



STATE OF MAINE  
Department of Environmental Protection

JOHN ELIAS BALDACCI  
GOVERNOR

David P. Littell  
COMMISSIONER

March 8, 2010

Mr. Greg Lambert  
Phoenix Salmon US Inc  
P.O. Box 380  
Oquossoc, Maine 04964

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0110086  
Maine Waste Discharge License (WDL) Application # W-007149-6F-I-R  
**Final Permit, Gardner Lake Fish Hatchery, East Machias**

Dear Greg:

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

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

If you have any questions regarding the matter, please feel free to call me at (207) 215-1579 or contact me via email at [Robert.D.Stratton@maine.gov](mailto:Robert.D.Stratton@maine.gov).

Sincerely,

A handwritten signature in black ink that reads "Bob Stratton" with "DEP" written in smaller letters below the name.

Robert D. Stratton  
Division of Water Quality Management  
Bureau of Land and Water Quality

Enc./cc: Matt Young (MEDEP); Sandy Mojica (USEPA); Craig Lithgow (Gardner Lake)

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

IN THE MATTER OF

PHOENIX SALMON US, INC. ) MAINE POLLUTANT DISCHARGE  
EAST MACHIAS, WASHINGTON CTY, MAINE ) ELIMINATION SYSTEM PERMIT  
FISH HATCHERY ) AND  
#ME0110086 ) WASTE DISCHARGE LICENSE  
#W-007149-6F-I-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) has considered the application of PHOENIX SALMON US INC. (Phoenix Salmon, Gardner Lake), with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

**APPLICATION SUMMARY**

The applicant has applied for a renewal of Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0110086 / Maine Waste Discharge License (WDL) #W-007149-5Q-E-R, which was issued on October 15, 2004 for a five year term. The MEPDES Permit / WDL approved the discharge of a monthly average of 10 million gallons per day (MGD) of fish hatchery wastewater to Chase Mills Stream, Class B, from a commercial Atlantic salmon hatchery and rearing facility in East Machias, Maine, known as the Gardner Lake facility.

**PERMIT SUMMARY**

This permitting action is similar to the October 15, 2004 MEPDES Permit / Maine WDL and subsequent permit modifications and revisions in that it is carrying forward all previous terms and conditions with a few exceptions. This permitting action is different in that it is:

1. revising minimum monitoring frequency requirements for effluent biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), formalin, dissolved oxygen, and ambient stream flow;
2. revising the required sample method for total phosphorus;
3. revising daily maximum formalin mass limits based on industry consistency and concentration limits based on revised acute effluent dilution;
4. eliminating seasonal ambient dissolved oxygen and water temperature monitoring requirements;
5. providing guidance for reporting analytical results below detection and/or reporting limits; and
6. updating requirements related to proper use and record keeping of therapeutic agents and disinfecting/sanitizing agents.

## CONCLUSIONS

BASED on the findings in the attached Fact Sheet dated February 1, 2010 and revised March 4, 2010, and subject to the Conditions listed below, the Department makes the following conclusions:

1. The discharge, either by itself or in combination with other discharges, will not lower the quality of any classified body of water below such classification.
2. The discharge, either by itself or in combination with other discharges, will not lower the quality of any unclassified body of water below the classification which the Department expects to adopt in accordance with state law.
3. The provisions of the State's antidegradation policy, 38 MRSA 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 waters of the State constitute an outstanding national resource, that water quality will be maintained and protected;
  - (c) The standards of classification of the receiving water body are met or, where the standards of classification of the receiving water body are not met, the discharge will not cause or contribute to the failure of the water body to meet the standards of classification;
  - (d) Where the actual quality of any classified receiving water body exceeds the minimum standards of the next highest classification, that higher water quality will be maintained and protected;  
and
  - (e) Where a discharge will result in lowering the existing 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 application of PHOENIX SALMON US INC. to discharge a monthly average of 10 MGD of fish hatchery and rearing facility wastewater to Chase Mills Stream, Class B, 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 expires five (5) years from the date of signature below.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: August 5, 2009

Date of application acceptance: August 6, 2009

This Order prepared by Robert D. Stratton, BUREAU OF LAND & WATER QUALITY

SPECIAL CONDITIONS

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

- The permittee is authorized to discharge **fish hatchery and rearing facility wastewater from Outfall #001A** to Chase Mills Stream. Such discharges shall be limited and monitored by the permittee as specified below. The italicized numeric values bracketed in the table below and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports (DMRs). Footnotes are found on Pages 5 and 6.

Effluent Characteristic	Discharge Limitations				Minimum Monitoring Requirements		
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Daily Minimum	Measurement Frequency	Sample Type
	as specified	as specified	as specified	as specified	as specified	as specified	as specified
Flow [50050]	10 MGD [03]	---	---	---	---	Daily [01/01]	Measured [MS]
BOD <sub>5</sub> [00310]	500 lbs/day [26]	834 lbs/day [26]	6 mg/L [19]	10 mg/L [19]	---	2 / month [02/30]	Composite <sup>1</sup> [CP]
TSS [00530]	500 lbs/day [26]	834 lbs/day [26]	6 mg/L [19]	10 mg/L [19]	---	2 / month [02/30]	Composite <sup>1</sup> [CP]
Total Phosphorus <sup>2</sup> From June 1 - Sept 30 [00665]	7.7 lbs/day [26]	report lbs/day [26]	0.092 mg/L [19]	report mg/L [19]	---	1/week [01/07]	Composite <sup>1</sup> [CP]
Fish on Hand [45604]	report lbs/day [26]	report lbs/day [26]	---	---	---	1/week [01/07]	Calculated [CA]
Formalin <sup>3</sup> 1-Hour Treatment Maximum [51064]	report lbs/day [26]	100 lbs/day [26]	report mg/L [19]	63 mg/L [19]	---	Once per occurrence [01/OC]	Calculated [CA]
Formalin <sup>3</sup> 24-Hour Treatment Maximum [51064]	report lbs/day [26]	100 lbs/day [26]	report mg/L [19]	35 mg/L [19]	---	Once per occurrence [01/OC]	Calculated [CA]
Dissolved Oxygen <sup>4</sup> From June 1 – Sept 30 [00300]	---	---	report mg/L [19]	report mg/L [19]	7.5 mg/L [19]	1/week [01/07]	Measured [MS]
Instantaneous Stream Flow <sup>5</sup> [00061] From June 1 – Sept 30	report cfs [08]	---	---	---	25.3 cfs [08]	5/week [05/07]	Measured [MS]
pH [00400]	---	---	---	6.0-8.5 S.U. [12]	---	1/week [01/07]	Grab [GR]

## SPECIAL CONDITIONS

### A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS, FOOTNOTES:

**Sampling Locations:** As Phoenix Gardiner Lake is a flow-through facility where outflow essentially equals inflow, discharge flow is determined through use of an ultrasound device calibrated for the facility, located in the filter building. Effluent samples for all other parameters shall be collected at Outfall #001A following all means of wastewater treatment prior to discharge to the receiving water. All monitoring shall be conducted so as to capture conditions representative of wastewater generating processes at the facility, such as flow-through and cleaning discharge flows, use of therapeutic and disinfecting/sanitizing agents, etc. and in consideration of settling pond detention times. Any change in sampling location(s) must be reviewed and approved by the Department in writing. Sampling and analysis must be conducted in accordance with: a) methods approved in 40 Code of Federal Regulations (CFR) Part 136; b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136; or c) as otherwise specified by the Department. Samples that are sent out for analysis shall be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services. Samples that are sent to a POTW licensed pursuant to *Waste discharge licenses*, 38 M.R.S.A. § 413 are subject to the provisions and restrictions of *Maine Comprehensive and Limited Environmental Laboratory Certification Rules*, 10-144 CMR 263 (last amended February 13, 2000). **All effluent limits are gross, end of pipe limits, unless otherwise specified.**

All analytical test results shall be reported to the Department including results which are detected below the respective reporting limits (RLs) specified by the Department or as specified by other approved test methods. If a non-detect analytical test result is below the respective RL, the concentration result shall be reported as <Y where Y is the detection limit achieved by the laboratory for each respective parameter. Reporting a value of <Y that is greater than an established RL is not acceptable and will be rejected by the Department. For mass, if the analytical result is reported as <Y or if a detectable result is less than a RL, report as <X lbs/day, where X is the parameter specific limitation established in the permit.

1. **Composite Samples:** Samples shall consist of 24-hour composites collected with an automatic composite sampler. Alternatively, when weather conditions and/or equipment prevents automatic compositing and upon approval by the Department's compliance inspector, the permittee may manually composite a minimum of four grab samples collected at two-hour intervals during the working day at the facility.
2. **Total Phosphorus:** The concentration and mass effluent limits and monitoring requirements shall consist of gross, end-of-pipe values. Phosphorus limits and monitoring requirements are seasonal and are only in effect from June 1 through September 30 each year. Laboratory analysis shall consist of a low-level phosphorus analysis with a minimum detection limit of 1 part per billion (1 ug/L).

