) (effective April 1, 2003)].

DONE AND DATED AT AUGUSTA, MAINE, THIS ____DAY O_____, 2015.

COMMISSIONER OF ENVIRONMENTAL PROTECTION

BY:_____
Patricia W. Aho, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application April 15, 2015.

Date of application acceptance April 23, 2015.

Date filed with Board of Environmental Protection _____

This order prepared by Gregg Wood, BUREAU OF LAND AND WATER QUALITY

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. The permittee is authorized to discharge **treated ground water** from **Outfall 001** to the Sabattus River. Such discharges shall be limited and monitored by the permittee as specified below.[(1)]

TIER I[(2)]

Effluent Characteristic	Discharge Limitations				Minimum Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow *[50050]*	66,000 gpd *[07]*	72,000 gpd *[07]*	---	---	Continuous *[99/99]*	Recorder *[RC]*
Temperature *[00011]* *June 1 – September 30*	---	---	---	70 ºF *[15]*	1/Month *[01/30]*	Grab *[GR]]*
Perchloroethylene *[34475]*	0.032 lbs/day *[26]*	---	118 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
1,1-Dichloroethane *[34496]*	3.8 lbs/day *[26]*	---	14,000 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
1,1,1 Trichloroethane *[34506]*	11 lbs/day *[26]*	---	40,000 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
Trichloroethylene *[78391]*	0.13 lbs/day *[26]*	---	474 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
Methylene Chloride *[34423]*	0.25 lbs/day *[26]*	---	920 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
Cadmium (Total) *[01027]*	0.0015 lbs/day *[26]*	0.0072 lbs/day *[26]*	5.4 ug/L *[28]*	24 ug/L *[28]*	1/Month *[01/30]*	Grab *[GR]*
Chromium III *[01034]*	0.43 lbs/day *[26]*	7.8 lbs/day *[26]*	1,572 ug/L *[28]*	28,500 ug/L *[28]*	1/Month *[01/30]*	Grab *[GR]*
Copper (Total) *[01042]*	0.028 lbs/day *[26]*	0.021 lbs/day *[26]*	102 ug/L *[28]*	70 ug/L *[28]*	1/Month *[01/30]*	Grab *[GR]*

SPECIAL CONDITIONS (cont'd)

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

TIER I[(2)]

Effluent Characteristic	Discharge Limitations				Minimum Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Iron (Total) *[01045]*	5.6 lbs/day *[26]*	---	20,400 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
Lead (Total) *[01051]*	0.0033 lbs/day *[26]*	0.19 lbs/day *[26]*	12 ug/L *[28]*	620 ug/L *[28]*	1/Month *[01/30]*	Grab *[GR]*
Manganese (Total) *[01055]*	2.7 lbs/day *[26]*	---	10,000 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
pH *[00400]*	---	---	---	6.0 – 8.5 S.U *[12]*	1/Month *[01/30]*	Grab *[GR]*
Analytical Chemistry[(4)] *[51168]*	---	---	---	Report ug/L *[28]*	1/Quarter *[01/90]*	Composite/ Grab *[24/GR)*

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. The permittee is authorized to discharge **treated ground water** from **Outfall 001** to the Sabattus River. Such discharges shall be limited and monitored by the permittee as specified below.[(1)]

TIER II[(2)]

Effluent Characteristic	Discharge Limitations				Minimum Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow *[50050]*	72,000 gpd *[07]*	79,000 gpd *[07]*	---	---	Continuous *[99/99]*	Recorder *[RC]*
Temperature *[00011]* *June 1 – September 30*	---	---	---	70 ºF *[15]*	1/Month *[01/30]*	Grab *[GR]]*
Perchloroethylene *[34475]*	0.032 lbs/day *[26]*	---	108 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
1,1-Dichloroethane *[34496]*	3.8 lbs/day *[26]*		12,846 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
1,1,1 Trichloroethane *[34506]*	11 lbs/day *[26]*		36,700 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
Trichloroethylene *[78391]*	0.13 lbs/day *[26]*		435 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
Methylene Chloride *[34423]*	0.25 lbs/day *[26]*		844 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
Cadmium (Total) *[01027]*	0.0015 lbs/day *[26]*	0.0072 lbs/day *[26]*	5 ug/L *[28]*	22 ug/L *[28]*	1/Month *[01/30]*	Grab *[GR]*
Chromium III *[01034]*	0.43 lbs/day *[26]*	7.7 lbs/day *[26]*	1,432 ug/L *[28]*	25,600 ug/L *[28]*	1/Month *[01/30]*	Grab *[GR]*
Copper (Total) *[01042]*	0.028 lbs/day *[26]*	0.021 lbs/day *[26]*	94 ug/L *[28]*	64 ug/L *[28]*	1/Month *[01/30]*	Grab *[GR]*

SPECIAL CONDITIONS (cont'd)

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

TIER II[(2)]

Effluent Characteristic	Discharge Limitations				Minimum Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Iron (Total) *[01045]*	5.6 lbs/day *[26]*	---	18,600 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
Lead (Total) *[01051]*	0.0033 lbs/day *[26]*	0.18 lbs/day *[26]*	11 ug/L *[28]*	558 ug/L *[28]*	1/Month *[01/30]*	Grab *[GR]*
Manganese (Total) *[01055]*	2.8 lbs/day *[26]*	---	9,200 ug/L *[28]*	---	1/Month *[01/30]*	Grab *[GR]*
pH *[00400]*	---	---	---	6.0 – 8.5 S.U *[12]*	1/Month *[01/30]*	Grab *[GR]*
Analytical Chemistry[(4)] *[511688]*	---	---	---	Report ug/L *[28]*	1/Quarter *[01/90]*	Composite/ Grab *[24/GR)*

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd) – OUTFALL #001

SCREENING LEVEL TESTING – Beginning upon commencement of a continuous discharge (30 consecutive days or 45 days within any 12-month period) and lasting through a minimum of twelve (12) consecutive months;

Effluent Characteristic	Discharge Limitations				Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Whole Effluent Toxicity (WET) (3)						
A-NOEL						
Ceriodaphnia dubia *[TDA3B]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Salvelinus fontinalis *[TDA6F]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
C-NOEL						
Ceriodaphnia dubia *[TBP3B]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Salvelinus fontinalis *[TBQ6F]*	---	---	---	Report % *[23]*	2/Year *[02/YR]*	Composite *[24]*
Analytical Chemistry (4,6) *[51477]*	---	---	---	Report ug/L ***[28]***	1/Quarter *[01/90]*	Composite/ Grab *[24/GR]*
Priority Pollutants (5,6) *[50008]*	---	---	---	Report ug/L *[28]*	1/Year *[01/YR]*	Composite/ Grab *[24/GR]*

SPECIAL CONDITIONS

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

Footnotes:

1. **Sampling Location**– Composite and grab sampling of the treatment plant effluent for compliance with this permit shall be conducted after the final neutralization tank but prior to the parshall flume. Any change in sampling location must be approved by the Department in writing.

   The permittee must conduct sampling and analysis 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 must be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services for wastewater. 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 (effective April 1, 2010**).** If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report.

2. **Tier I** - Limitations are in effect upon issuance of this permit. The permittee must formally request in writing, and receive written approval from the Department for authorization to discharge under limitations established in Tier II. Tier II limitations are not in effect until the monthly average discharge flow associated with the ground water remediation activities is >0.072 MGD for six (6) consecutive calendar months.

3. **Whole effluent toxicity (WET) testing** - Definitive WET testing is a multi-concentration testing event which provides a point estimate of toxicity in terms of No Observed Effect Level, commonly referred to as NOEL or NOEC. Tests shall be conducted such that a minimum of five dilutions bracketing the critical acute and chronic dilutions of 39:1 and 45:1 respectively for Tier I, (2.6% and 2.2% respectively - mathematical inverse of the dilution factor) and 35:1 and 41:1 respectively for Tier II (2.8% and 2.4%) are performed. 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.

SPECIAL CONDITIONS

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

Footnotes:

Screening level testing - Beginning upon commencement of a continuous discharge (30 consecutive days or 45 days within any 12-month period) and lasting through a minimum of twelve (12) consecutive months, the permittee shall initiate screening level WET testing at a frequency of two per year. Testing shall be conducted on the water flea (*Ceriodaphnia dubia*) and the brook trout (*Salvelinus fontinalis*). Results shall be submitted to the Department within thirty (30) days of the permittee receiving the data report from the laboratory conducting the testing. See **Attachment A** of this permit for a copy of the Department's WET reporting form.

Once the screening level of testing is completed, the Department will perform a statistical evaluation on the WET test results to determine if the discharge exceeds or has a reasonable potential to exceed the applicable acute and chronic critical ambient water quality thresholds cited in paragraph #1 of this footnote. WET testing thereafter (if necessary) will be determined by the Department and Special Condition G, *Reopening Of Permit For Modifications,* of this permit will be utilized to formally modify the permit accordingly.

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 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 as modified by Department protocol for the brook trout. See **Attachment C** of this permit for the Department protocol.

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.

SPECIAL CONDITIONS

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

Footnotes:

Each time a WET test is performed, the permittee shall sample and analyze for the parameters in the WET Chemistry and the Analytical Chemistry sections of the Department form entitled, *Maine Department of Environmental Protection, WET and Chemical Specific Data Report Form*. See **Attachment B** of this permit.

4. **Analytical chemistry** – Refers to a suite of chemicals listed in **Attachment B** of this permit.

   Screening level testing – **Beginning upon commencement of a continuous discharge (30 consecutive days or 45 days within any 12-month period) and lasting through a minimum of twelve (12) consecutive months**, the permittee shall conduct analytical chemistry testing at a minimum frequency of once per calendar quarter for four consecutive calendar quarters.

5. **Priority pollutant testing** – Refers to a suite of chemical listed in **Attachment B** of this permit.

   Screening level testing – **Beginning upon commencement of a continuous discharge (30 consecutive days or 45 days within any 12-month period) and lasting through a minimum of twelve (12) consecutive months**, the permittee shall conduct screening level priority pollutant testing at a minimum frequency of once per year, except for those analytical chemistry parameter(s) otherwise regulated in this permit.

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

6. **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.

   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

SPECIAL CONDITIONS

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

Footnotes:

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.

Once the screening level of chemical specific and priority pollutant testing is completed, the Department will perform a statistical evaluation on the chemical specific test results to determine if the discharge exceeds or has a reasonable potential to exceed the acute, chronic and or human health ambient water quality criteria (AWQC). Chemical specific testing thereafter (if necessary) will be determined by the Department and Special Condition G, *Reopening Of Permit For Modifications*, of this permit will be utilized to formally modify the permit accordingly.

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 uses 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 uses designated by the classification of the receiving waters.

3. The discharges shall not cause visible discoloration or turbidity in the receiving waters which would impair the uses 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.

C. AUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with: 1) the permittee's General Application for Waste Discharge Permit, accepted for processing on April 23, 2015, 2) the terms and conditions of this permit; and 3) only from Outfall #001. Discharges of waste water from any other point source are not authorized under this permit, and shall be reported in accordance with Standard Condition B(5)(*Bypass*) of this permit.

SPECIAL CONDITIONS

D. OPERATION & MAINTENANCE (O&M) PLAN

On or before 45 days of commencing a discharge, the permittee shall submit a written comprehensive Operation & Maintenance (O&M) Plan to the Department for review. The plan shall provide a systematic approach by which the permittee shall at all times, properly operate and maintain all facilities and systems of transport, 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.

E. NOTIFICATION REQUIREMENT

In accordance with Standard Condition D, the permittee shall notify the Department of any substantial change in the volume or character of pollutants being discharged.

F. 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 postmarked on or before the thirteenth (13^{th}) day of the month or hand-delivered to a Department Regional Office such that the DMR's are received by the Department on or before the fifteenth (15^{th}) day of the month following the completed reporting period. A signed copy of the DMR and all other reports required herein shall be submitted to the following address:

Department of Environmental Protection
Central Maine Regional Office
Bureau of Land and Water Quality
Division of Water Quality Management
17 Station House Station
Augusta, ME. 04333

SPECIAL CONDITIONS

F. MONITORING AND REPORTING

Alternatively, if you are submitting an electronic DMR (eDMR), the completed eDMR must be electronically submitted to the Department by a facility authorized DMR Signatory not later than close of business on the 15th day of the month following the completed reporting period. Hard Copy documentation submitted in support of the eDMR must be postmarked on or before the thirteenth (13th) day of the month or hand-delivered to the Department's Regional Office such that it is received by the Department on or before the fifteenth (15th) day of the month following the completed reporting period. Electronic documentation in support of the eDMR must be submitted not later than close of business on the 15th day of the month following the completed reporting period.

G. REOPENING OF PERMIT FOR MODIFICATIONS

Upon evaluation of the tests results or monitoring requirements specified in 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 effluent and or ambient water quality monitoring if results on file are inconclusive; or (3) change monitoring requirements or limitations based on new information.

H. SEVERABILITY

In the event that any provision(s), 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.

ATTACHMENT A

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
WHOLE EFFLUENT TOXICITY REPORT
FRESH WATERS

Facility Name _____ MEPDES Permit # _____

Facility Representative _____ Signature _____

By signing this form, I attest that to the best of my knowledge that the information provided is true, accurate, and complete.

Facility Telephone # _____ Date Collected _____ (mm/dd/yy) Date Tested _____ (mm/dd/yy)

Chlorinated? _____ Dechlorinated? _____

Results **% effluent**

	water flea	trout
A-NOEL		
C-NOEL		

Effluent Limitations

A-NOEL	
C-NOEL	

Data summary

	water flea			trout		
	% survival		no. young	% survival		final weight (mg)
QC standard	**A>90**	**C>80**	**>15/female**	**A>90**	**C>80**	**> 2% increase**
lab control						
receiving water control						
conc. 1 (%)						
conc. 2 (%)						
conc. 3 (%)						
conc. 4 (%)						
conc. 5 (%)						
conc. 6 (%)						
stat test used						

place * next to values statistically different from controls

for trout show final wt and % incr for both controls

Reference toxicant

	water flea		trout	
	A-NOEL	C-NOEL	A-NOEL	C-NOEL
toxicant / date				
limits (mg/L)				
results (mg/L)				

Comments _____

Laboratory conducting test

Company Name _____ Company Rep. Name (Printed) _____

Mailing Address _____ Company Rep. Signature _____

City, State, ZIP _____ Company Telephone # _____

Report WET chemistry on DEP Form "ToxSheet (Fresh Water Version), March 2007."

ATTACHMENT B

Maine Department of Environmental Protection

WET and Chemical Specific Data Report Form

This form is for reporting laboratory data and facility information. Official compliance reviews will be done by DEP.

Facility Name _____ **MEPDES #** _____ Facility Representative Signature _____

Pipe # _____ To the best of my knowledge this information is true, accurate and complete.

Licensed Flow (MGD)		**Flow for Day (MGD)[1]**		**Flow Avg. for Month (MGD)[2]**	
Acute dilution factor					
Chronic dilution factor		**Date Sample Collected**		Date Sample Analyzed	
Human health dilution factor					
Criteria type: M(arine) or F(resh)	f	Laboratory		Telephone	
		Address			
Last Revision - April 24, 2014					
		Lab Contact		Lab ID #	

ERROR WARNING ! Essential facility information is missing. Please check required entries in bold above.

FRESH WATER VERSION

Please see the footnotes on the last page.

			Effluent Limits, %			Receiving Water or Ambient	**Effluent Concentration (ug/L or as noted)** WET Result, % Do not enter % sign	Reporting Limit Check	**Possible Exceedence [7]**		
	WHOLE EFFLUENT TOXICITY		Acute	Chronic					Acute	Chronic	
	Trout - Acute										
	Trout - Chronic										
	Water Flea - Acute										
	Water Flea - Chronic										
	WET CHEMISTRY										
	pH (S.U.) (9)										
	Total Organic Carbon (mg/L)					(8)					
	Total Solids (mg/L)										
	Total Suspended Solids (mg/L)										
	Alkalinity (mg/L)					(8)					
	Specific Conductance (umhos)										
	Total Hardness (mg/L)					(8)					
	Total Magnesium (mg/L)					(8)					
	Total Calcium (mg/L)					(8)					
	ANALYTICAL CHEMISTRY [3]										
	Also do these tests on the effluent with WET. Testing on the receiving water is optional	Reporting Limit	Effluent Limits, ug/L Acute[6]	Chronic[6]	Health[6]			Reporting Limit Check	**Possible Exceedence [7]** Acute	Chronic	Health
	TOTAL RESIDUAL CHLORINE (mg/L) (9)	0.05				NA					
	AMMONIA	NA				(8)					
M	ALUMINUM	NA				(8)					
M	ARSENIC	5				(8)					
M	CADMIUM	1				(8)					
M	CHROMIUM	10				(8)					
M	COPPER	3				(8)					
M	CYANIDE, TOTAL	5				(8)					
	CYANIDE, AVAILABLE [3a]	5				(8)					
M	LEAD	3				(8)					
M	NICKEL	5				(8)					
M	SILVER	1				(8)					
M	ZINC	5				(8)					

Maine Department of Environmental Protection

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	PRIORITY POLLUTANTS [4]										
			Effluent Limits					Reporting Limit Check	**Possible Exceedence** [7]		
		Reporting Limit	Acute[6]	Chronic[6]	Health[6]				Acute	Chronic	Health
M	ANTIMONY	5									
M	BERYLLIUM	2									
M	MERCURY (5)	0.2									
M	SELENIUM	5									
M	THALLIUM	4									
A	2,4,6-TRICHLOROPHENOL	5									
A	2,4-DICHLOROPHENOL	5									
A	2,4-DIMETHYLPHENOL	5									
A	2,4-DINITROPHENOL	45									
A	2-CHLOROPHENOL	5									
A	2-NITROPHENOL	5									
A	4,6 DINITRO-O-CRESOL (2-Methyl-4,6-dinitrophenol)	25									
A	4-NITROPHENOL	20									
A	P-CHLORO-M-CRESOL (3-methyl-4-chlorophenol)+B80	5									
A	PENTACHLOROPHENOL	20									
A	PHENOL	5									
BN	1,2,4-TRICHLOROBENZENE	5									
BN	1,2-(O)DICHLOROBENZENE	5									
BN	1,2-DIPHENYLHYDRAZINE	20									
BN	1,3-(M)DICHLOROBENZENE	5									
BN	1,4-(P)DICHLOROBENZENE	5									
BN	2,4-DINITROTOLUENE	6									
BN	2,6-DINITROTOLUENE	5									
BN	2-CHLORONAPHTHALENE	5									
BN	3,3'-DICHLOROBENZIDINE	16.5									
BN	3,4-BENZO(B)FLUORANTHENE	5									
BN	4-BROMOPHENYLPHENYL ETHER	5									
BN	4-CHLOROPHENYL PHENYL ETHER	5									
BN	ACENAPHTHENE	5									
BN	ACENAPHTHYLENE	5									
BN	ANTHRACENE	5									
BN	BENZIDINE	45									
BN	BENZO(A)ANTHRACENE	8									
BN	BENZO(A)PYRENE	5									
BN	BENZO(G,H,I)PERYLENE	5									
BN	BENZO(K)FLUORANTHENE	5									
BN	BIS(2-CHLOROETHOXY)METHANE	5									
BN	BIS(2-CHLOROETHYL)ETHER	6									
BN	BIS(2-CHLOROISOPROPYL)ETHER	6									
BN	BIS(2-ETHYLHEXYL)PHTHALATE	10									
BN	BUTYLBENZYL PHTHALATE	5									
BN	CHRYSENE	5									
BN	DI-N-BUTYL PHTHALATE	5									
BN	DI-N-OCTYL PHTHALATE	5									
BN	DIBENZO(A,H)ANTHRACENE	5									
BN	DIETHYL PHTHALATE	5									
BN	DIMETHYL PHTHALATE	5									

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BN	FLUORANTHENE	5									
BN	FLUORENE	5									
BN	HEXACHLOROBENZENE	5									
BN	HEXACHLOROBUTADIENE	5									
BN	HEXACHLOROCYCLOPENTADIENE	10									
BN	HEXACHLOROETHANE	5									
BN	INDENO(1,2,3-CD)PYRENE	5									
BN	ISOPHORONE	5									
BN	N-NITROSODI-N-PROPYLAMINE	10									
BN	N-NITROSODIMETHYLAMINE	5									
BN	N-NITROSODIPHENYLAMINE	5									
BN	NAPHTHALENE	5									
BN	NITROBENZENE	5									
BN	PHENANTHRENE	5									
BN	PYRENE	5									
P	4,4'-DDD	0.05									
P	4,4'-DDE	0.05									
P	4,4'-DDT	0.05									
P	A-BHC	0.2									
P	A-ENDOSULFAN	0.05									
P	ALDRIN	0.15									
P	B-BHC	0.05									
P	B-ENDOSULFAN	0.05									
P	CHLORDANE	0.1									
P	D-BHC	0.05									
P	DIELDRIN	0.05									
P	ENDOSULFAN SULFATE	0.1									
P	ENDRIN	0.05									
P	ENDRIN ALDEHYDE	0.05									
P	G-BHC	0.15									
P	HEPTACHLOR	0.15									
P	HEPTACHLOR EPOXIDE	0.1									
P	PCB-1016	0.3									
P	PCB-1221	0.3									
P	PCB-1232	0.3									
P	PCB-1242	0.3									
P	PCB-1248	0.3									
P	PCB-1254	0.3									
P	PCB-1260	0.2									
P	TOXAPHENE	1									
V	1,1,1-TRICHLOROETHANE	5									
V	1,1,2,2-TETRACHLOROETHANE	7									
V	1,1,2-TRICHLOROETHANE	5									
V	1,1-DICHLOROETHANE	5									
V	1,1-DICHLOROETHYLENE (1,1-dichloroethene)	3									
V	1,2-DICHLOROETHANE	3									
V	1,2-DICHLOROPROPANE	6									
V	1,2-TRANS-DICHLOROETHYLENE (1,2-trans-dichloroethene)	5									
V	1,3-DICHLOROPROPYLENE (1,3-dichloropropene)	5									
V	2-CHLOROETHYLVINYL ETHER	20									

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V	ACROLEIN	NA									
V	ACRYLONITRILE	NA									
V	BENZENE	5									
V	BROMOFORM	5									
V	CARBON TETRACHLORIDE	5									
V	CHLOROBENZENE	6									
V	CHLORODIBROMOMETHANE	3									
V	CHLOROETHANE	5									
V	CHLOROFORM	5									
V	DICHLOROBROMOMETHANE	3									
V	ETHYLBENZENE	10									
V	METHYL BROMIDE (Bromomethane)	5									
V	METHYL CHLORIDE (Chloromethane)	5									
V	METHYLENE CHLORIDE	5									
V	TETRACHLOROETHYLENE (Perchloroethylene or Tetrachloroethene)	5									
V	TOLUENE	5									
V	TRICHLOROETHYLENE (Trichloroethene)	3									
V	VINYL CHLORIDE	5									

Notes:

(1) Flow average for day pertains to WET/PP composite sample day.

(2) Flow average for month is for month in which WET/PP sample was taken.

(3) Analytical chemistry parameters must be done as part of the WET test chemistry.

(3a) Cyanide, Available (Cyanide Amenable to Chlorination) is not an analytical chemistry parameter, but may be required by certain discharge permits .

(4) Priority Pollutants should be reported in micrograms per liter (ug/L).

(5) Mercury is often reported in nanograms per liter (ng/L) by the contract laboratory, so be sure to convert to micrograms per liter on this spreadsheet.

(6) Effluent Limits are calculated based on dilution factor, background allocation (10%) and water quality reserves (15% - to allow for new or changed discharges or non-point sources).

(7) Possible Exceedence determinations are done for a single sample only on a mass basis using the actual pounds discharged. This analysis does not consider watershed wide allocations for fresh water discharges.

(8) These tests are optional for the receiving water. However, where possible samples of the receiving water should be preserved and saved for the duration of the WET test. In the event of questions about the receiving water's possible effect on the WET results, chemistry tests should then be conducted.

(9) pH and Total Residual Chlorine must be conducted at the time of sample collection. Tests for Total Residual Chlorine need be conducted only when an effluent has been chlorinated or residual chlorine is believed to be present for any other reason.

Maine Department of Environmental Protection

WET and Chemical Specific Data Report Form

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Comments:

ATTACHMENT C

Salmonid Survival and Growth Test

The Salmonid survival and growth test must follow the procedures for the fathead minnow larval survival and growth tests detailed in USEPA's freshwater acute and chronic methods manuals with the following Department modifications:

Species - Brook Trout, *Salvelinus fontinalis,* or other salmonid approved by the Department.

Age - Less than six months old for the first test each year and less than twelve months for subsequent tests.

Size - The largest fish must not be greater than 150% of the smallest.

Loading Rate - < 0.5 g/l/day

Feeding rate - 5% of body weight 3 times daily (15%/day)

Temperature - 12° ± 1°C

Dissolved Oxygen - 6.5 mg/l ,aeration if needed with large bubbles (> 1 mm diameter) at a rate of <100/min

Dilution Water - Receiving water upstream of discharge (or other ambient water approved by the Department)

Dilution Series - A minimum of 5 effluent concentrations (including the instream waste concentrations bracketing acute and chronic dilutions calculated pursuant to Section D); a receiving water control; and control of known suitable water quality

Duration - Acute = 48 hours
- Chronic = 10 days minimum

Test acceptability - Acute = minimum of 90% survival in 2 days
- Chronic = minimum of 80% survival in 10 days; minimum growth of 20 mg/gm/d dry weight in controls, (individual fish weighed, dried at 100°C to constant weight and weighed to 3 significant figures)

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
AND
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

Date: **June 9, 2015**

PERMIT NUMBER: **ME0020427**
LICENSE NUMBER: **W007759-5S-G-R**

NAME AND ADDRESS OF APPLICANT:

MAINE ELECTRONICS, INC.
19 Saint Anne Street
Lisbon, ME. 04250

COUNTY: **Androscoggin County**

NAME AND ADRESS WHERE DISCHARGE OCCURS:

19 Saint Anne Street
Lisbon, ME. 04250

RECEIVING WATER/CLASSIFICATION: **Sabattus River/Class C**

COGNIZANT OFFICIAL AND TELEPHONE NUMBER: **Mr. Thomas D. Gentner, V.P.**
Mr. William Sanborn, Operator
(207) 353-8612
e-mail: thomas.gentner@rockwellcollins.com

1. APPLICATION SUMMARY

a. Application – Maine Electronic Inc. (MEI hereinafter) has filed a timely and complete application to the Department for the renewal of combination Maine Pollutant Discharge Elimination System (MEPDES) permit ME0020247/Maine Waste Discharge License (WDL) #W007759-5S-E-R, (permit hereinafter) which was issued on by the Department on May 13, 2010, for a five-year term. The permit approved a discharge of up to a daily maximum of 79,000 gallons per day (gpd) or 0.079 million gallons per day (MGD) of treated ground water from a former electronic circuit board manufacturing complex to the Sabattus River, Class C, in Lisbon, Maine. The May 13, 2010 permit was modified on September 11, 2013, by removing the water quality based limitations and monitoring requirements for inorganic arsenic given the human AWQC was revised on July 29, 2012, and the discharge no longer had a reasonable potential exceed said revised criteria. See **Attachment A** of this Fact Sheet for a location map for the facility.