## SPECIAL CONDITIONS

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

3. Formalin: Formalin monitoring shall be conducted only when in use at the facility and shall consist of a calculated effluent value. The permittee shall calculate the effluent formalin concentration through accurate determinations of the formalin mass administered in each facility use, the volume of facility wastewater to which the formalin is added during the treatment period, and the volume of large wastewater structures that receive the effluent (during 1-hour treatments or less). The effluent mass shall be calculated by multiplying the gallons of formalin used by a 9.13 lbs / gallon conversion formula based on the weight of formalin. The permittee shall provide this information and calculations to the Department in a document accompanying the monthly DMR. See Fact Sheet Section 6f for sample calculations. The two-tiered formalin limits correspond to a first tier standard one hour per day treatment typical of hatchery and rearing facility discharges and a second tier for up to a maximum of 24 hours of treatment and discharge for addressing emergency conditions at the facility. Concentration limits for both tiers are based on the Department's BPJ of AWQC that will be protective of aquatic life in the receiving water. **Note, formalin treatments and discharges pursuant to the second tier limits (1 hour to 24 hour discharges) must be conducted no more frequently than once every four days. The permittee shall provide a list of dates on which the second tier limits were utilized and the length of time of each such treatment, with each monthly DMR.**
4. Dissolved Oxygen: The permittee shall maintain copies of all data from effluent dissolved oxygen monitoring at the facility for a period of five years and shall provide copies of data to the Department upon request.
5. Stream Flow: This limitation is an instantaneous minimum flow requirement. Between June 1 and September 30 of each year the permittee shall measure, record and report stream flows in Chase Mills Stream at a frequency of five days per week. Flow measurements shall be obtained from the staff gauge constructed in calendar year 2005 located just downstream of the hatchery. The reported stream flow value shall be calculated by subtracting the hatchery effluent flow from the stream flow value obtained from the stage discharge curve developed for said gauge. The minimum flow value for each month shall be reported on the applicable DMRs. The staff gauge shall be calibrated annually in the spring as soon as the site is safely accessible. The permittee shall prepare a spreadsheet containing the daily staff gauge readings, the daily stream flows derived from the stage discharge curve, the daily hatchery effluent flow and the daily calculated stream flow in Chase Mill Stream. The spreadsheets for each month shall be submitted as an attachment to the applicable monthly DMR.

## **SPECIAL CONDITIONS**

### **B. NARRATIVE EFFLUENT LIMITATIONS**

1. The effluent shall not contain a visible oil sheen, foam or floating solids at any time which would impair the usages designated by the classification of the receiving waters.
2. The effluent shall not contain materials in concentrations or combinations which are hazardous or toxic to aquatic life, or which would impair the usages designated by the classification of the receiving waters.
3. The discharges shall not cause visible discoloration or turbidity in the receiving waters which would impair the usages designated by the classification of the receiving waters.
4. Notwithstanding specific conditions of this permit the effluent must not lower the quality of any classified body of water below such classification, or lower the existing quality of any body of water if the existing quality is higher than the classification.

### **C. UNAUTHORIZED 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 August 6, 2009; 2) the terms and conditions of this permit; and 3) only from Outfall #001A. Discharges of wastewater from any other point source are not authorized under this permit, and shall be reported in accordance with Standard Condition B(5), *Bypasses*, of this permit.

### **D. NOTIFICATION REQUIREMENT**

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

1. Any substantial change in the volume or character of pollutants being introduced into the wastewater collection and treatment system.
2. For the purposes of this section, adequate notice shall include information on:
  - a. The quality or quantity of waste water introduced to the waste water collection and treatment system; and
  - b. Any anticipated impact of the change in the quantity or quality of the wastewater to be discharged from the treatment system.

## SPECIAL CONDITIONS

### E. MONITORING AND REPORTING

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report (DMR) forms provided by the Department. If you are receiving hard-copy DMR forms by mail, the completed, returned forms must be **postmarked on or before the thirteenth (13<sup>th</sup>) day of the month or hand-delivered to the Department's Regional Office such that the DMRs are received by the Department on or before the fifteenth (15<sup>th</sup>) 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 Department assigned inspector (unless otherwise specified by the Department) at the following address:

Department of Environmental Protection  
Bureau of Land and Water Quality  
106 Hogan Road  
Bangor, Maine 04401

Alternatively, if you are submitting an electronic Discharge Monitoring Report (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 15<sup>th</sup> 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 (13<sup>th</sup>) 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 (15<sup>th</sup>) 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 15<sup>th</sup> day of the month** following the completed reporting period.

### F. OPERATION & MAINTENANCE PLAN

This facility shall have a current written comprehensive Operation & Maintenance (O&M) Plan. The plan shall provide a systematic approach by which the permittee shall at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit.

The O&M Plan shall establish Best Management Practices (BMP) to be followed in operating the facility, cleaning the raceways/culture tanks, screens, and other equipment and disposing of any solid waste. The purpose of the BMP portion of the plan is to identify and to describe the practices which minimize the amounts of pollutants (biological, chemical, and medicinal) discharged to surface waters. Among other items, the plan shall describe in detail efficient feed management and feeding strategies to minimize discharges of uneaten feed and waste products, how and when the accumulated solids are to be removed, dewatered, and methods of disposal. The plan shall also describe where the removed material is to be placed and the techniques used to prevent it from re-entering the surface waters from any onsite storage. The plan shall document the recipients and methods of any offsite waste disposal.

## **SPECIAL CONDITIONS**

### **F. OPERATION & MAINTENANCE (O&M) PLAN (cont'd)**

**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 wastewater treatment facility,** the permittee shall submit the updated O&M Plan to their Department inspector for review and comment.

### **G. SETTLING TANK CLEANING**

All wastewater settling structures shall be cleaned when accumulated materials occupy 20% of a basin's capacity, when material deposition in any area of the basins exceed 50% of the operational depth, or at any time that said materials in or from the basins are contributing to a violation of permit effluent limits. The permittee is responsible for reporting effluent violations pursuant to Standard Conditions D.1 (f) and (g).

### **H. DISEASE AND PATHOGEN CONTROL AND REPORTING**

Phoenix Salmon must comply with Maine Department of Inland Fisheries and Wildlife and Maine Department of Marine Resources salmonid fish health rules (12 MRSA, §6071; 12 MRSA, §§7011, 7035, 7201, and 7202, or revised rules). The cited rules include requirements for notification to the appropriate agency within 24-hours of pathogen detection. In the event of a catastrophic pathogen occurrence, in addition to the requirements of the rules, **the permittee shall notify the Department in writing within 24-hours of detection,** with information on necessary control measures and the veterinarian involved. The permittee shall submit to the Department for review and approval, information on the proposed treatment including materials/chemicals to be used, material/chemical toxicity to aquatic life, the mass and concentrations of materials/chemicals as administered, and the concentrations to be expected in the effluent. If, upon review of information regarding a treatment pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may restrict or limit such use.

## **SPECIAL CONDITIONS**

### **I. THERAPEUTIC AGENTS**

All medicated fish feeds, drugs, and other fish health therapeutants shall be registered with USEPA as appropriate, approved by the US Food and Drug Administration (USFDA), and applied according to USFDA accepted guidelines and manufacturer's label instructions. Records of all such materials used are to be maintained at the facility for a period of five years. This permitting action does not authorize routine off-label or extra-label drug use. Such uses shall only be permitted in emergency situations when they are the only feasible treatments available and only under the authority of a veterinarian. **The permittee shall notify the Department in writing within 24-hours of such use.** This notification must be provided by the veterinarian involved and must include the agent(s) used, the concentration and mass applied, a description of how the use constitutes off-label or extra-label use, the necessity for the use in terms of the condition to be treated and the inability to utilize accepted drugs or approved methods, the duration of the use, the likely need of repeat treatments, and information on aquatic toxicity. Such uses and discharges will be subject to Department review and approval. If, upon review of information regarding the use of a drug pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may restrict or limit such use.

### **J. DISINFECTING/SANITIZING AGENTS**

Records of all disinfectants and/or sanitizing agents used that have the potential to enter the waste stream or receiving water, their volumes and concentrations as used and concentrations at the point of discharge, shall be maintained at the facility for a period of five years. This permitting action only authorizes the discharge of those materials applied for, evaluated by the Department, and either regulated or determined to be de minimus in this permitting action or in subsequent Department actions.

### **K. MINIMUM TREATMENT TECHNOLOGY REQUIREMENT**

Based on the information provided and Department BPJ, the permittee shall provide minimum treatment technology for the Gardner Lake facility that shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, and removal of solids. The Gardner Lake facility shall provide treatment and/or effluent quality equal to or better than the BPJ minimum treatment technology and shall comply with all effluent limitations, monitoring requirements, and operational requirements established in this permitting action. Additional treatment may be necessary to achieve specific water quality based limitations.