1. APPLICATION SUMMARY (cont'd)

b. Source Description: Maine Electronics manufactured circuit boards at the Lisbon facility from 1971 to 1989. In the late 1980's, ground water contamination was discovered on the Maine Electronics property and further investigation indicated that the contamination had migrated off-site and was detected in the public drinking water source on the Moody Road. On July 29, 1991, the Department issued a Compliance Order to Maine Electronics that contained requirements to address ground water contamination, including investigation and remediation. The ground water investigation and remediation provisions of that Compliance Order have been largely superseded by the requirements contained in the Hazardous Waste Facility Post Closure Licenses issued by the Department, the most recent of which is O-000153-HG-C-R issued in September of calendar year 2003.

In June of 1991, Woodard and Curran, on behalf of Maine Electronics, submitted an application to the Department for a waste discharge license for the pump and treat remediation project.

On April 3, 1993, the EPA issued a NPDES permit exclusion, pursuant to 40 CFR, 122.3(d), authorizing the discharge for a pilot test of the recovery and treatment system. The permit exclusion specified a flow limitation of fifty-five (55) gallons per minute and established concentration limitations for specific elements and compounds expected to be present in the discharge from the treatment system. The permit exclusion was in effect until the EPA issued the NPDES permit on August 9, 1994.

On June 3, 1993, Maine Electronics received approval from the Department for the start-up and operation of the remedial pump and treat system over a short-term pilot test period. Maine Electronics had requested the pilot test operation in order to collect operational and treatability data to evaluate the long-term treatment requirements for the remediation of the ground water. During operation, influent and effluent water quality samples were collected for laboratory analysis and subsequently reported to EPA and Department. In addition, Maine Electronics engaged a firm to conduct one set of whole effluent toxicity (WET) tests (acute and chronic testing on vertebrate and invertebrate species) utilizing the treated effluent. Priority pollutant testing was conducted on an additional sample of effluent collected at the same time as the sample for WET testing. At the completion of the pilot test period in October 1993, Maine Electronics considered whether to continue operating the system or shut it down until the appropriate State WDL and federal NPDES permit were issued. Maine Electronics chose to suspend operation of the system in order to avoid an exceedence of the concentration limitations established in the EPA permit exclusion.

1. APPLICATION SUMMARY (cont'd)

Based on the results of the pilot test operation, it became apparent in discussions between Maine Electronics and the Department that the issuance of a WDL would require the development of a site specific criterion for arsenic or the development of a new treatment technology for arsenic. In the absence of a State toxicologist in 1993, the Department obtained the services of a toxicologist in the State's Department of Agriculture. After a review of up-to-date scientific literature on the components that are factored into the equation for establishing water quality criteria that is protective of human health, the toxicologist rendered a decision on an interim effluent limitation for arsenic. The interim limitation for arsenic permitted Maine Electronics to continue operating the pump and treat system, remediate ground water on-site and remove a potential threat to the adjacent aquifer that supplies water to the municipal well located at Moody Road while a site specific criterion or new treatment technology for arsenic were developed. Additional water quality data collected during the term of the license would provide further insight into the occurrence and variation of arsenic levels over time and aid in the toxicological assessment for the long term discharge.

c. Waste Water Treatment: The ground water treatment system consists of air stripping to remove volatile organic compounds (VOCs). Periodically, the air stripper is cleaned to maintain air-water flow conditions at optimum performance levels. The cleaning with a weak acid removes inorganics that precipitate out on the interior surfaces of the air stripper. Residue collected as a result of cleaning the air stripper media is properly disposed of in accordance with federal and State regulations. The treated ground water will be discharged to the Sabattus River via a concrete pipe measuring 18 inches in diameter that extends three to four feet out into the river.

It is noted the permittee has not discharged to the Sabattus River as of the date of this permitting action as the waste water generated to date has been conveyed to the Town of Lisbon's publicly owned treatment works. The permittee has requested to retain a permit to discharge to the Sabattus River due to clauses in a document entitled, Agreement For Sewer Use, Town of Lisbon Industrial Waste Water Discharge Permit #70799, dated July 7, 1994 and subsequently renewed several times with an expiration date of December 21, 2015. Under the agreement, the Town of Lisbon may unilaterally modify, suspend or revoke the aforementioned local permit if conditions warrant such action. Should the Town of Lisbon revoke the local permit and a discharge to the Sabattus River is realized, the terms and conditions of this MEPDES permit become effectively immediately.

2. PERMIT SUMMARY

With the exception of inorganic arsenic, this permit is carrying forward all the terms and conditions of the previous permitting action. The May 13, 2010 permit was modified on September 11, 2013, by removing the water quality based limitations and monitoring requirements for inorganic arsenic given the human AWQC was revised on July 29, 2012, and the discharge no longer had a reasonable potential to exceed said revised criteria.

3. CONDITIONS OF PERMITS

Maine law, 38 M.R.S.A. Section 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., Section 420 and Department rule 06-096 CMR Chapter 530, *Surface Water Toxics Control Program,* require the regulation of toxic substances not to exceed levels set forth in Department rule 06-096 CMR Chapter 584, *Surface Water Quality Criteria for Toxic Pollutants*, and that ensure safe levels for the discharge of toxic pollutants.

4. RECEIVING WATER QUALITY STANDARDS

Maine law, 38 M.R.S.A., Section 467(1)(D)(3) classifies the Sabattus River as a Class C waterway. Maine law, 38 M.R.S.A., §465(4) contains the classification standards for Class C waters as follows:

A. Class C waters must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as a habitat for fish and other aquatic life.

B. The dissolved oxygen content of Class C water may be not less than 5 parts per million or 60% of saturation, whichever is higher, except that in identified salmonid spawning areas where water quality is sufficient to ensure spawning, egg incubation and survival of early life stages, that water quality sufficient for these purposes must be maintained. In order to provide additional protection for the growth of indigenous fish, the following standards apply.

4. WATER QUALITY STANDARDS (cont'd)

(1) The 30-day average dissolved oxygen criterion of a Class C water is 6.5 parts per million using a temperature of 22 degrees centigrade or the ambient temperature of the water body, whichever is less, if:

(a) A license or water quality certificate other than a general permit was issued prior to March 16, 2004 for the Class C water and was not based on a 6.5 parts per million 30-day average dissolved oxygen criterion; or

(b) A discharge or a hydropower project was in existence on March 16, 2005 and required but did not have a license or water quality certificate other than a general permit for the Class C water. This criterion for the water body applies to licenses and water quality certificates issued on or after March 16, 2004.

(2) In Class C waters not governed by subparagraph (1), dissolved oxygen may not be less than 6.5 parts per million as a 30-day average based upon a temperature of 24 degrees centigrade or the ambient temperature of the water body, whichever is less. This criterion for the water body applies to licenses and water quality certificates issued on or after March 16, 2004. The department may negotiate and enter into agreements with licensees and water quality certificate holders in order to provide further protection for the growth of indigenous fish. Agreements entered into under this paragraph are enforceable as department orders according to the provisions of sections 347-A to 349.

Between May 15th and September 30th, the number of Escherichia coli bacteria of human and domestic animal origin in Class C waters may not exceed a geometric mean of 126 per 100 milliliters or an instantaneous level of 236 per 100 milliliters. In determining human and domestic animal origin, the department shall assess licensed and unlicensed sources
using available diagnostic procedures. The board shall adopt rules governing the procedure for designation of spawning areas. Those rules must include provision for periodic review of designated spawning areas and consultation with affected persons prior to designation of a stretch of water as a spawning area.

C. Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community. This paragraph does not apply to aquatic pesticide or chemical discharges approved by the department and conducted by the department, the Department of Inland Fisheries and Wildlife or an agent of either agency for the purpose of restoring biological communities affected by an invasive species.

5. RECEIVING WATER CONDITIONS

A 9.1-mile Class C segment of Sabattus River (ABD Assessment Unit ID ME0104000210_418R01, is listed in a table entitled, *Category 5-A: Rivers And Streams Impaired By Pollutants Other Than Those Listed In 5-B Through 5-D (TMDL Required)* in a document entitled The 2012 Integrated Water Quality Monitoring and Assessment Report, published by the Department. The table states that aquatic life standards are impaired due to insufficient dissolved oxygen and excessive nutrient loading due to Sabattus Lake's eutrophic state and point and non-point source loadings from the municipal waste water treatment facility and agricultural runoff. The Department collected additional ambient water quality data during the summer of calendar year 2002 to supplement a data set collected in August of calendar year 2000. To address the aforementioned water quality issues, the Department is required to prepare a Total Maximum Daily Load (TMDL) report for review and approval by the EPA. The Department has not completed the TMDL as of the date of this permitting action.

Given the nature of the discharge from the Maine Electronics facility (ground water), the Department has made a determination that the discharge will not cause or contribute to the failure of the Sabattus River to meet the standards of its assigned classification.

6. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

a. Flow: The previous permitting action established monthly average and daily maximum flow limitations of 0.066 MGD and 0.072 MGD respectively for Tier I and monthly average and daily maximum flow limitations of 0.072 MGD and 0.079 MGD respectively, for Tier II. All four flow limitations are being carried forward in this permitting action.

b. Temperature - Department regulation Chapter 582 – *Regulations Relating to Temperature*, states that no discharge shall cause the ambient temperature of any freshwater body such as a stream or river, as measured outside a mixing zone, to be raised more than 5°F. The regulation 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 EPA water quality criterion for the protection of brook trout and Atlantic salmon (both species indigenous to the Sabattus River). The weekly average temperature of 66° F was derived to protect for the 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.

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

To promote consistency, the Department also interprets the ΔT of 0.5° F as a weekly rolling average criteria when the receiving water temperature is ≥66° F and <73° F. When the receiving water is ≥73°F the ΔT of 0.5° F is a daily criteria. The Department has determined that the 7Q10 low flow for the Sabattus River is 4.5 cfs or 1.62 MGD based on the required minimum low flow release from Sabattus Lake and low flow data collected by the Department in calendar year 2002.

This permitting action is carrying forward the seasonal (summer - June 1 through September 30) daily maximum temperature limitation of 70°F established in the previous licensing actions as it has been determined to be representative of the daily maximum temperature of the discharge during the summer months.

The Department has determined that these limitations are well within the criteria established in Chapter 582 as the maximum temperature increase in the receiving water during the critical time of the year (June 1 – September 30) is 0.11° F. This determination is based on the assumption that the discharge is at the Tier II daily maximum discharge flow limit of 0.079 MGD, the daily maximum discharge temperature limit of 70° F, the receiving water flow at the 1Q10 critical low flow of 4.2 cfs (2.71 MGD) and the receiving water is at the critical threshold of 66° F. The calculation is as follows:

$$\frac{(70° F)(0.079 MGD) + (66° F)(2.71 MGD)}{(0.079 MGD) + (2.71 MGD)} = 66.11° F$$

c. Dilution Factors - The Department establishes applicable dilution factors for discharges in accordance with freshwater protocols established in Department Rule Chapter 530, *Surface Water Toxics Control Program*, October 2005. With a monthly average and daily maximum permit flow limits of 0.066 MGD and 0.072 MGD for Tier I and 0.072 MGD and 0.079 MGD for Tier II respectively, and critical receiving water low flow values of 4.2 cfs[(1)] (1Q10), 4.5 cfs[(1)] (7Q10) and 13.5 cfs[(2)] (harmonic mean) the dilution factors are as follows:

Tier I

Acute: 1Q10 = 4.2 cfs $\Rightarrow \frac{(4.2 cfs)(0.6464) + (0.072 MGD)}{(0.072 MGD)} = 39:1$

Chronic: 7Q10 = 4.5 cfs $\Rightarrow \frac{(4.5 cfs)(0.6464) + (0.066 MGD)}{(0.066 MGD)} = 45:1$

Harmonic Mean: = 13.5 cfs $\Rightarrow \frac{(13.5 cfs)(0.6464) + (0.066 MGD)}{(0.066 MGD)} = 133:1$

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

Tier II

Acute: 1Q10 = 4.2 cfs $\Rightarrow \frac{(4.2 \text{ cfs})(0.6464) + (0.079 \text{ MGD})}{(0.079 \text{ MGD})} = 35:1$

Chronic: 7Q10 = 4.5 cfs $\Rightarrow \frac{(4.5 \text{ cfs})(0.6464) + (0.072 \text{ MGD})}{(0.072 \text{ MGD})} = 41:1$

Harmonic Mean: = 13.5 cfs $\Rightarrow \frac{(13.5 \text{ cfs})(0.6464) + (0.072 \text{ MGD})}{(0.072 \text{ MGD})} = 122:1$

Footnotes:

1) The 7Q10 and 1Q10 critical low flow values for the Sabattus River take into consideration the minimum low flow requirements in the April 16, 2001 Water Level Order approved for Sabattus Lake by the Sabattus Lake Dam Commission and low flow data for the Sabattus River collected by the Department in calendar year 2002.

2) 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 USEPA 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.

d. Whole effluent toxicity (WET) testing - 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 and vertebrate species. Priority pollutant and analytical chemistry testing is required to assess the levels of individual toxic pollutants in the discharge, comparing each pollutant to acute, chronic, and human health AWQC as established in Chapter 584.

Chapter 530 establishes four categories of testing requirements based predominately on the chronic dilution factor. The categories are as follows:

1) Level I – chronic dilution factor of <20:1.
2) Level II – chronic dilution factor of ≥20:1 but <100:1.
3) Level III – chronic dilution factor ≥100:1 but <500:1 or >500:1 and Q ≥1.0 MGD
4) Level IV – chronic dilution >500:1 and Q ≤1.0 MGD

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

Department rule Chapter 530 (1)(D) specifies the criteria to be used in determining the minimum monitoring frequency requirements for WET, priority pollutant and analytical chemistry testing. Based on the Chapter 530 criteria, the permittee's facility falls into the Level II frequency category as the facility has a chronic dilution factor of >20:1 but <100:1. Chapter 530(1)(D)(1) specifies that routine screening and surveillance level testing requirements are as follows:

Screening level testing – Beginning 24 months prior to permit expiration and lasting through 12 months prior to permit expiration (Year 4 of the term of the permit) and every five years thereafter if a timely request for renewal has been made and the permit continues in force, or is replaced by a permit renewal containing this requirement, the permittee shall conduct screening level testing as follows:

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

Surveillance level testing – Beginning upon permit issuance and lasting through 24 months prior to permit expiration (Years 1, 2 & 3 of the term of the permit) and commencing again 12 months prior to permit expiration (Year 5 of the term of the permit),the permittee shall conduct surveillance level testing as follows

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

Special Condition A, *Effluent Limitations and Monitoring Requirements*, of this permit requires the permittee to commence WET testing beginning upon commencement of a continuous discharge (30 consecutive days or 45 days within any 12-month period) and lasting through a minimum of twelve (12) consecutive months. Once the screening level of testing is completed, the Department will perform a statistical evaluation on the WET test results to determine if the discharge exceeds or has a reasonable potential to exceed the applicable acute and chronic critical ambient water quality thresholds of 2.6% and 2.2% respectively for Tier I and 2.8% and 2.4% respectively for Tier II. If necessary, this permit may be reopened pursuant to Special Condition G, *Reopening of Permit For Modifications*, to establish applicable limitations and or additional monitoring requirements.

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

e. Chemical specific testing - Parameters that have been limited by this permit and the previous permit have been previously identified or expected to be present in the treated ground water. The compounds were identified in the October 1994 waste discharge license application and subsequent correspondence submitted to the Department by the permittee, as well as the State Compliance Order issued in 1991.

Maine Law, 38 M.R.S.A, Sections 414-A and 420, Maine Rules Chapter 523(5)(d)(i), prohibit the discharge of effluents containing substances in amounts which would cause the surface waters of the State to contain toxic substance above levels set forth in federal ambient water quality criteria (AWQC) as established by the U.S. EPA. Accordingly, the discharge is subject to effluent monitoring requirements pursuant to Department rule 06-096 CMR Chapter 530, *Surface Water Toxics Control Program*, and ambient water quality criteria (AWQC) established in Department rule 06-096 CMR Chapter 584, *Surface Water Quality Criteria for Toxic Pollutants*, that ensure safe levels for the discharge of toxic pollutants.

With the exception of inorganic arsenic, 06-096 CMR, Chapter 584 requires a risk level of (10^{-6}) be utilized in determining the human health criteria for toxic pollutants believed to be carcinogenic. Permit limitations based on human health criteria have been calculated utilizing an AWQC associated with the consumption of water and organisms from the receiving water, as one of the designated uses of the Sabattus River include *"…a drinking water supply after treatment, fishing...."*

The EPA, Technical Support Document for Water Quality Based Toxics Control, March 1991, recommends the harmonic mean river flow be used in calculating limitations for carcinogens. If there is insufficient data to calculate the harmonic flow of the river, permit writers are authorized to utilize a flow that is three (3) times the 7Q10 flow. The 7Q10 is defined as the lowest observed seven (7) consecutive days of flow recorded over a ten (10) year reoccurrence interval.

Limitations for non-carcinogenic constituents were established to protect the aquatic community from acute and chronic effects of the discharge. Maximum daily limits are based on the maximum daily flow limitation (0.072 MGD for Tier I and 0.079 MGD for Tier II) from the facility, the 1Q10 river flow (lowest observed one (1) day flow recorded over a ten (10) year reoccurrence interval) and the criteria maximum concentration (CMC - acute). The monthly average limitations are based on the monthly average flow limitation (0.066 MGD for Tier I and 0.072 MGD for Tier II) from the facility, the 7Q10 river flow and the criteria continuous concentration (CCC - chronic). For parameters without an established CMC and or CCC, the next most stringent criteria, maximum

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

contamination levels (MCL) were utilized to derive the effluent limitation. In the absence of a CMC, CCC or MCL the State's human health maximum exposure guidelines (MEG) July 28, 2008, that utilizes a risk level of (10^{-5}) and a harmonic mean river flow were used to derive monthly average limitations.

The Fact Sheet of the 8/17/04 permit contained the following text "*The mass and concentration limits calculated for the VOCs in this Fact Sheet are less stringent than the previous State WDL issued on February 2, 1999 and the federal NPDES issued by the EPA on August 5, 1994. The Fact Sheet attached to the 8/5/94 NPDES permit states that the calculated end-of-pipe mass and concentration limits "…have been reduced by 80% so that the permitted discharge utilizes no more 20% of the total maximum daily load allowable in the Sabattus River." This methodology for establishing permit limits originated with a mid-1980's Department practice of limiting new or increased discharges to not consuming more than 20% of the remaining assimilative capacity of a receiving water. The intent was to always reserve a portion of the remaining assimilative capacity for future discharges. It remains Department practice to consider any discharge that consumes 20% or more of the remaining assimilative capacity of a receiving water to be a significant lowering of water quality under the State's antidegradation policy described more fully below."*

Chapter 530 (promulgated on October 12, 2005) §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 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, based on previously collected data from 60 rivers and streams statewide, in the absence of ambient data, an assumed concentration of 10% of the applicable water quality criteria must be used in calculations."* The Department has limited information on the background levels of metals in the water column in the Sabattus River in the vicinity of the permittee's outfall. Therefore, a default background concentration of 10% of the applicable water quality criteria is being used in the calculations of this permitting action.

Chapter 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 in the calculations of this permitting action.

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

Due to the Chapter 530 criteria regarding withholding 10% of the assimilative capacity of the receiving water for background and 15% of the assimilative capacity for reserve, this permitting action is not carrying forward the additional withholding of 20% of the assimilative capacity as this would be considered "double counting" the withholdings.

Chapter 530 §(3)(E) states *"... 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."*

Chapter 530 §4(F) states in part **"***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 total allowable discharge quantity for pollutants must be allocated consistent with the following principles.*

Evaluations must be done for individual pollutants of concern in each watershed or segment to assure that water quality criteria are met at all points in the watershed and, if appropriate, within tributaries of a larger river.

The total assimilative capacity, less the water quality reserve and background concentration, may be allocated among the discharges according to the past discharge quantities for each as a percentage of the total quantity of discharges, or another comparable method appropriate for a specific situation and pollutant. Past discharges of pollutants must be determined using the average concentration discharged during the past five years and the facility's licensed flow.

The amount of allowable discharge quantity may be no more than the past discharge quantity calculated using the statistical approach referred to in section 3(E) [Section 3.3.2 and Table 3-2 of USEPA's "Technical Support Document for Water Quality-Based Toxics Control"] of the rule, but in no event may allocations cause the water quality reserve amount to fall below the minimum referred to in 4(E) [15% of the total assimilative capacity]. Any difference between the total allowable discharge quantity and that allocated to existing dischargers must be added to the reserve.

The previous permitting action established monthly average and or daily maximum mass limits for the volatile organic compounds based on allocating 100% of the assimilative capacity of the Sabattus River and established monthly average and or daily maximum mass limits for metals based on allocating 20% of the assimilative capacity of the Sabattus River. Pursuant to Chapter 530, this permitting action is establishing the

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

monthly average and daily maximum water quality based mass limitations for all parameters based on 75% of the assimilative capacity of the Sabattus River or something less taking into consideration the discharge of toxic pollutants of concern being discharged from the Sabattus Sanitary District's waste water treatment facility located approximately 5 miles upstream of the MEI facility.

The Sabattus River is a tributary to the Androscoggin River. One municipal waste water treatment facility that is subject to the Department's Chapter 530 testing requirements discharges to the Sabattus River. The waste water treatment facility is the Sabattus Sanitary District located approximately 5 miles upstream from the MEI facility. As previously cited, Chapter 530 requires that AWQC must be met at the confluence of the Sabattus River and the Androscoggin River as well as at the individual discharge points on the Sabattus River after taking into consideration historic discharge levels for the two facilities as well as an allocation dedicated to background (10% of AWQC) and a reserve (15% of AWQC).

See **Attachment C** of this Fact Sheet Based on Department guidance that establishes protocols for establishing waste load allocations. The guidance states that the most protective of water quality becomes the facility's allocation.

Volatile Organic Compounds (VOCs)

Based on the fact the volatile organic compounds regulated by this permit and the last permitting action are unique to this discharge, the Department is utilizing the individual allocation method for determining limitations in this permit. The monthly average limitations for VOCs in this permitting action were derived utilizing the following equation.

EOP concentration = [Dilution factor x 0.75 x AWQC in ug/L] + [0.25 x AWQC in ug/L]

$$\text{Mass limit} = \frac{(\text{EOP concentration in ug/L})(8.34 \text{ lbs/gal})(\text{Permit flow limit in MGD})}{1000 \text{ ug/mg}}$$

f. **Perchloroethylene (Tetrachloroethylene)** – The 5/13/10 permitting action established water quality based monthly average mass and concentration limits as follows:

Tier I	Mass: 0.032 lbs/day	Concentration: 118 ug/L
Tier II	Mass: 0.032 lbs/day	Concentration: 108 ug/L

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

The limits were based on the human health AWQC of 0.59 ug/L (associated with the consumption of water and organisms), the harmonic mean dilution factor of 133:1 (Tier I) and 122:1 (Tier II) and the monthly average permit flow limit of 0.066 MGD (Tier I) and 0.072 MGD (Tier II). The mass limitations for perchloroethylene (tetrachloroethylene) in the 5/13/10 permit were derived as follows:

Tier I
EOP concentration: (133)(0.75)(0.59 ug/L) + (0.25)(0.59 ug/L) = 59 ug/L

Mass: $\frac{(59 \text{ ug/L})(8.34)(0.066 \text{ MGD})}{1000 \text{ ug/mg}} = 0.032$ lbs/day

Tier II
Concentration(122)(0.75)(0.59 ug/L) + (0.25)(0.59 ug/L) = 54 ug/L

Mass: $\frac{(54 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1{,}000 \text{ ug/mg}} = 0.032$ lbs/day

As for concentration, Chapter 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.*"

Since the adoption of Chapter 530, the Department has a developed a policy by which to establish equitable concentration limits in permits that are greater than calculated end-of-pipe concentrations. In general, most dischargers subject to the Chapter 530 testing requirements are discharging at or about 50% of the flow limitations established in their permits. This provides the Department with the flexibility to establish higher concentration limits in the permit while still maintaining compliance with the water quality based mass limitations. With an actual discharge flow at ½ (0.5) of permitted flow rate, a concentration limit of two times (mathematical inverse of 0.5) the calculated end-of-pipe concentration, will maintain compliance with water quality based mass limits. Therefore, this permitting action is establishing concentration limitations that are two (2) times higher than the calculated end-of-pipe concentrations. The permittee must keep in mind, if flows greater than 50% of the permitted flow are realized, the concentration in the effluent must be reduced proportional to maintain compliance with the mass limitations.