## SPECIAL CONDITIONS

### L. SALMON GENETIC TESTING AND ESCAPE PREVENTION

The US Fish and Wildlife Service and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) formally listed the Atlantic salmon as an endangered species on November 17, 2000. In that decision, the Gulf of Maine Distinct Population Segment (DPS) encompassed all naturally reproducing remnant populations of Atlantic salmon downstream of the former Edwards Dam site on the Kennebec River northward to the mouth of the St. Croix River. The watershed structure, available Atlantic salmon habitat, and abundance of Atlantic salmon at various life stages were best known for the following eight rivers: Dennys River, East Machias River, Machias River, Pleasant River, Narraguagus River, Ducktrap River, Sheepscot River, and Cove Brook. On June 15, 2009, the two agencies expanded the Gulf of Maine DPS to include salmon in the Penobscot, Kennebec, and Androscoggin Rivers and their tributaries. Two significant issues of concern regarding the rearing of salmon in Maine involve the genetic integrity of the salmon and escape prevention to avoid impacts on native fish.

Leading up to the 2000 listing and in review of MEPDES Permit / Maine WDLs for other fish hatchery and rearing facilities in Maine, the USFWS and NOAA Fisheries have advocated for genetic testing of Atlantic salmon housed at hatchery and rearing facilities to ensure that they are of North American origin, as well as employment of a fully functional Containment Management System (CMS) at facilities to prevent the escape of raised salmon or other species of concern in order to avoid impacts on native fish populations. The escape of reared fish also has the potential for transmission of diseases and pathogens to native fish populations. These issues are of particular concern for the Gulf of Maine DPS and resulted in establishment of CMS requirements for the Gardner Lake facility in the previous permitting action. The East Machias River, which is located downstream of the facility, is an identified DPS river. US Fish and Wildlife Service and NOAA Fisheries previously reported that Gardner Lake, Chase Mills Stream, and the East Machias River provide habitat for, and are used by Atlantic salmon.

Maine's Aquaculture General Permit (#MEG130000, Part II, Section I) and individual MEPDES Permits for marine aquaculture facilities contain requirements to address the genetic integrity of Atlantic salmon raised in Maine for aquaculture. The genetic requirements are implemented at the marine sites as well as at the hatchery and rearing facilities that raise and supply salmon for marine aquaculture. **The use of Atlantic salmon eggs or fish originating from non-North American stock is prohibited at the Gardner Lake facility.** In the event that Phoenix Salmon intends to keep Atlantic salmon eggs or fish at the Gardner Lake facility that are not intended for marine aquaculture, or are otherwise not included in the above described genetic testing requirements, the permittee shall comply with the requirements specified in Permit Attachment A, *Genetic Testing Requirements for non-Marine Aquaculture Atlantic Salmon*.

Based on requirements established in Maine's Aquaculture General Permit, individual MEPDES Permits for marine aquaculture facilities, and guidance developed by the Maine Aquaculture Association, this permitting action carries forward the requirement that **the permittee shall employ a fully functional CMS at the facility** designed, constructed, and operated so as to prevent the accidental or consequential escape of fish to open water. The CMS plan shall include a

## SPECIAL CONDITIONS

### L. SALMON GENETIC TESTING AND ESCAPE PREVENTION (cont'd)

site plan or schematic with specifications of the particular system. The permittee shall develop and utilize a CMS consisting of management and auditing methods to describe or address the following: site plan description, inventory control procedures, predator control procedures, escape response procedures, unusual event management, severe weather procedures and training. The CMS shall contain a facility specific list of critical control points (CCP) where escapes have been determined to potentially occur. Each CCP must address the following: the specific location, control mechanisms, critical limits, monitoring procedures, appropriate corrective actions, verification procedures that define adequate CCP monitoring, and a defined record keeping system.

The CMS site specific plan shall describe the use of effective containment barriers appropriate to the life history of the fish. The facility shall have in place both a three-barrier system for fish up to 5 grams in size and a two barrier system for fish 5 grams in size or larger. The three-barrier system shall include one barrier at the incubation/rearing unit, one barrier at the effluent from the hatch house/fry rearing area and a third barrier placed inline with the entire effluent from the facility. Each barrier shall be appropriate to the size of fish being contained. The two-barrier system shall include one barrier at the individual rearing unit drain and one barrier inline with the total effluent from the facility. Each barrier shall be appropriate to the size of fish being contained. Barriers installed in the system may be of the screen type or some other similarly effective device used to contain fish of a specific size in a designated area. Barriers installed in the system for compliance with these requirements shall be monitored daily. Additional requirements include:

1. The CMS shall be audited **at least once per year and within 30 days of a reportable escape** (more than 50 fish) by a party other than the facility operator or owner qualified to conduct such audits and approved by the Department. *[09008]* A written report of these audits shall be provided to the permittee and the Department for review and approval **within 30 days of the audit being conducted**. If deficiencies are identified during the audit, the report shall contain a corrective action plan, including a timetable for implementation and re-auditing to verify deficiencies are addressed as in the corrective action plan approved by the Department. Additional third party audits to verify correction of deficiencies shall be conducted in accordance with the corrective action plan or upon request of the Department. The permittee shall notify the Department upon completion of corrective actions.
2. Facility personnel responsible for routine operation shall be properly trained and qualified to implement the CMS. **Prior to any containment system assessment** associated with this permit, the permittee shall provide to the Department documentation of the employee's or contractor's demonstrated capabilities to conduct such work.
3. The permittee shall maintain complete records, logs, reports of internal and third party audits and documents related to the CMS on site for a period of 5 years.
4. For new facilities, a CMS shall be prepared and submitted to the Department for review and approval prior to fish being introduced into the facility.

## **SPECIAL CONDITIONS**

### **L. SALMON GENETIC TESTING AND ESCAPE PREVENTION (cont'd)**

**The permittee shall report any known or suspected escapes of more than 50 fish within 24 hours to the Maine Dept of Marine Resources Bureau of Sea-Run Fisheries and Habitats at 207-941-9973 (Pat Keliher and Joan Trial), Maine Department of Inland Fisheries and Wildlife at 207-287-5202 (Commissioner's office), USFWS Maine Field Office at 207-827-5938, and NOAA Fisheries Maine Office at 207-866-7379. During off-hours, the reports can be called to 800-432-7381.**

### **M. REOPENING OF PERMIT FOR MODIFICATIONS:**

Upon evaluation of the test 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 including, but not limited to, new information from ambient water quality studies of the receiving water.

### **N. SEVERABILITY**

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

# **ATTACHMENT A**

## Genetic Testing Requirements for Non-Marine Aquaculture Atlantic Salmon

Maine's Aquaculture general permit and individual MEPDES Permits for marine aquaculture facilities contain requirements to address the genetic integrity of Atlantic salmon raised in Maine for aquaculture. The genetic requirements are implemented at the marine sites as well as at the hatchery and rearing facilities that raise and supply salmon for marine aquaculture. As this is precisely the nature of Phoenix Salmon's business and the purpose of the Gardner Lake facility, it is assumed that all salmon at the facility shall comply with these requirements. In the event that Phoenix Salmon Inc intends to keep Atlantic salmon eggs or fish at the Gardner Lake facility that are not intended for marine aquaculture, or are otherwise not included in the above described genetic testing requirements, the permittee shall comply with the following requirements.

1. a. **The use of Atlantic salmon eggs or fish** (hereinafter referred to as Atlantic salmon) **originating from non-North American stock is prohibited at the Gardner Lake facility.** Non-North American stock is defined as any Atlantic salmon (*Salmo salar*) that possess genetic material derived partially (hybrids) or entirely (purebreds) from any Atlantic salmon stocks of non-North American heritage, regardless of the number of generations that have passed since the initial introduction of the non-North American genetic material. For the purposes of this permit, classification of brood fish as either North American or non-North American stock will be based on genetic evaluation of each fish's DNA in accordance with the Atlantic Salmon Microsatellite Analysis Protocol (salmon testing protocol) below. The Microsatellite Protocol shall be used to classify each brood fish.
- b. Only individual fish determined to be North American, according to the salmon testing protocol, can be used to produce offspring to be placed at the Gardner Lake facility. No fish classified as non-North American can be used to create progeny for the Gardner Lake facility.
- c. **Prior to January 1 of each year**, beginning the effective date of this permit, genetic evaluation information developed pursuant to the salmon testing protocol shall be submitted to NOAA Fisheries and/or the US Fish and Wildlife Service, with confirmation sent to the Department.
- d. **Prior to April 30 of each year**, beginning the effective date of this permit, the permittee shall submit to the Department confirmation from the Services demonstrating compliance with section 1. In the event any fish or gametes are found to be non-North American pursuant to the salmon testing protocol, the permittee shall also report to the Department and the Services the disposition of those fish or gametes.
- e. As of the effective date of this permit, **all Atlantic salmon kept at the Gardner Lake facility must be of North American origin.** At least 30 days prior to bringing any Atlantic salmon to the facility that are not destined for marine aquaculture and are thus not subject to the salmon testing protocol through other permit requirements, the permittee shall provide the Department with written confirmation regarding compliance with these conditions.

2. Transgenic salmonids are prohibited. Transgenic salmonids are defined as species of the genera *Salmo*, *Oncorhynchus* and *Salvelinus* of the family Salmonidae and bearing, within their DNA, copies of novel genetic constructs introduced through recombinant DNA technology using genetic material derived from a species different from the recipient, and including descendants of individuals so transfected. This prohibition does not apply to vaccines.
3. Personnel from the Department, the Department of Marine Resources, the US Environmental Protection Agency, NOAA Fisheries, and the US Fish and Wildlife Service shall be allowed to inspect the facility during normal operation hours. These personnel will provide credentials attesting to their position and will follow the site's biosecurity procedures and may, at market value, purchase random samples of salmon from the facility to monitor compliance with these conditions. Operational records regarding compliance with this permitting action shall be made available to these personnel for their inspection upon request.
4. The intentional release of Atlantic salmon to the receiving waters is prohibited.