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

Volatile Organic Compounds (VOCs)

Concentration limitations for perchloroethylene in this permitting action were derived as follows;

Tier I
Permit concentration limit: (59 ug/L)(2.0) = 118 ug/L

Tier II
Permit concentration limit: (54 ug/L)(2.0) = 108 ug/L

g. **1,1 Dichloroethane** – The 5/10/13 permitting action established water quality based monthly average mass and concentration limits as follows:

Tier I	Mass: 3.8 lbs/day	Concentration: 14.0 mg/L
Tier II	Mass: 3.8 lbs/day	Concentration: 12.8 mg/L

The limits were based on the State of Maine's July 28 2008 interim MEG of 70 ug/L, the harmonic mean dilution factor of 133:1 (Tier I) and 122:1 (Tier II) and the monthly average permit flow limit of 0.066 MGD (Tier I) and 0.072 MGD (Tier II). The mass limitations for 1,1 dichloroethane in the 5/13/10 permit were derived as follows:

Tier I
EOP concentration: (133)(0.75)(70 ug/L) + (0.25)(70 ug/L) = 7,000 ug/L

Mass: $\frac{(7{,}000 \text{ ug/L})(8.34)(0.066 \text{ MGD})}{1{,}000 \text{ ug/mg}}$ = 3.8 lbs/day

Tier II
Concentration(122)(0.75)(70 ug/L) + (0.25)(70 ug/L) = 6,423 ug/L

Mass: $\frac{(6{,}423 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1000 \text{ ug/mg}}$ = 3.8 lbs/day

Concentration limitations for 1,1 dichloroethane in the 5/13/10 permit were derived as follows;

Tier I
Permit concentration limit: (7,000 ug/L)(2.0) = 14,000 ug/L

Tier II
Permit concentration limit: (6,423 ug/L)(2.0) = 12,846 ug/L

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

Volatile Organic Compounds (VOCs)

h. **1,1,1 Trichloroethane** – The 5/13/10 permitting action established water quality based monthly average mass and concentration limits as follows:

Tier I	Mass: 11 lbs/day	Concentration: 40 mg/L
Tier II	Mass: 11 lbs/day	Concentration: 36.7 mg/L

The limits were based on the State of Maine's July 28, 2008 interim MEG of 200 ug/L, the harmonic mean dilution factor of 133:1 (Tier I) and 122:1 (Tier II) and the monthly average permit flow limit of 0.066 MGD (Tier I) and 0.072 MGD (Tier II). The mass limitations for 1,1,1 trichloroethane in the 5/13/10 permit were derived as follows:

Tier I
EOP concentration: (133)(0.75)(200 ug/L) + (0.25)(200 ug/L) = 20,000 ug/L

Mass: $\frac{(20{,}000 \text{ ug/L})(8.34)(0.066 \text{ MGD})}{1{,}000 \text{ ug/mg}}$ = 11 lbs/day

Tier II
EOP concentration: (122)(0.75)(200 ug/L) + (0.25)(200 ug/L) = 18,350 ug/L

Mass: $\frac{(18{,}350 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1{,}000 \text{ ug/mg}}$ = 11 lbs/day

Concentration limitations for 1,1,1 trichloroethane in this permitting action were derived as follows;

Tier I
Permit concentration limit: (20,000 ug/L)(2.0) = 40,000 ug/L

Tier II
Permit concentration limit: (18,350 ug/L)(2.0) = 36,700 ug/L

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

Volatile Organic Compounds (VOCs)

i. **Trichloroethylene** – The 5/13/10 permitting action established water quality based monthly average mass and concentration limits as follows:

Tier I	Mass: 0.13 lbs/day	Concentration: 474 ug/L
Tier II	Mass: 0.13 lbs/day	Concentration: 435 ug/L

The limits were established based on the human health AWQC of 2.37 ug/L (associated with the consumption of water and organisms), the harmonic mean dilution factor of 133:1 (Tier I) and 122:1 (Tier II) and the monthly average permit flow limit of 0.066 MGD (Tier I) and 0.072 MGD (Tier II). The mass limitations for trichloroethylene in the 5/13/10 permit were derived as follows:

Tier I
EOP concentration: (133)(0.75)(2.37 ug/L) + (0.25)(2.37ug/L) = 237 ug/L

Mass: $\frac{(237 \text{ ug/L})(8.34)(0.066 \text{ MGD})}{1{,}000 \text{ ug/mg}} = 0.13$ lbs/day

Tier II
EOP concentration: (122)(0.75)(2.37 ug/L) + (0.25)(2.37ug/L) = 217 ug/L

Mass: $\frac{(217 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1{,}000 \text{ ug/mg}} = 0.13$ lbs/day

Concentration limitations for trichloroethylene in this permitting action were derived as follows;

Tier I
Permit concentration limit: (237 ug/L)(2.0) = 474 ug/L

Tier II
Permit concentration limit: (217 ug/L)(2.0) = 435 ug/L

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

Volatile Organic Compounds (VOCs)

j. **Methylene Chloride** – The 5/10/13 permitting action established water quality based monthly average mass and concentration limits as follows:

Tier I	Mass: 0.25 lbs/day	Concentration: 920 ug/L
Tier II	Mass: 0.25 lbs/day	Concentration: 844 ug/L

The limits were established based on the human health AWQC of 4.6 ug/L (associated with the consumption of water and organisms), the harmonic mean dilution factor of 133:1 (Tier I) and 122:1 (Tier II) and the monthly average permit flow limit of 0.066 MGD (Tier I) and 0.072 MGD (Tier II). The mass limitations for methylene chloride in the 5/10/13 permit were derived as follows:

Tier I
EOP concentration: (133)(0.75)(4.6 ug/L) + (0.25)(4.6 ug/L) = 460 ug/L

Mass: $\frac{(460 \text{ ug/L})(8.34)(0.066 \text{ MGD})}{1{,}000 \text{ ug/mg}} = 0.25$ lbs/day

Tier II
EOP concentration: (122)(0.75)(4.6 ug/L) + (0.25)(4.6 ug/L) = 422 ug/L

Mass: $\frac{(422 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1{,}000 \text{ ug/mg}} = 0.25$ lbs/day

Concentration limitations for methylene chloride in this permitting action were derived as follows;

Tier I
Permit concentration limit: (460 ug/L)(2.0) = 920 ug/L

Tier II
Permit concentration limit: (422 ug/L)(2.0) = 844 ug/L

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

Volatile Organic Compounds (VOCs)

Metals

Based on the fact metals are being regulated in this permit and the permit for the Sabattus Sanitary District, the Department is utilizing the segment allocation method for determining limitations in this permit. However, given the fact the MEI facility has never discharged to the Sabattus River, it has no historical discharge levels to be used in calculations pursuant to the Department's protocol. See Attachment C of this Fact Sheet for a copy of the Department protocol. Therefore, the monthly average and/or daily maximum water quality based mass limitations for metals in this permitting action were derived by calculating the end-of-pipe limitations for pollutants of concern for the Sabattus Sanitary District and then assigning the remainder of the allocation to the MEI facility or calculating an individual allocation if the pollutant of concern is specific to the MEI facility only.

It is noted the Sabattus River flows of 1Q10 of 4.2 cfs, the 7Q10 of 4.5 cfs and the harmonic mean of 13.5 cfs are applicable to both facilities as this is a regulated flow limit from Sabattus Pond. See the discussion in Section 6(c) of this Fact Sheet.

k. **Cadmium** – The 5/10/13 permitting action established water quality based monthly average and daily maximum mass and concentration limits that are being carried forward in this permit as follows:

Tier I

	Mass	Concentration
Monthly Avg.	0.0015 lbs/day	5.4 ug/L
Daily Max.	0.0072 lbs/day	24 ug/L

Tier II

	Mass	Concentration
Monthly Avg.	0.0015 lbs/day	5 ug/L
Daily Max.	0.0072 lbs/day	22 ug/L

Department rule Chapter 584, *Surface Water Quality Criteria for Toxic Pollutants*, promulgated on October 12, 2005, adopted acute and chronic AWQC for cadmium. The CCC (chronic) is 0.08 ug/L and CMC (acute) is 0.42 ug/L. It is noted the 12/4/09 statistical evaluation for the Sabattus River indicates the discharge of cadmium was not of a concern for the Sabattus Sanitary District. Therefore, the MEI facility was allocated 75% of the assimilative capacity of the receiving water at this time.

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

Metals

The monthly average mass and concentration limits established in the 5/13/10 permit were derived utilizing the chronic dilution factor of 45:1 (Tier I) and 41:1 (Tier II) and the monthly average flow limitations of 0.066 MGD (Tier I) and 0.072 MGD (Tier II).

The daily maximum mass and concentration limits were established utilizing the acute dilution factor of 39:1 (Tier I) and 35:1 (Tier II) and the daily maximum flow limitations of 0.072 MGD (Tier I) and 0.079 MGD (Tier II).

The monthly average and daily maximum limitations for total cadmium established in the 5/13/10 permit were derived as follows:

Monthly Average

Tier I

EOP concentration: (45)(0.75)(0.08 ug/L) + (0.25)(0.08 ug/L) = 2.7 ug/L

Mass: $\frac{(2.7 \text{ ug/L})(8.34)(0.066 \text{ MGD})}{1{,}000 \text{ ug/mg}}$ = 0.0015 lbs/day

Tier II

EOP concentration: (41)(0.75)(0.08 ug/L) + (0.25)(0.08 ug/L) = 2.5 ug/L

Mass: $\frac{(2.5 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1{,}000 \text{ ug/mg}}$ = 0.0015 lbs/day

Daily Maximum

Tier I

EOP concentration: (39)(0.75)(0.42 ug/L) + (0.25)(0.42 ug/L) = 12 ug/L

Mass: $\frac{(12 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1{,}000 \text{ ug/mg}}$ = 0.0072 lbs/day

Tier II

EOP concentration: (35)(0.75)(0.42 ug/L) + (0.25)(0.42 ug/L) = 11 ug/L

Mass: $\frac{(11 \text{ ug/L})(8.34)(0.079 \text{ MGD})}{1{,}000 \text{ ug/mg}}$ = 0.0072 lbs/day

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

Metals

Concentration limitations for total cadmium in the 5/13/10 permit were derived as follows;

Monthly Average

Tier I
Permit concentration limit: (2.7 ug/L)(2.0) = 5.4 ug/L

Tier II
Permit concentration limit: (2.5 ug/L)(2.0) = 5.0 ug/L

Daily Maximum

Tier I
Permit concentration limit: (12 ug/L)(2.0) = 24 ug/L

Tier II
Permit concentration limit: (11 ug/L)(2.0) = 22 ug/L

l. **Chromium III** - The 5/13/10 permit established water quality based monthly average and daily maximum mass and concentration limits that are being carried forward in this permit as follows:

Tier I

	Mass	Concentration
Monthly Avg.	0.43 lbs/day	1.57 mg/L
Daily Max.	7.8 lbs/day	28.5 mg/L

Tier II

	Mass	Concentration
Monthly Avg.	0.43 lbs/day	1.43 mg/L
Daily Max.	7.7 lbs/day	25.6 mg/L

Department rule Chapter 584, *Surface Water Quality Criteria for Toxic Pollutants*, promulgated on October 12, 2005, adopted AWQC for chromium III. The CCC (chronic) is 23.1 ug/L and CMC (acute) is 483 ug/L. It is noted the 12/4/09 statistical evaluation for the Sabattus River indicated the discharge of chromium III is not of a concern for the Sabattus Sanitary District. Therefore, the MEI facility was allocated 75% of the assimilative capacity of the receiving water at this time.

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

Metals

The monthly average mass and concentration limits established in the 5/13/10 permit were derived utilizing the chronic dilution factor of 45:1 (Tier I) and 41:1 (Tier II) and the daily maximum flow limitation of 0.066 MGD (Tier I) and 0.072 MGD (Tier II).

The daily maximum mass and concentration limits established in the 5/13/10 permit were derived utilizing the acute dilution factor of 39:1 (Tier I) and 35:1 (Tier II) and the daily maximum flow limitation of 0.072 MGD (Tier I) and 0.079 MGD (Tier II).

Monthly Average

Tier I

EOP concentration: (45)(0.75)(23.1 ug/L) + (0.25)(23.1 ug/L) = 785 ug/L

Mass: $\frac{(785 \text{ ug/L})(8.34)(0.066 \text{ MGD})}{1{,}000 \text{ ug/mg}} = 0.43$ lbs/day

Tier II

EOP concentration: (41)(0.75)(23.1 ug/L) + (0.25)(23.1 ug/L) = 716 ug/L

Mass: $\frac{(716 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1{,}000 \text{ ug/mg}} = 0.43$ lbs/day

Daily Maximum

Tier I

EOP concentration: (39)(0.75)(483 ug/L) + (0.25)(483 ug/L) = 14,248 ug/L

Mass: (14.248 mg/L)(8.34)(0.066 MGD) = 7.8 lbs/day

Tier II

EOP concentration: (35)(0.75)(483 ug/L) + (0.25)(483 ug/L) = 12,800 ug/L

Mass: (13 mg/L)(8.34)(0.072 MGD) = 7.7 lbs/day

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

Metals

Concentration limitations for chromium III in the 5/13/10 permit were derived as follows;

Monthly Average

Tier I
Permit concentration limit: (786 ug/L)(2.0) = 1,572 ug/L

Tier II
Permit concentration limit: (716 ug/L)(2.0) = 1,432 ug/L

Daily Maximum

Tier I
Permit concentration limit: (14,248 ug/L)(2.0) = 28,500 ug/L

Tier II
Permit concentration limit: (12,800 ug/L)(2.0) = 25,600 ug/L

m. **Copper** – The 5/13/10 permit established water quality based monthly average and daily maximum mass and concentration limits that are being carried forward in this permit as follows:

Tier I

	Mass	Concentration
Monthly Avg.	0.028 lbs/day	102 ug/L
Daily Max.	0.021 lbs/day	70 ug/L

Tier II

	Mass	Concentration
Monthly Avg.	0.028 lbs/day	94 ug/L
Daily Max.	0.021 lbs/day	64 ug/L

Department rule Chapter 584, *Surface Water Quality Criteria for Toxic Pollutants*, promulgated on October 12, 2005, adopted chronic and acute AWQC for copper. The CCC (chronic) is 2.36 ug/L and CMC (acute) is 3.07 ug/L. The 12/4/09 statistical evaluation for the Sabattus River indicated the discharge of copper was also a concern for the Sabattus Sanitary District. Therefore, mass limits for total copper were derived utilizing the segment allocation methodology outlined in the Department's guidance in **Attachment B** of this Fact Sheet.