#### **Atlantic Salmon Microsatellite Analysis Protocol (salmon testing protocol)**

This protocol will be used to determine which Atlantic salmon can be used for breeding and production stock pursuant to the requirements of this permitting action. The protocol describes a standardized procedure to classify fish as either North American or non-North American stock and is largely based on the procedures used by King et al. (2001; *Molecular Ecology*, 10: 807-821). The permittee shall be responsible for providing genotype data to the US Fish and Wildlife Service and the National Marine Fisheries Service (the "Services") for data analysis and fish classification as described herein.

##### *DNA isolation*

Genomic DNA will be isolated from tissue, fin clip or scale samples from each fish intended for use as broodstock employing either a commercially available DNA extraction, such as PureGene (Gentra Systems) or DNeasy tissue kit (Qiagen Inc.) or a phenol/chloroform based extraction system such as used in Patton et al. (1997; *Can. J. Fish. Aquat. Sci.*, 54: 1548-1556) or, particularly for scales, a Chelex-resin based protocol such as given in King et al. (2001). DNA should be of sufficiently consistent quality and quantity to perform PCR analyses.

### *Microsatellite analysis*

The loci used to classify brood fish as either North American or non-North American stock will be: Ssa85, Ssa171, Ssa197, and Ssa202 (O'Reilly et al. 1996); SSOSL311 and SSOSL438 (Slettan et al. 1995, 1996) and Ssa289 (McConnel et al. 1995). Additional loci are required for marking purposes via genetic parentage determination, and will be supplemental to the loci identified above that are used for continent of origin determination. Also, additional loci may be incorporated in the future by the Services to allow for unique genotypes or for additional identification purposes.

PCR conditions for the selected loci will essentially follow that of King et al. (2001) and Patton et al. (1997) with possible minor modifications for optimization of products of individual loci. The loci will be labeled with fluorescent dyes to allow for visualization, including Ned, Hex, and 6-Fam by ABI or any other comparable commercial supplier of labeled oligonucleotides. An appropriate size standard for genotyping will be used (such as the 500ROX by ABI). Microsatellite analysis will be performed using the ABI 3100 autosequencer or any other commercial system providing equivalent results. Fragment analysis will be accomplished using a combination of GENESCAN and GENOTYPER software packages from ABI, or any other commercial system providing equivalent results. The permittee will present electronic data tables from the GENOTYPER program, or in an equivalent program that is acceptable to the Services, to the Services in spreadsheet format in Excel or any other commercially available program providing equivalent results that allow the data to be easily reformatted for subsequent analyses. The output files (gel tracings) from GENESCAN and GENOTYPER will also be provided by the permittee at the same time to help the Services assure data quality. Data provided must be complete at all loci for all fish.

### *Size verification of allelic products*

To ensure accurate sizing of allelic products from the aquaculture fish relative to the designations developed in the King laboratory (see King et al. 2001), the Services will provide an adequate supply of DNA samples from representative fish of known genotypes to enable calibration of equipment throughout the term of the controlling permit conditions. Control samples will be used at the inception of the study to set the automated allele designation/binning parameters of the GENOTYPER software or equivalent genotyping software so that all subsequent allele designations made for aquaculture fish will be sized relative to the standards.

### *Genetic screening*

Identification of North American stock will be based on assignment tests performed with GeneClass, [www.montpellier.inra.fr/URLB/geneclass/geneclass.html](http://www.montpellier.inra.fr/URLB/geneclass/geneclass.html). Atlantic salmon for the facility will be compared to two reference groups. The first group will be comprised of samples from North America (Dennys, Ducktrap, East Machias, Machias, Narraguagus, Penobscot mainstem, Pleasant, Sheepscot, Conne, Gold, Gander, Miramichi, Saguenay, and Stewiacke rivers and aquaculture stocks derived from St John and Penobscot populations). The second group will be comprised of non-North American samples from at least 2 rivers each from Iceland, Norway, Finland, Scotland, Ireland, and Spain and the Landcatch aquaculture stock plus a hybrid stock crossing Landcatch with St John NB aquaculture salmon.

The likelihood for assigning any given fish to each reference population will be calculated using the program GeneClass. If the ratio of the likelihood scores indicates that North American origin is at least twice as likely as non-North American origin, then that fish will be considered to be of North American origin. All other fish will be classified as non-North American stock. In addition, those fish not able to be classified as either NNA or NA due to incomplete genotypes or insufficient sample size or quality will be considered non-North American. The Services will promptly report the results to the facility.

**MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT  
AND  
MAINE WASTE DISCHARGE LICENSE**

**FACT SHEET**

Date: February 1, 2010  
Revised: March 4, 2010

MEPDES PERMIT NUMBER: #ME0110086  
MAINE WDL NUMBER: # W-007149-6F-I-R

NAME AND ADDRESS OF APPLICANT:

**PHOENIX SALMON US, INC.  
P.O. Box 380  
Oquossoc, Maine 04964**

COUNTY: WASHINGTON

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

Phoenix Salmon US, Inc.  
Gardner Lake Hatchery  
144 Chases Mill Road  
East Machias, Maine 04630

RECEIVING WATER / CLASSIFICATION: Chase Mills Stream / Class B

COGNIZANT OFFICIAL AND TELEPHONE NUMBER:

Greg Lambert (207) 864-3664, [greg.lambert@cookeaqua.com](mailto:greg.lambert@cookeaqua.com) (Phoenix Salmon)  
Craig Lithgow (207) 259-3900, [craig.lithgow@cookeaqua.com](mailto:craig.lithgow@cookeaqua.com) (Gardner Lake)

**1. APPLICATION SUMMARY**

The applicant has applied for a renewal of Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0110086 / Maine Waste Discharge License (WDL) #W-007149-5Q-E-R, which was issued on October 15, 2004 for a five year term. The MEPDES Permit / WDL approved the discharge of a monthly average of 10 million gallons per day (MGD) of fish hatchery wastewater to Chase Mills Stream, Class B, from a commercial Atlantic salmon hatchery and rearing facility in East Machias, Maine, known as the Gardner Lake facility.

## 2. PERMIT SUMMARY

- a. Regulatory - On January 12, 2001, the Department received authorization from the U.S. Environmental Protection Agency (USEPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program in Maine, excluding areas of special interest to Maine Indian Tribes. On October 30, 2003, after consultation with the U.S. Department of Justice, USEPA extended Maine's NPDES program delegation to all but tribally owned discharges. That decision was subsequently appealed. On August 8, 2007, a panel of the U.S. First Circuit Court of Appeals ruled that Maine's environmental regulatory jurisdiction applies uniformly throughout the State. From January 12, 2001 forward, the program has been referred to as the MEPDES program and permit #ME0110086 (same as NPDES permit number) utilized as the primary reference number for the Gardner Lake facility.
- b. Terms and Conditions – This permitting action is similar to the October 15, 2004 MEPDES Permit / Maine WDL and subsequent permit modifications and revisions in that it is carrying forward all previous terms and conditions with a few exceptions. This permitting action is different in that it is:
  1. revising minimum monitoring frequency requirements for effluent BOD<sub>5</sub>, TSS, formalin, dissolved oxygen, and ambient stream flow;
  2. revising the required sample method for total phosphorus;
  3. revising daily maximum formalin mass limits based on industry consistency and concentration limits based on revised acute effluent dilution;
  4. eliminating seasonal ambient dissolved oxygen and water temperature monitoring requirements;
  5. providing guidance for reporting analytical results below detection and/or reporting limits; and
  6. updating requirements related to proper use and record keeping of therapeutic agents and disinfecting/sanitizing agents.
- c. History: The most recent relevant regulatory actions include the following:

November 25, 1986 – The Department issued WDL #W-007149-41-A-N to Ocean Products, Inc. (OPI) for the discharge of a maximum of 11.2 MGD of treated fish hatchery wastewater from the Gardner Lake hatchery/smolt production facility to Chase Mills Stream, Class B, in East Machias. The term of the WDL was 5-years from the date of issuance.

February 12, 1987 – The Department issued a certification under Section 401 of the Federal Water Pollution Control Act (WPCA) certifying that the discharge proposed in a pending National Pollutant Discharge Elimination System (NPDES) permit was in compliance with applicable sections of the WPCA and State law.

March 3, 1987 - The US Environmental Protection Agency (EPA) issued NPDES permit #ME0110086 to OPI for the discharge of a maximum of 11.2 MGD of treated fish hatchery wastewater from the Gardner Lake hatchery to Chase Mills Stream. The term of the NPDES Permit was 5-years from the date of issuance.

## 2. PERMIT SUMMARY (cont'd)

September 4, 1990 – The Department issued WDL #W-007149-WA-B-T, transferring the Gardner Lake hatchery WDL (#W-007149-41-A-N) from OPI to Connors Aquaculture, Inc., reflecting a change in ownership.

July 30, 1992 – The Department issued WDL #W-007149-WA-C-R to Connors Aquaculture, Inc. for the discharge of a maximum of 10.08 MGD of treated fish hatchery wastewater from the Gardner Lake hatchery to Chase Mills Stream. The WDL application summary indicated it was a renewal of WDL #W-007149-41-A-N, and attributed a discharge of 10.08 MGD to the original WDL, which actually approved the discharge of 11.2 MGD. The WDL cited water quality problems in the receiving water caused by the facility discharge. The term of the WDL was 5-years from the date of issuance.

August 24, 1999 – The Department issued WDL #W-007149-5Q-D-R to Connors Aquaculture, Inc. for the discharge of a maximum of 10.08 MGD of treated fish hatchery wastewater from the Gardner Lake hatchery to Chase Mills Stream. The term of the WDL was 2-years from the date of issuance. Connors requested a discharge flow increase to 13 MGD. The most recent ambient monitoring data (1989) indicated that Chase Mills Stream was not attaining Class B standards and that the Gardner Lake hatchery discharge was causing or contributing to this condition. Pursuant to State law, no increases in pollutant discharges could be authorized.

January 2001 – Connors Aquaculture, Inc. submitted to the Department a report entitled, “2000 Biomonitoring Study, Chase Mills Stream”, prepared by Acheron Engineering, Inc.

August, 2001 – Weston Foods Limited sold one of its subsidiaries, Connors Brothers, Inc., but retained ownership of Connors Aquaculture, Inc, the owner and license holder of the Gardner Lake facility. Subsequently, Weston Foods Ltd changed the name of Connors Aquaculture to Heritage Salmon, Inc., which entails the historical market name of its products.

October 15, 2004 – The Department issued WDL #W-007149-5Q-E-R / MEPDES Permit #ME0110086 to Heritage Salmon, Inc for the discharge of up to a monthly average of 10 MGD of fish hatchery and rearing facility wastewater to Chase Mills Stream, Class B from a commercial Atlantic salmon facility in East Machias, Maine. The Permit / WDL incorporated the terms and conditions of the MEPDES permit program and was issued for a five-year term.

## 2. PERMIT SUMMARY (cont'd)

October 17, 2005 – The Town of East Machias and Phoenix Salmon US entered into an agreement entitled, Agreement to Modify 1987 Agreement To Operate Structures And Dams At Gardner Lake Outlet. It is noted the Gardner Lake Outlet dam is currently owned by the Town of East Machias and a like agreement was established between Ocean Products and the Town of East Machias in a document entitled Agreement To Operate Structures And Dams At Gardner Lake Outlet, dated February 26, 1987. The 10/17/05 modified agreement established a minimum instantaneous stream flow of 25.3 cfs to Chase Mill Stream above the Phoenix hatchery between June 1 and September 30 of each year. This minimum stream flow requirement is also consistent with the 1994 Gardner Lake Water Level Agreement.

March 24, 2006 – The Department issued an Order transferring the MEPDES Permit / Maine WDL for the Gardner Lake facility from Heritage Salmon Inc. to Phoenix Salmon US Inc.

April 6, 2006 – The Department approved a one-time use of the therapeutant SLICE (Emamectin) at the Gardner Lake facility, establishing use restrictions and requirements for Whole Effluent Toxicity (WET) testing and pursuant to a SLICE Testing Work Plan dated April 4, 2006.

May 22, 2006 – The Department issued Permit Modification #W-007149-5Q-G-M / MEPDES Permit #ME01100886, which: increased monthly average phosphorus mass and concentration limits; revised effluent dilution factors based on a revised seasonal minimum ambient flow; required seasonal reporting of ambient flows; and removed the requirement for annual macroinvertebrate biomonitoring.

October 26, 2006 – The Department issued an Administrative Modification of the MEPDES Permit / Maine WDL for Phoenix Salmon US to enable the Gardner Lake facility to use SLICE (Emamectin) on Atlantic salmon housed at the facility and ultimately discharge the therapeutant in its wastewater discharge to Chase Mills Stream. The use was conducted as part of the USFDA Federal Investigational New Animal Drug (INAD) program #10-418. The Administrative Modification established use restrictions within the Gardner Lake facility based on use of the therapeutant in the spring of 2006.

October 10, 2008 – The Department issued Minor Revision #W-007149-5Q-H-M / MEPDES Permit #ME0110086 to revise effluent formalin limitations based on newly obtained toxicity data and a revision of the Department's best professional judgement of ambient water quality criteria.

August 5, 2009 – Phoenix Salmon US, Inc. submitted a timely application for renewal of its WDL / MEPDES Permit. The application was assigned WDL #W-007149-6F-I-R / MEPDES Permit #ME0110086.

## 2. PERMIT SUMMARY (cont'd)

- d. Source Description/ Facility Operation: Phoenix Salmon's Gardner Lake facility is a commercial Atlantic salmon hatchery and rearing facility that raises Atlantic salmon from eggs to smolts over a 12 to 18-month cycle for use ultimately in human consumption.

Influent Water: Phoenix Salmon obtains influent water for the facility from two intake pipes in Gardner Lake in East Machias. The deep water inlet is located 2,200 feet from shore in a water depth of 55 feet, providing source water ranging in temperature throughout the year from 33-68° F (1-20° C). The shallow water inlet is located 900 feet from shore in a water depth of 24 feet, providing source water ranging in temperature throughout the year from 33-77° F (1-25° C). Both the 24-inch diameter deep water intake pipe and the 36-inch diameter shallow water intake pipe are constructed of PVC plastic and have coarse inlet screens to minimize intake of large matter from Gardner Lake. The shallow water pipe intake screen is removed in the winter to prevent freezing. The two intake pipes provide Phoenix Salmon with the opportunity to blend influent flows as necessary to equalize seasonal temperature variations and create optimal fish culture conditions. Phoenix Salmon mainly uses the deep water intake, as it provides more uniform temperatures. Influent water enters the head tank building through the head tank itself, a 14 foot x 6 foot x 6 foot receiving tank containing two coarse screens to capture large debris and any fish from Gardner Lake. Materials captured on the screens are removed and disposed of in the facility sludge pit, described below. From the head tank, water is pumped to two "point four system" oxygen columns. Water from the head tank building is distributed to either the hatch house or smolt field. The water supply to the smolt field is super saturated with oxygen, split, and delivered to two sets of rows of circular smolt tanks described below.

Hatch house: The hatch house contains 100 four-foot diameter circular "combi" tanks, designed to provide space for egg incubation in the upper, shallow tray and space for fry development in the lower, deeper portion of the tank upon hatching. The tanks maintain an operational depth of 3 feet (280 gallons per tank) and have a flow through rate of 5 gallons per minute (gpm) (7,200 gallons per day (gpd)) from each tank. Green (fertilized, but undeveloped) eggs are received at the facility in November. The eggs hatch in February as alevin (with yolk-sac) and begin being fed as fry in March by automatic feeders. In June, the fry have attained an average weight of approximately 2 grams per fish and are moved outside to the smolt tanks. The following November, a new year-class of green eggs is brought to the hatch house. Alternately, the facility can obtain "eyed" eggs in January or hatched fry in June either from other Phoenix Salmon facilities in Maine or from Kelly Cove Salmon facilities in New Brunswick. Incoming fry are sent directly to the smolt tanks. Phoenix Salmon has indicated that its future operations will most likely involve receiving fry or eyed eggs rather than green eggs. During the winter, influent water for the hatch house is heated to 46°F (8° C). When the fry are being fed, water temperature is raised to 50° F (10° C) and for later stages of fry development, the temperature is raised to 55°F (13 C). At that time, the influent water temperature is approximately 37° F (3°C), necessitating a maximum rise in temperature of 18° F or 10°C.

## 2. PERMIT SUMMARY (cont'd)

The combi tanks are cleaned weekly by scrubbing down the sides and bottoms. Each tank is equipped with two effluent screens to filter excess food and feces from the wastewater and contain the fry. The hatch house discharges a combined effluent flow of 500 gpm. Hatch house wastewater is treated as described below.

Smolt field: The smolt field contains 160 twelve-foot diameter circular tanks. The tanks maintain an operational depth of 3.5 feet (3,000 gallons per tank) and have a flow through rate of 40 gpm (57,600 gpd) from each tank. Each tank contains approximately 7,000 fish, which attain a weight of 100 grams per fish. Fish are fed pellets by automatic feeders, which are filled once per day. Fish at the facility are graded in the spring and fall as they are moved between different components of the facility. Smolts are graded in March and are shipped to Phoenix Salmon's ocean net pen sites in April and May. The smolt tanks are then cleaned and disinfected in preparation for receipt of the new fry in June. Phoenix Salmon maintains approximately 165,000 pounds of fish or 1.1 million fish on site. Maximum feeding occurs during August - October, consisting of an average of 800 lbs of food per day and a maximum of 1,600 lbs/day. Phoenix Salmon utilizes low phosphorus fish foods and occasionally medicated food to address bacteria problems in the source water. Phoenix Salmon indicates that the maximum quantity of fish kept on site consists of 1.3 million first-year fish weighing approximately 275,000 pounds.