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

Metals

A statistical evaluation was conducted on December 4, 2009 (Report ID 194) on the data for the Sabattus Sanitary District to establish limitations of concern and the remaining balance of the allocation for each pollutant was apportioned to the MEI facility. The total copper limits established in the 5/13/10 permit for the MEI facility were calculated as follows:

Monthly Average
Chronic - 7Q10 = 4.5 cfs (0.6464) = 2.91 MGD
Chronic AWQC = 2.36 ug/L or 0.00236 mg/L

Taking into consideration 15% of the AWQC reserve and 10% for background for a total of 25%, the assimilative capacity of the Sabattus River at the confluence of the Androscoggin River can be calculated as follows:

(0.00236 mg/L)(0.75)(8.34 lbs/gal)(2.91 MGD) = 0.0520 lbs/day

Based on the 12/4/09 statistical evaluation utilizing the segment allocation methodology, the Sabattus Sanitary District was given a daily maximum allocation of 0.023821 lbs for total copper. Thus, the balance of the assimilative capacity was allocated to the MEI facility. The calculation is as follows:

0.0520 lbs/day – 0.023821 lbs/day = 0.0282 lbs/day

Daily Maximum
Acute - 1Q10 = 4.2 cfs (0.6464) = 2.71 MGD
Acute AWQC = 3.07 ug/L or 0.00307 mg/L

Taking into consideration 15% of the AWQC reserve and 10% for background for a total of 25%, the assimilative capacity of the Sabattus River at the confluence of the Androscoggin River can be calculated as follows:

(0.00307 mg/L)(0.75)(8.34 lbs/gal)(2.71 MGD) = 0.0520 lbs/day

Based on the 12/4/09 statistical evaluation utilizing the segment allocation methodology, the Sabattus Sanitary District was given a daily maximum allocation of 0.031041 lbs for total copper. Thus, the balance of the assimilative capacity was allocated to the MEI facility. The calculation is as follows:

0.0520 lbs/day – 0.031041 lbs/day = 0.0210 lbs/day

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

Metals

For concentration, the 5/13/10 permit derived the monthly average and daily maximum end-of pipe concentrations by back-calculating from the mass limit and the monthly average permit flow limits of 0.066 MGD (Tier I) and 0.072 MGD (Tier II). The calculations are as follows:

Monthly average

Tier I

$$\frac{0.0282 \text{ lbs/day}}{(0.066 \text{ MGD})(8.34 \text{ gal/lb})} = 0.051 \text{ mg/L or } 51 \text{ ug/L}$$

Tier II

$$\frac{0.0282 \text{ lbs/day}}{(0.072 \text{ MGD})(8.34 \text{ gal/lb})} = 0.047 \text{ mg/L or } 47 \text{ ug/L}$$

Daily maximum

Tier I

$$\frac{0.021 \text{ lbs/day}}{(0.072 \text{ MGD})(8.34 \text{ gal/lb})} = 0.035 \text{ mg/L or } 35 \text{ ug/L}$$

Tier II

$$\frac{0.021 \text{ lbs/day}}{(0.079 \text{ MGD})(8.34 \text{ gal/lb})} = 0.032 \text{ mg/L or } 32 \text{ ug/L}$$

Concentration limitations for copper in the 5/13/10 permit were derived as follows;

Monthly Average

Tier I
Permit concentration limit: (51 ug/L)(2.0) = 102 ug/L

Tier II
Permit concentration limit: (47 ug/L)(2.0) = 94 ug/L

Daily Maximum

Tier I
Permit concentration limit: (35 ug/L)(2.0) = 70 ug/L

Tier II
Permit concentration limit: (32 ug/L)(2.0) = 64 ug/L

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

Metals

n. Iron – The 5/13/10 permit established water quality based monthly average limits that are being carried forward in this permit as follows:

Tier I

	Mass	Concentration
Monthly Avg.	5.6 lbs/day	20.4 mg/L

Tier II

	Mass	Concentration
Monthly Avg.	5.6 lbs/day	18.6 mg/L

Department rule Chapter 584, *Surface Water Quality Criteria for Toxic Pollutants*, promulgated on October 12, 2005, did not adopt AWQC for iron so the EPA MCL of 300 ug/L was the criteria by which the limitations for iron were established. It is noted the 5/13/10 statistical evaluation for the Sabattus River indicated the discharge of iron was not of a concern for the Sabattus Sanitary District. Therefore, the MEI facility was allocated 75% assimilative capacity of the receiving water at this time. The monthly average limits for total iron limits in the 5/13/10 permit were calculated as follows:

Monthly Average

Tier I

EOP concentration: (45)(0.75)(300 ug/L) + (0.25)(300 ug/L) = 10,200 ug/L

Mass: (10.2 mg/L)(8.34)(0.066 MGD) = 5.6 lbs/day

Tier II

EOP concentration: (41)(0.75)(300 ug/L) + (0.25)(300 ug/L) = 9,300 ug/L

Mass: (9.3 mg/L)(8.34)(0.072 MGD) = 5.6 lbs/day

Concentration limitations for total iron in this permitting action were derived as follows;

Tier I
Permit concentration limit: (10,200 ug/L)(2.0) = 20,400 ug/L

Tier II
Permit concentration limit: (9,300 ug/L)(2.0) = 18,600 ug/L

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

Metals

o. Lead – The 5/13/10 permit established water quality based monthly average and daily maximum mass and concentration limits that are being carried forward in this permit as follows

Tier I

	Mass	Concentration
Monthly Avg.	0.0033 lbs/day	12 ug/L
Daily Max.	0.19 lbs/day	620 ug/L

Tier II

	Mass	Concentration
Monthly Avg.	0.0033 lbs/day	11 ug/L
Daily Max.	0.18 lbs/day	588 ug/L

The 12/4/09 statistical evaluation for the Sabattus River indicated the discharge of lead (chronic) was also a concern for the Sabattus Sanitary District. Therefore, new monthly average mass limits for total lead were derived utilizing the segment allocation methodology outlined in the Department's guidance in **Attachment C** of this Fact Sheet and daily maximum mass limits for the MEI facility were allocated based on 75% of the assimilative capacity of the receiving water at this time. A statistical evaluation was conducted on December 4, 2009 (Report ID 194) on the data for the Sabattus Sanitary District to establish limitations of concern and the remaining balance of the allocation for each pollutant was apportioned to the MEI facility. The total lead limits established in this permitting action for the MEI facility were calculated as follows:

Monthly Average
Chronic - 7Q10 = 4.5 cfs (0.6464) = 2.91 MGD
Chronic AWQC = 0.41 ug/L or 0.00041 mg/L

Taking into consideration 15% of the AWQC reserve and 10% for background for a total of 25%, the assimilative capacity of the Sabattus River at the confluence of the Androscoggin River can be calculated as follows:

(0.00041 mg/L)(0.75)(8.34 lbs/gal)(2.91 MGD) = 0.007463 lbs/day

Based on the 12/4/09 statistical evaluation utilizing the segment allocation methodology, the Sabattus Sanitary District was given a monthly average allocation of 0.004142 lbs for total lead. Thus, the balance of the assimilative capacity was allocated to the MEI facility. The calculation is as follows:

0.007463 lbs/day – 0.004142 lbs/day = 0.003321 lbs/day

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

Metals

For concentration. the monthly average end-of pipe concentration was established by back-calculating from the mass limit and the monthly average permit flow limits of 0.066 MGD (Tier I) and 0.072 MGD (Tier II). The calculations are as follows:

Monthly Average

Tier I

$$\frac{0.003321 \text{ lbs/day}}{(0.066 \text{ MGD})(8.34 \text{ gal/lb})} = 0.0060 \text{ mg/L or } 6.0 \text{ ug/L}$$

Tier II

$$\frac{0.003321 \text{ lbs/day}}{(0.072 \text{ MGD})(8.34 \text{ gal/lb})} = 0.0055 \text{ mg/L or } 5.5 \text{ ug/L}$$

Tier I
Permit concentration limit: (6 ug/L)(2.0) = 12 ug/L

Tier II
Permit concentration limit: (5.5 ug/L)(2.0) = 11 ug/L

Daily Maximum

The daily maximum mass limits for the MEI facility were allocated based on 75% of the assimilative capacity of the receiving water at this time.

Tier I
EOP concentration: (39)(0.75)(10.52 ug/L) + (0.25)(10.52 ug/L) = 310 ug/L

Mass: $\frac{(310 \text{ ug/L})(8.34)(0.072 \text{ MGD})}{1000 \text{ ug/mg}} = 0.19 \text{ lbs/day}$

Tier II

EOP Concentration: (35)(0.75)(10.52 ug/L) + (0.25)(10.52 ug/L) = 279 ug/L

Mass: $\frac{(279 \text{ ug/L})(8.34)(0.079 \text{ MGD})}{1000 \text{ ug/mg}} = 0.18 \text{ lbs/day}$

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

Metals

Daily maximum concentration limitations for total lead in the 5/13/10 permit were derived as follows;

Daily Maximum

Tier I
Permit concentration limit: (310 ug/L)(2.0) = 620 ug/L

Tier II
Permit concentration limit: (279 ug/L)(2.0) = 558 ug/L

q. Manganese – The 5/13/10 permit established water quality based monthly average mass and concentration limits that are being carried forward in this permit, as follows:

Tier I

	Mass	Concentration
Monthly Avg.	2.7 lbs/day	10 mg/L

Tier II

	Mass	Concentration
Monthly Avg.	2.8 lbs/day	9.2 mg/L

Tier I

EOP concentration: (133)(0.75)(50 ug/L) + (0.25)(50 ug/L) = 5,000 ug/L or 5.0 mg/L

Mass: (5.0 mg/L)(8.34)(0.066 MGD) = 2.7 lbs/day

Tier II

EOP concentration: (122)(0.75)(50 ug/L) + (0.25)(50 ug/L) = 4,600 ug/L or 4.6 mg/L

Mass: (4.6 mg/L)(8.34)(0.072 MGD) = 2.8 lbs/day

Monthly average concentration limitations for manganese in this permitting action were derived as follows;

Tier I
Permit concentration limit: (5,000 ug/L)(2.0) = 10,000 ug/L

Tier II
Permit concentration limit: (4,600 ug/L)(2.0) = 9,200 ug/L

7. IMPACT ON RECEIVING WATER QUALITY

The Department has made a determination that as permitted, the discharge will not cause of contribute to the failure of the water body to meet the standards of Class C classification and the discharge will be subject to effluent limitations that require application of best practicable treatment.

8. PUBLIC COMMENTS

Public notice of this application was made in the Lewiston `Sun Journal newspaper on April 14, 2015. The Department receives public comments on an application until the date a final agency action is taken on that application. Those persons receiving copies of draft permits shall have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to Chapter 522 of the Department's rules.

9. DEPARTMENT CONTACTS

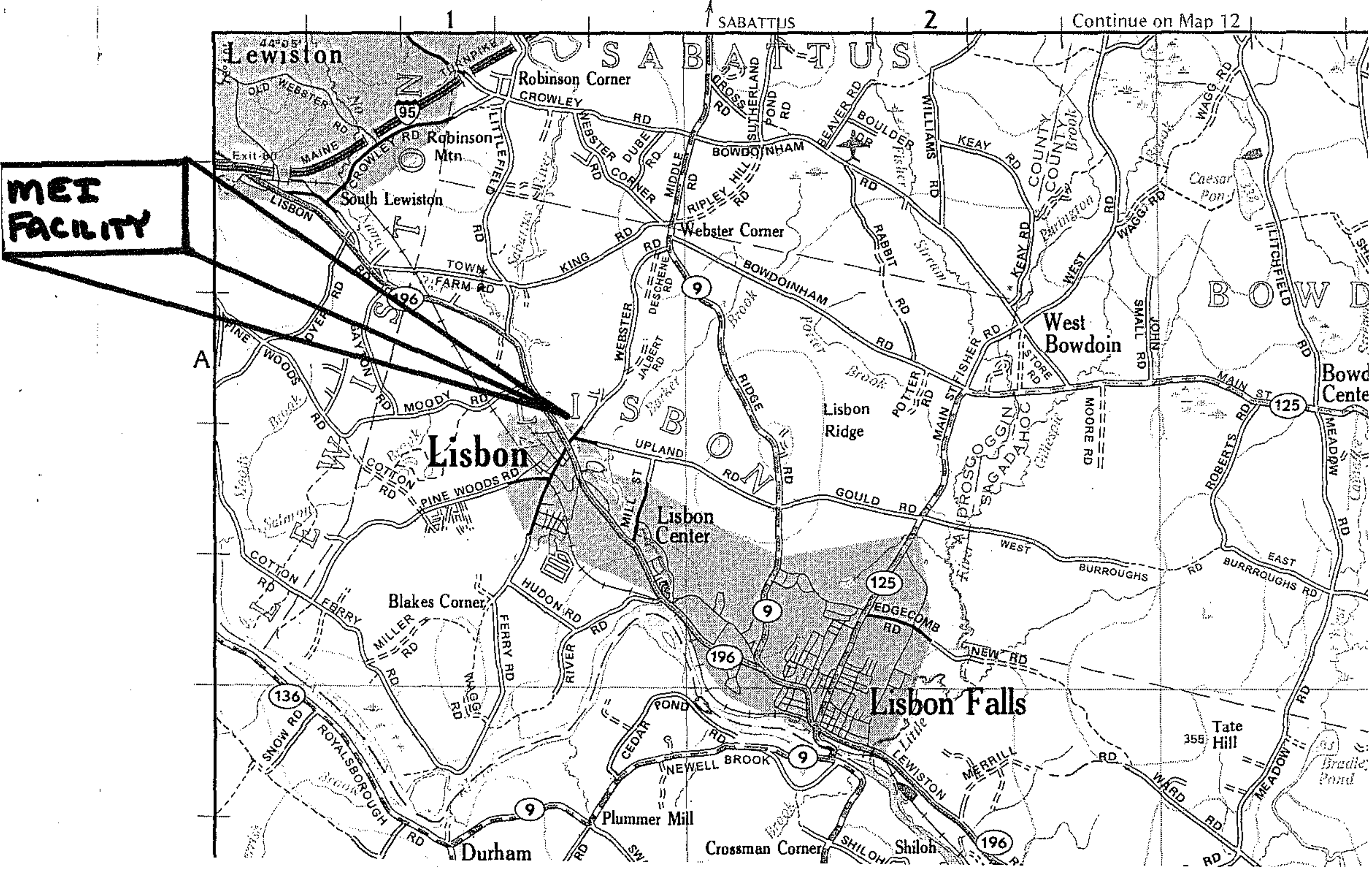
Additional information concerning this permitting action may be obtained from and written comments should be sent to:

Gregg Wood
Bureau of Land and Water Quality
Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017 Telephone (207) 287-7693
E-mail: gregg.wood@maine.gov

10. RESPONSE TO COMMENTS

Reserved until the close of the formal 30-day public comment period.

ATTACHMENT A


MEI FACILITY
SABATTUS
Continue on Map 12
Lewiston
Robinson Corner
Robinson Mtn
South Lewiston
Webster Corner
West Bowdoin
Lisbon
Lisbon Ridge
Lisbon Center
Blakes Corner
Lisbon Falls
Tate Hill
Plummer Mill
Durham
Crossman Corner
Shiloh
SABATTUS
LISBON
BOWD
ANDROSCOGGIN
SAGADAHOC

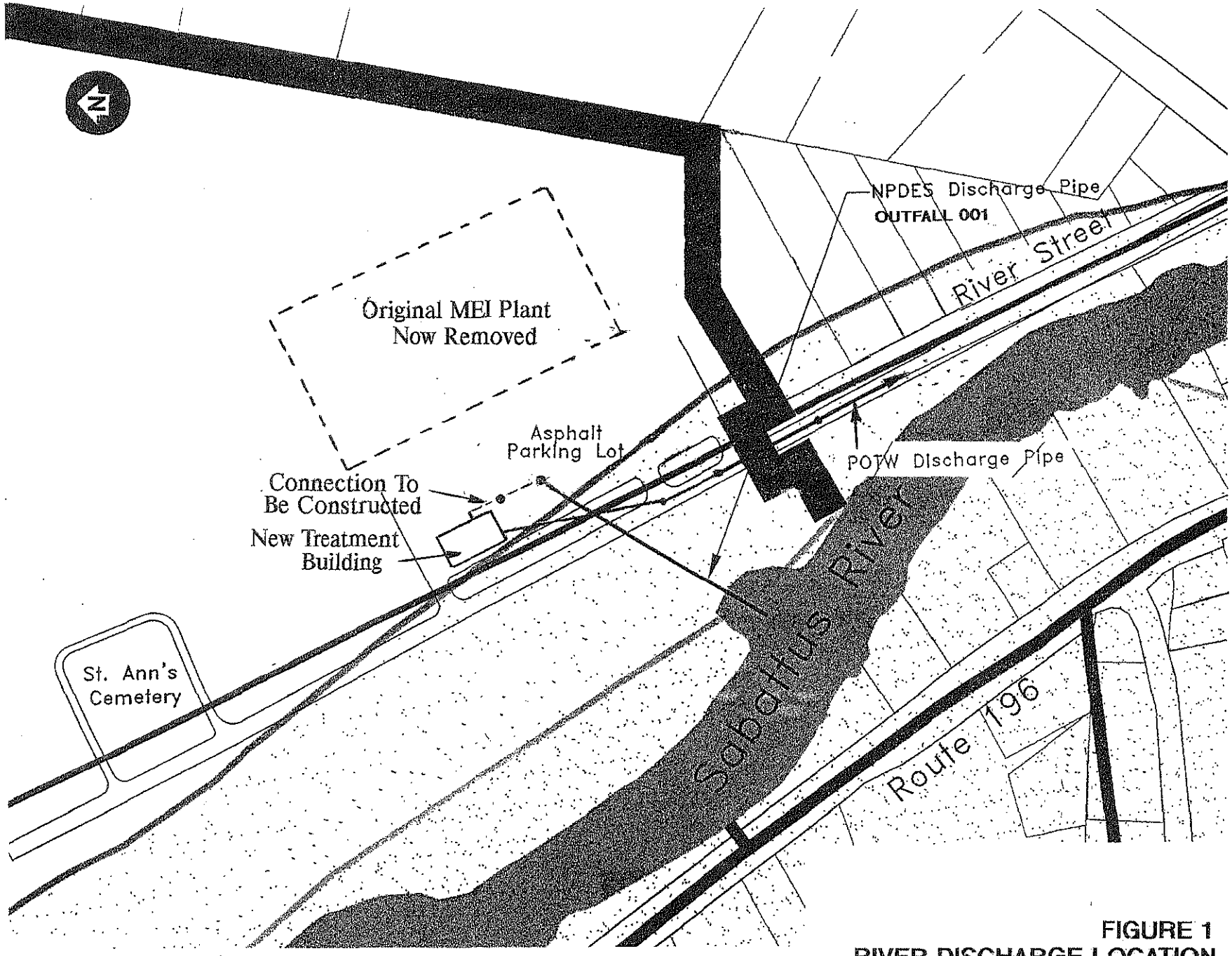


FIGURE 1
RIVER DISCHARGE LOCATION
MAINE ELECTRONICS, INC.

ATTACHMENT B

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

MEMORANDUM

DATE: October 2008

TO: Interested Parties

FROM: Dennis Merrill, DEP

SUBJECT: DEP's system for evaluating toxicity from multiple discharges

****

Following the requirements of DEP's rules, Chapter 530, section 4(F), the Department is evaluating discharges of toxic pollutants into a freshwater river system in order to prevent cumulative impacts from multiple discharges. This is being through the use of a computer program known internally as "DeTox". The enclosed package of information is intended to introduce you to this system.

Briefly, the DeTox program evaluates each wastewater facility within a watershed in three different ways in order to characterize its effluent: 1) the facility's past history of discharges, 2) its potential toxicity at the point of discharge on an individual basis, and 3) the facility's contribution to cumulative toxicity within a river segment in conjunction with other facilities. The value that is most protective of water quality becomes the value that is held in the DeTox system as an allocation for the specific facility and pollutant.

The system is not static and uses a five-year "rolling" data window. This means that, over time, old test results drop off and newer ones are added. The intent of this process is to maintain current, uniform facility data to estimate contributions to a river's total allowable pollutant loading prior to each permit renewal.

Many facilities are required to do only a relatively small amount of pollutant testing on their effluent. This means, statistically, the fewer tests done, the greater the possibility of effluent limits being necessary based on the facility's small amount of data. To avoid this situation, most facilities, especially those with low dilution factors, should consider conducting more than the minimum number of tests required by the rules.

Attached you will find three documents with additional information on the DeTox system:

- Methods for evaluating the effects of multiple discharges of toxic pollutants
- Working definitions of terms used in the DeTox system
- Reviewing DeTox Reports
- Prototype facility and pollutant reports

If you have questions as you review these, please do not hesitate to contact me at Dennis.L.Merrill@maine.gov or 287-7788.

Maine Department of Environmental Protection

Methods for evaluating the effects of multiple discharges of toxic pollutants.

Reference: DEP Rules, Chapter 530, section 4(F)

To evaluate discharges of toxic pollutants into a freshwater river system and prevent cumulative impacts from multiple discharges, DEP uses a computer program called "DeTox that functions as a mathematical evaluation tool.

It uses physical information about discharge sources and river conditions on file with the Department, established water quality criteria and reported effluent test information to perform these evaluations. Each toxic pollutant and associated water quality criterion for acute, chronic and/or human health effects is evaluated separately.

Each facility in a river drainage area has an assigned position code. This "address" is used to locate the facility on the river segment and in relation to other facilities and tributary streams. All calculations are performed in pounds per day to allow analysis on a mass balance. Pollutants are considered to be conservative in that once in the receiving water they will not easily degrade and have the potential to accumulate.

The process begins with establishing an assimilative capacity for each pollutant and water quality criterion at the most downstream point in the river segment. This calculation includes set-aside amounts for background and reserve quantities and assumed values for receiving water pH, temperature and hardness. The resulting amount of assimilative capacity is available for allocation among facilities on the river.

Each facility is evaluated to characterize its past discharge quantities. The historical discharge, in pounds per day, is figured using the average reported concentration and the facility's permitted flow. As has been past practice, a reasonable potential (RP) factor is used as a tool to estimate the largest discharge that may occur with a certain degree of statistical certainty. The RP factor is multiplied by the historical average to determine an allocation based on past discharges. The RP factor is also multiplied by the single highest test to obtain a maximum day estimate. Finally, the direct average without RP adjustment is used to determine the facility's percent contribution to the river segment in comparison to the sum of all discharges of the pollutant. This percent multiplied by the total assimilative capacity becomes the facility's discharge allocation used in evaluations of the segment loadings.

Additionally, individual facility discharges are evaluated as single sources, as they have been in the past to determine if local conditions are more limiting than a segment evaluation.

With all of this information, facilities are evaluated in three ways. The methods are:

1. The facility's past history. This is the average quantity discharged during the past five years multiplied by the applicable RP factor. This method is often the basis for an allocation when the discharge quantity is relatively small in comparison to the water quality based allocation.
2. An individual evaluation. This assumes no other discharge sources are present and the allowable quantity is the total available assimilative capacity. This method may be used when a local condition such as river flow at the point of discharge is the limiting factor.
3. A segment wide evaluation. This involves allocating the available assimilative capacity within a river segment based on a facility's percent of total past discharges. This method would be used when multiple discharges of the same pollutant to the same segment and the available assimilative capacity is relatively limited.

The value that is most protective of water quality becomes the facility's allocation that is held in the system for the specific facility and pollutant. It is important to note that the method used for allocation is facility and pollutant specific and different facilities on the same segment for the same pollutant can have different methods used depending on their individual situations.

Discharge amounts are always allocated to all facilities having a history of discharging a particular pollutant. This does not mean that effluent limits will be established in a permit. Limits are only needed when past discharge amounts suggest a reasonable potential to exceed a water quality based allocation, either on an individual or segment basis. Similar to past practices for single discharge evaluations, the single highest test value is multiplied by a RP factor and if product is greater than the water quality allowance, an effluent limit is established. It is important to remember an allocation is "banking" some assimilative capacity for a facility even if effluent limits are not needed.

Evaluations are also done for each tributary segment with the sum of discharge quantities in tributaries becoming a "point source" to the next most significant segment. In cases where a facility does not use all of its assimilative capacity, usually due to a more limiting individual water quality criterion, the unused quantity is rolled downstream and made available to other facilities.

The system is not static and uses a five-year rolling data window. Over time, old tests drop off and newer ones are added on. These changes cause the allocations and the need for effluent limits to shift over time to remain current with present conditions. The intent is to update a facility's data and relative contribution to a river's total assimilative capacity prior to each permit renewal. Many facilities are required to do only minimal testing to characterize their effluents. This creates a greater degree of statistical uncertainty about the true long-term quantities. Accordingly, with fewer tests the RP factor will be larger and result in a greater possibility of effluent limits being necessary. To avoid this situation, most facilities, especially those with relatively low dilution factors, are encouraged to conduct more that a minimum number of tests. It is generally to a facility's long-term benefit to have more tests on file since their RP factor will be reduced.

Maine Department of Environmental Protection

Working Definitions of Terms Used in the DeTox System.

Allocation. The amount of pollutant loading set aside for a facility. Separate amounts are set for each *water quality criterion.* Each pollutant having a history of being discharged will receive an allocation, but not all allocations become *effluent limits.* Allocation may be made in three ways: *historical allocation, individual allocation* or *segment allocation.*

Assimilative capacity. The amount of a pollutant that river segment can safely accept from point source discharges. It is determined for the most downstream point in a river segment using the *water quality criterion* and river flow. Separate capacities are set for acute, chronic and human health criteria as applicable for each pollutant. Calculation of this capacity includes factors for *reserve* and *background* amounts.

Background. A concentration of a pollutant that is assumed to be present in a receiving water but not attributable to discharges. By rule, this is set as a rebuttable presumption at 10% of the applicable *water quality criterion.*

Effluent limit. A numeric limit in a discharge permit specifically restricting the amount of a pollutant that may be discharged. An effluent limit is set only when the highest discharge, including an adjustment for *reasonable potential,* is greater than a facility's water quality based *allocation* for a pollutant.

Historical allocation (or *RP history*). One of three ways of developing an *allocation.* The facility's average history of discharges, in pounds at design flow, is multiplied by the appropriate *reasonable potential* factor. An allocation using this method does not become an *effluent limit.*

Historical discharge percentage. For each pollutant, the average discharge concentration for each facility in a segment is multiplied by the permitted flow (without including a *reasonable potential* factor). The amounts for all facilities are added together and a percent of the total is figured for each facility. When a facility has no detectable concentrations, that pollutant is assumed to be not present and it receives no percentage.

Individual allocation. One of three ways of developing an *allocation.* The facility's single highest discharge on record multiplied by the appropriate *reasonable potential* factor is compared to a water quality based quantity with an assumption that the facility is the only point source to that receiving water. If the RP-adjusted amount is larger, the water quality amount may become an *effluent limit.*

Less than. A qualification on a laboratory report indicating the concentration of a pollutant was below a certain concentration. Such a result is evaluated as being one half of the Department's reporting limit in most calculations.

Reasonable potential (RP). A statistical method to determine the highest amount of a pollutant likely to be present at any time based on the available test results. The method produces a value or RP factor that is multiplied by test results. The method relies on an EPA guidance document, and considers the coefficient of variation and the number of tests. Generally, the fewer number of tests, the higher the RP factor.