The smolt tanks are operated in parallel, with separate inlets for all tanks to avoid transmittal of any diseases between tanks. The smolt tanks are cleaned twice per year; in the fall during fish grading and in the spring when the smolts are shipped to the net pen sites. Groups of three tanks outlet together to the facility wastewater trench, located in the center of the smolt field. The wastewater trench can be equipped with two different sized screens. The finer sized screen is used when fry are first transferred to the smolt field to trap the smaller sized food and to contain escaped fish. A larger sized screen is used when the smolts and their food are of larger sizes. The smolt field tanks discharge a combined effluent flow of 6,400 gpm, for a total smolt field effluent flow of approximately 7,000 gpm. Smolt field wastewater is treated as described below.

- e. Wastewater Treatment: All wastewater from the hatch house combi-tanks is collected in trenches inside the hatch house, combined into a 12-14" pipe, and passed through a Hydro Tech 60-micron rotary drum filter for filtration of solid waste materials. The drum filter is automatically self cleaning with solid matter taken to the facility sludge pit, described below. The supernatant is pumped through a parallel flow heat exchange unit to provide initial heating of the influent water for egg and fry growth, then routed to the facility wastewater drainage channel in the smolt field, described below. The hatch house effluent flow consists of approximately 500 gpm.

## 2. PERMIT SUMMARY (cont'd)

The smolt tanks wastewater flows directly to the facility wastewater trench, located in the center of the smolt field. The smolt tanks effluent flow consists of approximately 6,400 gpm, for a total smolt field effluent flow of approximately 7,000 gpm. The wastewater trench is subject to coarse screening to trap excess food, feces, and contain any escaped fish, as detailed in Source Description / Facility Operation, above. Combined facility wastewater flows to the wastewater treatment building, which contains four 60-micron rotating drum filters. The drum filters are automatically self cleaning, with filtered matter disposed of as described below. The approximately 13 gpm wastewater flow from the drum filter cleaning is pumped to an elevated belt filter in the wastewater treatment building for dewatering, a coagulant is added to aid settling of suspended particles, then it is piped to two 1,500-gallon underground tanks. From the settling tanks the wastewater is piped to an 80-foot long limestone bed, then to a constructed wetland (cattail) nutrient uptake bed. Wastewater from the constructed wetland uptake bed is monitored separately to determine its treatment efficiency, then is returned to the facility wastewater flow prior to the drum filters. Following the drum filters, treated facility wastewater is collected in a trench within the building, passed through a coarse screen, then exits the building via a 36-inch diameter discharge pipe. The discharge pipe outlets the facility wastewater to an approximately 6-8 foot wide by 95-foot long open ditch/conveyance system, which flows into Chase Mills Stream.

Solid matter removed during the process described above is stored in a 7,000-gallon sludge storage tank. Solid waste matter from the head tank building filters and the hatch house drum filter are also stored in the sludge storage tank. When full, the sludge storage tank contents are removed for landspreading by a local contractor. A deminimus amount of chlorine in the form of 4 disinfectant pucks per week is used to maintain the filter spray bars used in cleaning the drum filters. The spray enters and is diluted in the entire facility wastewater flow.

Use of agents for therapeutic and disinfecting/sanitizing purposes are addressed in subsequent Fact Sheet sections titled accordingly.

## 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 such that existing and designated uses of surface waters are maintained and protected.

#### **4. RECEIVING WATER QUALITY STANDARDS**

Maine law, 38 M.R.S.A., Section 467.3.B(1) classifies Chase Mills Stream at the point of discharge as a Class B water. Maine law, 38 M.R.S.A., Section 465.3, describes the standards for Class B waters.

#### **5. RECEIVING WATER QUALITY CONDITIONS**

The State of Maine 2008 *Integrated Water Quality Monitoring and Assessment Report* (DEPLW0895), prepared pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act contains lists of waters in Maine that are attaining water quality standards as well as those that are impaired. The report lists a 1.52 mile segment of Chase Mill Stream (East Machias), Class B, in Category 2, Rivers and Streams Attaining Some Designated Uses – Insufficient Information for Other Uses (Assessment Unit ID ME0105000204\_509R01).

All freshwaters in Maine are listed as only partially attaining the designated use of recreational fishing due to a fish consumption advisory (Category 5-C). The advisory was established in response to elevated levels of mercury in some fish caused by atmospheric deposition. The Department has no information at this time that the Gardner Lake facility causes or contributes to non-attainment of standards in Chase Mill Stream.

#### **6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS**

Pursuant to Maine Law (38 M.R.S.A., §414-A.1), the Department shall only authorize discharges to Maine waters when those discharges, either by themselves or in combination with other discharges, “*will not lower the quality of any classified body of water below such classification*”. Further, “*the discharge will be subject to effluent limitations that require application of the best practicable treatment*”. “*Best practicable treatment (BPT) means the methods of reduction, treatment, control and handling of pollutants, including process methods, and the application of best conventional pollutant control technology or best available technology economically available, for a category or class of discharge sources that the department determines are best calculated to protect and improve the quality of the receiving water and that are consistent with the requirements of the Federal Water Pollution Control Act*” (40 CFR). “*If no applicable standards exist for a specific activity or discharge, the department must establish limits on a case-by-case basis using best professional judgement...*” considering “*...the existing state of technology, the effectiveness of the available alternatives for control of the type of discharge and the economic feasibility of such alternatives...*”. Pursuant to 38 M.R.S.A., §414-A.1 and §464.4, the Department regulates wastewater discharges through establishment of effluent limitations and monitoring requirements that are protective of Maine waters.

## 6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

At the time of the previous permitting action, the Department undertook to revise its wastewater discharge permitting program for fish hatcheries and rearing facilities to provide for establishment of scientifically valid and consistently applied effluent limitations, monitoring and operational requirements based on the Department's best professional judgement (BPJ) of best practicable treatment (BPT) or site specific water quality conditions. This permitting action represents a continuance of that process based on observations and analyses conducted for Gardner Lake and other facilities since issuance of the previous permitting actions.

- a. Flow: The previous permitting action established a monthly average flow limit of 10 MGD, which is being carried forward in this permitting action. The required daily minimum measurement frequency is also being carried forward from the previous permitting action, consistent with Department guidelines for wastewater treatment facility discharges.

A review of the Discharge Monitoring Report (DMR) data for the Gardner Lake facility for the period of November 2004 through June 2009 indicates the following.

### EFFLUENT FLOW

Value	Limit	Minimum	Maximum	Average	# Values
Monthly Avg.	10.0 MGD	4.7 MGD	10.0 MGD	8.5 MGD	49
Daily Max	---	7.0 MGD	12.7 MGD	9.7 MGD	18

- b. Dilution Factors: The flow in Chase Mills Stream is affected by a dam on the outlet of Gardner Lake. Heritage Salmon, the former owner of the Gardner Lake facility, maintained the Gardner Lake dam. However, the dam was and still is owned by the Town of East Machias and the maintenance agreement was informal. Additionally, there is no formal state water level order on Gardner Lake or Chase Mills Stream. As the minimum flow released from the dam was not regulated, it could not be assured. Thus, for the previous permitting action, the Department utilized the drainage area of Gardner Lake (50.6 square miles) in calculating the minimum stream flow and available dilution.

Subsequent to the 10/15/04 permitting action, the permittee provided the Department with additional information on the physical means and contractual obligations to balance low flows in Chase Mills Stream and desired water levels in Gardner Lake. That information included, "*Water is released from Gardner Lake to Chase Mill Stream through and over a dam and a culvert located on the outlet of the lake.*" Both of these structures are "*owned by the Town of East Machias.*" A 1987 agreement with the Town "*delegates, to the hatchery, primary responsibility for operation of the dam so as to cause the prescribed minimum flow of 25.3 cfs to be maintained at all times.*" The selectmen and Phoenix Salmon USA Inc. modified the 1987 agreement on October 17, 2005. The 2005 modification "*provides for the owners of the Hatchery to continue to have primary responsibility for operation of the outlet structures and the dam that regulate the release of water from Gardner Lake to Chase Mill Stream.*" Specifically,

## 6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

*“Phoenix shall operate the structures and dams as follows:*

*(a) Consistent with the requirements of both this Agreement and the Lake Level Agreement of 1994, the water level in Gardner Lake shall, to the greatest extent practicable, be maintained at a level sufficient to provide that at the upstream end of the fishway at Gardner Lake Dam, there is a water depth of one foot (1'). Phoenix will cause Gardner Lake Dam to be operated so that the water level in the lake will not be higher than three inches (3”) over the top of the highest concrete fixed spillway (spillway elevation = 67 feet) and will not drop lower than eighteen inches (18”) below the spillway (elevation 65.5 feet) during the summer through Labor Day. Only at times of unusually high flows (e.g., a 100 year storm) will the flows be allowed to rise higher. Only during times of extended drought will the water level be allowed to drop below 65.5 feet.*

*(b) The water level in Gardner Lake shall be maintained at a level sufficient to provide, from June 1 to September 30, a minimum instantaneous stream flow to Chase Mills Stream above the Phoenix hatchery outfall equal to 0.5 CFS per square mile of drainage area (25.3 CFS).”*