Reserve. An assumed concentration of a pollutant that set aside to account for non-point source of a pollutant and to allow new discharges of a pollutant. By rule this is set at 15% of the applicable *water quality criterion.*

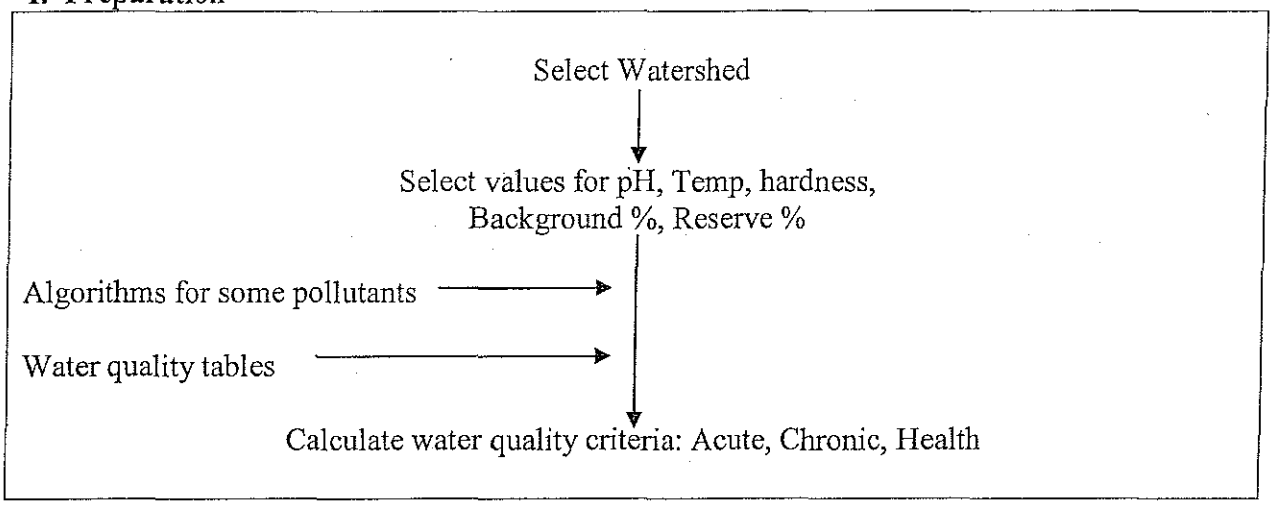
Segment allocation. One of three ways of developing an *allocation.* The amount is set by multiplying a facility's *historical discharge percentage* for a specific pollutant by the *assimilative capacity* for that pollutant and criterion. A facility will have different allocation percentages for each pollutant. This amount may become an *effluent limit.*

Tributary. A stream flowing into a larger one. A total pollutant load is set by adding the all facilities *allocations* on the tributary and treating this totaled amount as a "point source" to the next larger segment.

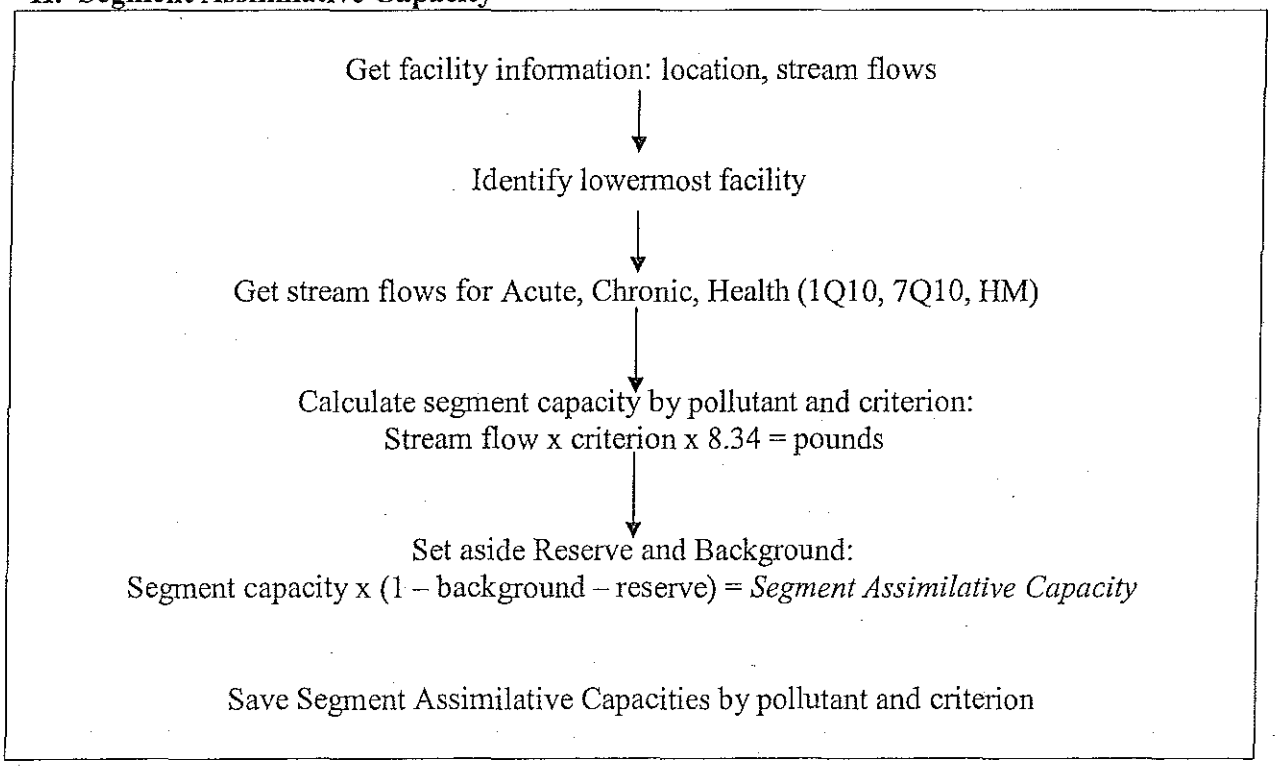
Water quality criteria. Standards for acceptable in-stream or ambient levels of pollutants. These are established in the Department's Chapter 584 and are expressed as concentrations in ug/L. There may be separate standards for acute and chronic protection aquatic life and/or human health. Each criterion becomes a separate standard. Different stream flows are used in the calculation of each.

Maine Department of Environmental Protection
General Processing Steps in "DeTox"

I. Preparation

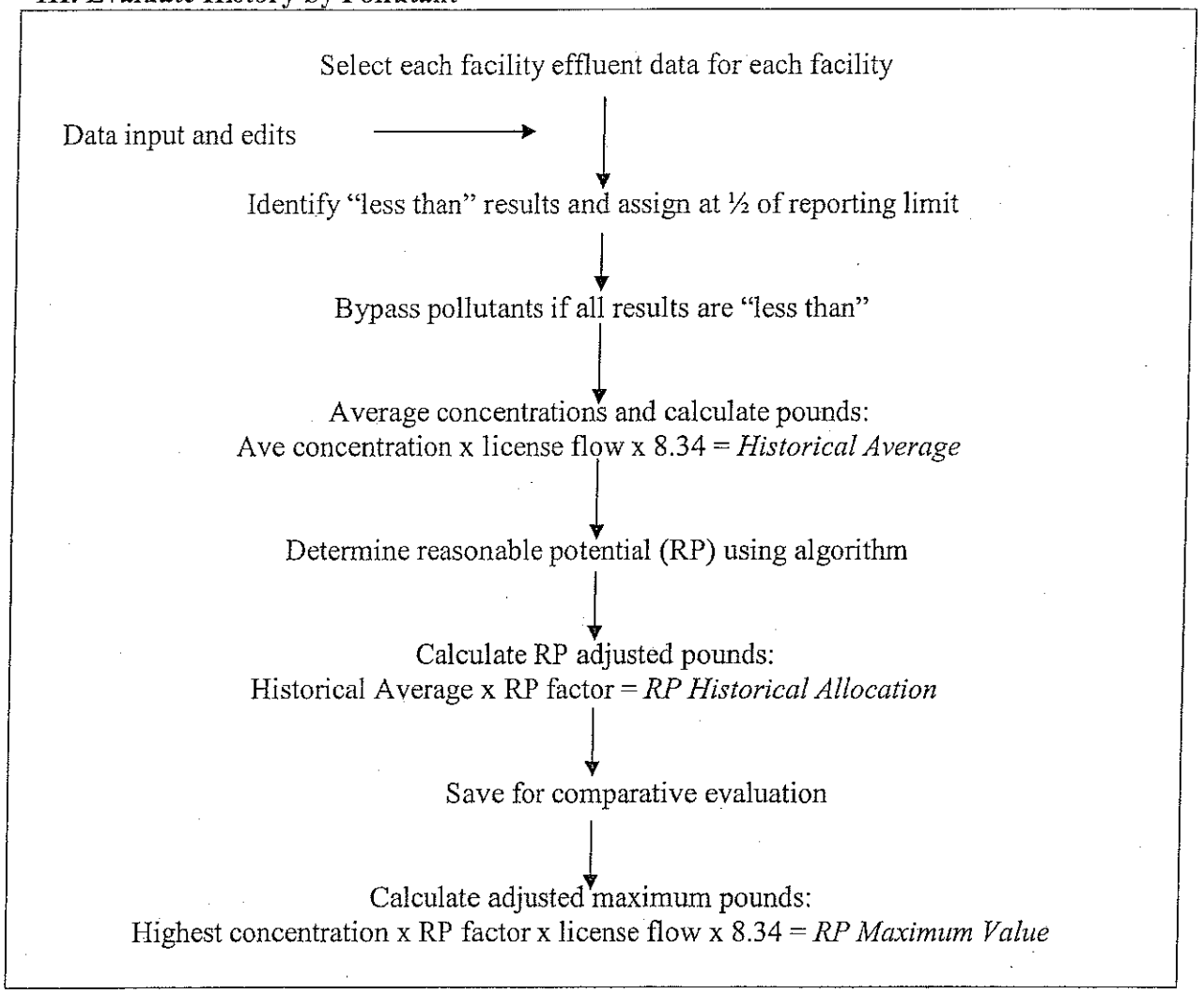


II. Segment Assimilative Capacity

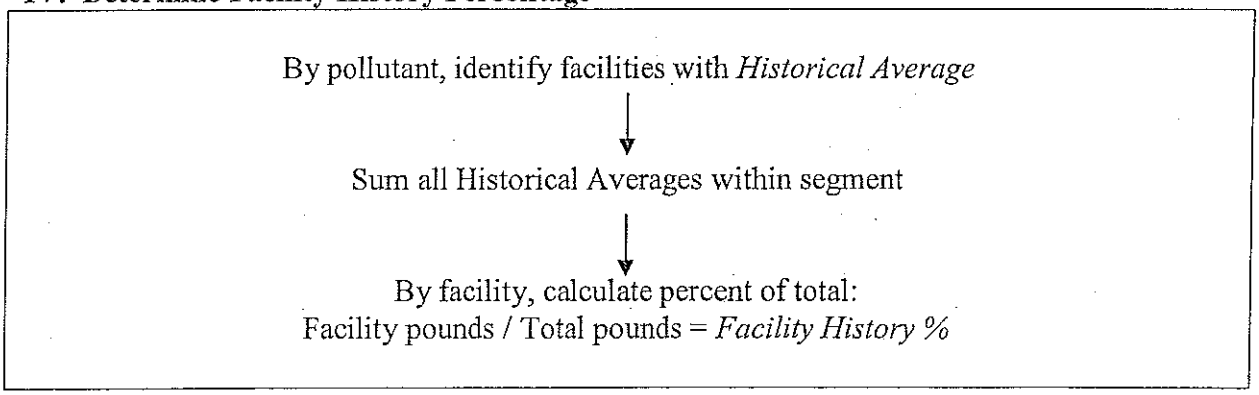


Maine Department of Environmental Protection
General Processing Steps in "DeTox"

III. Evaluate History by Pollutant



IV. Determine Facility History Percentage



V. Segment Allocation

By pollutant and criterion, select *Segment Assimilative Capacity*

↓

Select individual *Facility History %*

↓

Determine facility allocation:
Assimilative Capacity x Facility History % = *Segment Allocation*

↓

Save for comparative evaluation

VI. Individual Allocation

Select individual facility and dilution factor (DF)

↓

Select pollutant and water quality criterion

↓

By pollutant and criterion, calculate individual allocations:
[DF x 0.75 x criterion] + [0.25 x criterion] = Individual Concentration

↓

Determine individual allocation:
Individual Concentration x license flow x 8.34 = *Individual Allocation*

↓

Save for comparative evaluation

VII. Make Initial Allocation

By facility, pollutant and criterion, get:
Individual Allocation, Segment Allocation, RP Historical Allocation

↓

Compare allocation and select the smallest

↓

Save as *Facility Allocation*

VIII. Evaluate Need for Effluent Limits

By facility, pollutant and criterion select
Segment Allocation, *Individual Allocation* and *RP Maximum value*

↓

If *RP Maximum value* is greater than either *Segment Allocation* or *Individual Allocation*, use lesser value as *Effluent Limit*

↓

Save *Effluent Limit* for comparison

IX. Reallocation of Assimilative Capacity

Starting at top of segment, get *Segment Allocation*, *Facility Allocation* and *Effluent Limit*

↓

If *Segment Allocation* equals *Effluent Limit*, move to next facility downstream

↓

If not, subtract *Facility Allocation* from *Segment Allocation*

↓

Save difference

↓

Select next facility downstream

↓

Figure remaining *Segment Assimilative Capacity* at and below facility, less tributaries

↓

Add saved difference to get an adjusted *Segment Assimilative Capacity*

↓

Reallocate *Segment Assimilative Capacity* among downstream facilities per step V

↓

Repeat process for each facility downstream in turn