*This new agreement provides the authority and responsibility for Phoenix Salmon US Inc. (Gardner Lake Hatchery) to operate the dam to balance the lake levels and the flow in Chase Mill Stream in cooperation with the Town of East Machias. Phoenix Salmon has multiple tools it can use to accomplish the goals set forth in the agreement.*

### Dam

*The dam at the outlet of Gardner Lake is a reinforced concrete structure with some operable components that can be used to regulate lake levels and flows in the stream.*

### Culvert

*About 200 feet north of the dam, the Town has installed a four (4) foot diameter culvert under Church Street. Water from the lake flows into Chase Mill Stream through both of these outlet structures.*

*The culvert does not have any means to control or regulate the release of water from the lake to the stream. The culvert is open at all times and the flow through the culvert varies directly in relation to the water level in the lake. The estimated capacity of the culvert is 75 and 100 cfs without overtopping the roadway. As water level in the lake declines, the flow through the culvert declines.*

## 6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

### Regulation of Flows to the Stream Via the Dam and Culvert

*The dam has a fixed concrete crest at elevation 67.0 feet. The dam has a small fishway, a 12 inch drain pipe with a valve and a deep waste gate with wooden flashboards.”*

Based on this information, the Department recalculated dilution factors for the Gardner Lake facility and modified the MEPDES Permit / Maine WDL on May 22, 2006. The Department has made the determination that the dilution factors associated with the discharge shall be calculated in accordance with freshwater protocols established in Department Regulation Chapter 530, Surface Water Toxics Control Program, October 2005. With a monthly average flow limitation of 10.0 MGD, the dilution factors are calculated as follows:

$$\text{Mod. Acute: } \frac{1}{4} Q_{10} = 6.3 \text{ cfs} \quad \Rightarrow \frac{(6.3 \text{ cfs})(0.6464) + 10 \text{ MGD}}{10.0 \text{ MGD}} = 1.4:1$$

$$\text{Acute: } 1Q_{10} = 25.3 \text{ cfs} \quad \Rightarrow \frac{(25.3 \text{ cfs})(0.6464) + 10 \text{ MGD}}{10.0 \text{ MGD}} = 2.63:1$$

$$\text{Chronic: } 7Q_{10} = 25.3 \text{ cfs} \quad \Rightarrow \frac{(25.3 \text{ cfs})(0.6464) + 10 \text{ MGD}}{10 \text{ MGD}} = 2.63:1$$

$$\text{Harmonic Mean} = 76 \text{ cfs} \quad \Rightarrow \frac{(76 \text{ cfs})(0.6464) + 10 \text{ MGD}}{10 \text{ MGD}} = 5.9:1$$

Chapter 530.4.B(1) states that analyses using numeric acute criteria for aquatic life must be based on  $\frac{1}{4}$  of the  $1Q_{10}$  stream design flow to prevent substantial acute toxicity within any mixing zone. The regulation goes on to say that where it can be demonstrated that a discharge achieves rapid and complete mixing with the receiving water by way of an efficient diffuser or other effective method, analyses may use a greater proportion of the stream design, up to including all of it. The Gardner Lake facility discharges its treated effluent to an approximately 6-8 foot wide by 95-foot long open ditch/conveyance system, which flows into the side of Chase Mills Stream. Typically, these types of discharges do not achieve rapid and complete mixing with the receiving water since initial dilution is based on mixing resulting from the momentum of a discharge as it exits a discharge pipe (jet effect) as well as the dispersion of the effluent plume as it rises to the surface of the receiving water. Therefore, the Department is utilizing the default stream flow of  $\frac{1}{4}$  of the  $1Q_{10}$  pursuant to Chapter 530 in acute evaluations.

**6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)**

c. Biochemical Oxygen Demand (BOD<sub>5</sub>) and Total Suspended Solids (TSS): The previous permitting action established monthly average and daily maximum concentration limits of 6 mg/L and 10 mg/L respectively for BOD<sub>5</sub> and TSS based on Department Best Professional Judgement (BPJ) of Best Practicable Treatment (BPT). These limits were based on recommendations included in USEPA's 2002 proposed draft National Effluent Guidelines for TSS from fish hatchery wastewater receiving a secondary level of treatment, the Department's long-standing view of the relationship with and significance of BOD<sub>5</sub>, and consideration of effluent quality from facilities utilizing the Department's BPJ of minimum treatment technology. Mass limits were calculated based on the monthly average flow limit, the appropriate concentration limits, and a standard conversion factor. The previously established BOD<sub>5</sub> and TSS mass and concentration limits are being carried forward in this permitting action.

A review of the DMR data for the Gardner Lake facility for the period of November 2004 through June 2009 indicates the following.

**BOD MASS**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
Monthly Avg.	500 lbs/day	<78 lbs/day	307 lbs/day	<161 lbs/day	50
Daily Max.	834 lbs/day	<78 lbs/day	453 lbs/day	<190 lbs/day	50

**BOD CONCENTRATION**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
Monthly Avg.	6 mg/L	<2 mg/L	4 mg/L	<2.3 mg/L	50
Daily Max.	10 mg/L	<2 mg/L	6 mg/L	<2.7 mg/L	50

**TSS MASS**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
Monthly Avg.	500 lbs/day	15 lbs/day	465 lbs/day	<92 lbs/day	46
Daily Max.	834 lbs/day	15 lbs/day	465 lbs/day	<99 lbs/day	46

**TSS CONCENTRATION**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
Monthly Avg.	6 mg/L	<1 mg/L	4 mg/L	<1.2 mg/L	49
Daily Max.	10 mg/L	<1 mg/L	4 mg/L	<1.4 mg/L	49

The previous permitting action established requirements for BOD<sub>5</sub> and TSS monitoring at a minimum frequency of once per week. Based on the review of effluent monitoring conducted to date, this permitting action revises the minimum required monitoring frequency to twice per month based on Department BPJ.

## 6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

- d. Total Phosphorus and Orthophosphate: Phosphorus is a nutrient that encourages the growth of plants such as planktonic algae and macrophytes in northern waters. Oxygen levels in the water are reduced in the early morning hours due to extended nighttime respiration of algae. The decomposition of excess plant material further reduces the amount of available oxygen in the water through biochemical oxygen demand. Lowering oxygen levels in a receiving water impacts the aquatic life in that water, making it unfit for some forms of life. Further, enrichment from excess nutrients, such as phosphorus, can result in reductions in aquatic macro-invertebrate species diversity, an indicator of the overall health of a receiving water. Excess phosphorus can also result in undesirable aesthetic conditions in a receiving water, impacting that water's ability to meet standards for maintaining recreational use, a designated use by law. Therefore, any increase in the phosphorus content in a receiving water has the potential to cause or contribute to non-attainment of classification standards. Pursuant to Maine law (38 MRSA § 414-A.1), the Department shall only authorize discharges to Maine waters when those discharges, either by themselves or in combination with other discharges, "*will not lower the quality of any classified body of water below such classification*".

In the previous permitting action, the Department established a seasonal monthly average phosphorus concentration limit based on a 0.035-mg/L BPJ instream ambient water quality (AWQ) threshold and Gardner Lake's chronic dilution factor. Based on Department research, the AWQC of 0.035 mg/L corresponds to the maximum level at which algae blooms will not typically occur in a receiving river or stream under normal circumstances. As phosphorus is typically of concern under chronic discharge conditions, the 7Q10 dilution of 1.16:1 was utilized to calculate a 0.041 mg/L monthly average limit. A monthly average mass limit of 3.4 lbs/day was established based on the concentration limit and monthly average effluent flow limit. Monitoring and reporting requirements were also established for the daily maximum phosphorus concentration and mass discharged. As phosphorus is typically a summer time concern for water quality in free flowing rivers and streams, the effluent limits and monitoring requirements were in effect from June 1 through September 30 each year. A required minimum monitoring frequency of once per week was established based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.

The previous permitting action established a one year monitoring requirement for monthly average and daily maximum orthophosphate mass and concentration. Orthophosphate is the portion of total phosphorous that is readily available for uptake by aquatic plants. The requirement was fulfilled and is not being carried forward in this permitting action.

A review of the DMR data for the Gardner Lake facility for the period of November 2004 through June 2009 indicates the following.

**6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)**

**PHOSPHORUS MASS**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
Monthly Avg.	3.4 lbs/day	0.85 lbs/day	4.0 lbs/day	2.21 lbs/day	14
Daily Max.	report lbs/day	0.94 lbs/day	4.6 lbs/day	2.80 lbs/day	14

**PHOSPHORUS CONCENTRATION**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
Monthly Avg.	0.041 mg/L	0.011 mg/L	0.052 mg/L	0.035 mg/L	14
Daily Max.	report mg/L	0.012 mg/L	0.079 mg/L	0.046 mg/L	14

**ORTHO-PHOSPHORUS MASS**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
Monthly Avg.	report lbs/day	0.16 lbs/day	0.34 lbs/day	0.25lbs/day	2
Daily Max.	report lbs/day	0.16lbs/day	1.13 lbs/day	0.65 lbs/day	2

**ORTHO-PHOSPHORUS CONCENTRATION**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
Monthly Avg.	Report mg/L	0.002 mg/L	0.006 mg/L	0.004 mg/L	2
Daily Max.	Report mg/L	0.002 mg/L	0.02 mg/L	0.011 mg/L	2

In a 2006 permit modification, the Department revised Gardner Lake’s monthly average phosphorus mass and concentration limits based on a revised chronic effluent dilution factor of 2.63:1. Phosphorus limits were calculated as follows:

Monthly Avg concentration:  $(0.035 \text{ mg/L})(2.63) = 0.092 \text{ mg/L}$   
 Monthly Avg mass:  $(0.092 \text{ mg/L})(8.34 \text{ lbs/gallon})(10.0 \text{ MGD}) = 7.7 \text{ lbs/day}$

The Department is currently undergoing rulemaking to establish new nutrient criteria. Until new rules are adopted, the Department is continuing to utilize the BPJ AWQ threshold for phosphorus described above. This permitting action carries forward the phosphorus effluent limitations and monitoring requirements described above.

- e. **Fish on Hand:** This permitting action is carrying forward the reporting requirement for monthly average and daily maximum mass of fish on hand. This parameter is intended to enable both the Department and the permittee in evaluating management practices at the facility and trends in effluent quality and receiving water impacts. This permitting action is also carrying forward the required minimum monitoring frequency of once per week basis based on the Department’s BPJ of the monitoring frequency necessary to more accurately characterize facility effluent conditions.

**6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)**

A review of the DMR data for the Gardner Lake facility for the period of November 2004 through June 2009 indicates the following.

**FISH ON HAND**

Value	Limit	Minimum	Maximum	Average	# Values
Monthly Avg.	report lbs/day	6,261 lbs/day	277,168 lb/day	142,566 lb/day	50
Daily Max.	report lbs/day	9,611 lbs/day	704,604 lb/day	170,605 lb/day	50

f. Formalin: Fish hatcheries and rearing facilities commonly use formalin based biocides for therapeutic treatment of fungal infections and external parasites of finfish and finfish eggs. Phoenix Salmon reports that approximately 110 gallons of formalin are used at the Gardner Lake facility annually. The previous permitting action established monthly average mass and concentration reporting requirements and daily maximum mass and concentration limits for formalin with a required minimum monitoring frequency requirement of once per week and guidance for calculating the levels of effluent formalin. The previous permitting action also established a schedule of compliance for implementation of the toxicity (water quality) based formalin limits, as they were more restrictive than limits established in the immediately preceding licensing action. For the previous permitting action, as existing studies revealed significant variability in formalin toxicity, the MEDEP undertook its own investigation to determine appropriate limitations, contracting with a commercial laboratory for Whole Effluent Toxicity (WET) testing on *Ceriodaphnia dubia* for 48-hour acute toxicity, pursuant to standard methods. Pursuant to MEDEP’s long standing goal of 100% survival of the test species, Lotic Inc. identified a BPJ of ambient water quality criteria (AWQC) of 1.56 mg/L. The 1.56 mg/L BPJ of AWQC was multiplied by the facility’s acute (1Q10) ambient to effluent dilution to calculate concentration limits under acute critical low flow conditions. Mass limits were calculated based on the calculated concentration limit, multiplied by the discharge flow over an 8-hour period, then multiplied by a conversion factor of 9.13 lbs/gallon representing the weight of formalin. Though standard methods and assumptions were utilized in the Lotic study, realistically no facilities utilize formalin for 48-hours continuously. Thus, using the standard methods and assumptions appeared to overestimate impacts to aquatic life. In 2008, the Maine Department of Inland Fisheries and Wildlife (MDIFW) provided results of its study of acute toxicity at more targeted time frames of less than 48-hours, typical of rearing facility operations.

MDIFW utilized statistical “bootstrapping” to lend greater statistical significance to the data set. These results were reviewed by MEDEP and determined to represent a more appropriate means of establishing toxicity based effluent limits for formalin. Simultaneously, MEDEP revised its survival goals to 95% of test species to correspond with toxicity work conducted by USEPA. A MEDEP biologist noted, “*the basis for all of EPA’s ambient water quality criteria for aquatic life (is) to protect 95% of the species*” and determined that using the 5<sup>th</sup> percentile of MDIFW’s 1-hour exposure data “*gives an equivalent amount of protection to aquatic life.*” Based on this, in 2008 the Department

## 6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

developed a revised BPJ of AWQC of 45 mg/L based on a one hour treatment, typical of most hatchery and rearing facility discharges. Under emergency conditions, it is acknowledged that additional rearing structures may need to be treated, causing formalin discharges to extend beyond the typical one hour period. To accommodate this, the Department also developed a BPJ of AWQC of 25 mg/L based on a maximum 24-hour treatment period. Such emergency treatments and discharges must be conducted no more frequently than once every four days to ensure the average formalin concentration does not exceed the 5<sup>th</sup> percentile level. Based on this research, the Department revised Phoenix Salmon's MEPDES Permit / Maine WDL on October 10, 2008, revising hatchery and rearing station permit concentration limits for formalin. In the 2008 Permit Revision, the Department incorrectly utilized the 1.03:1 acute dilution in place at the time of the 2004 permitting action and not the 1.4:1 dilution established in the facility's 2006 permit modification.

In this permitting action, the Department is utilizing the same procedure to calculate formalin concentration limits. These calculations utilize a 1-hour exposure criterion typical of normal treatment operations, a 24-hour exposure criterion to accommodate emergency treatment conditions, and the 1.4:1 effluent to ambient acute dilution applicable to this facility and its receiving water.

45 mg/L (1-hour acute criterion) x 1.4 (effluent dilution) = 63 mg/L formalin limit.  
25 mg/L (24-hour acute criterion) x 1.4 (effluent dilution) = 35 mg/L formalin limit.

The previously established daily maximum formalin mass limit of 50 lbs/day was calculated from the previous concentration limit, the facility flow during the projected treatment/discharge period, and a weight-based conversion factor, pursuant to Department Rules, Chapter 523.6(f). Formalin mass limits in other facilities' permits issued after Gardner Lake's 2004 permit were based on the permittee's projected maximum amount of formalin used per day times the weight of formalin (9.13 lbs/gallon). This method was incorporated to provide for flexibility in management of necessary treatments and to ensure that formalin was not discharged in toxic amounts. In this permitting action, Gardner Lake's formalin mass limit is being revised accordingly. Phoenix Salmon reports that the projected maximum amount of formalin used per day corresponds to treatments twice per day at the current mass limit. This equates to 5.5 gallons of formalin times two treatments or 11 gallons per day times 9.13 lbs/gallon yielding 100 lbs/day. It must be noted that the concentration and mass limits are derived separately and that compliance with one does not guarantee compliance with the other. Though the new mass limit is larger than the previously established mass limit, the Department views the formalin concentration limit and timing restrictions as ensuring that formalin will not be discharged in toxic amounts. Throughout the term of the permit, the permittee shall report the monthly average effluent formalin mass and concentration. Effluent values shall be determined through calculations, as described below.

**6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)**

This permitting action is establishing effluent limitations and monitoring requirements for formalin, as this is the commonly used form, and not for formaldehyde. The Department is requiring Phoenix Salmon to report therapeutic agents used at the facility that have the potential to be discharged to the receiving water.

A review of the DMR data for the Gardner Lake facility for the period of November 2004 through June 2009 indicates the following.

**FORMALIN MASS**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
<u>Monthly Avg.</u>					
1-hr treatment	report lbs/day	20.6 lbs/day	121.4 lbs/day	51.1 lbs/day	7
24-hr treatment	report lbs/day				
<u>Daily Max.</u>					
1-hr treatment	50 lbs/day	25.1 lbs/day	121.4 lbs/day	54.5 lbs/day	7
24-hr treatment	50 lbs/day				

**FORMALIN CONCENTRATION**

<b>Value</b>	<b>Limit</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b># Values</b>
<u>Monthly Avg.</u>					
1-hr treatment	report mg/L	0.6 mg/L	43 mg/L	12.0 mg/L	7
24-hr treatment	report mg/L				
<u>Daily Max.</u>					
1-hr treatment	46 mg/L	0.6 mg/L	43 mg/L	12.6 mg/L	7
24-hr treatment	26 mg/L				

Effluent levels of formalin can be calculated based on the amount of formalin used at the facility for hatchery, rearing, and broodstock functions and the dilution available in large wastewater settling structures and through mixing in the total facility waste-stream. Previously, the Department developed methods for calculating effluent formalin concentrations and mass values utilizing the varying treatment concentrations in the different facility functions and various internal dilutions provided within the facility. In this permitting action, the Department is providing a more simplified recommendation that utilizes the total mass of formalin used for all functions during the treatment period and the dilutions described above during the same time period. The facility may propose alternative methods for Department review and approval. Effluent formalin values must be calculated upon each use at the facility.

In this example, a theoretical facility adds approximately 0.172-gallons (650 ml) of undiluted formalin directly to each line of hatchery egg troughs to achieve the desired dose during a 15-minute treatment period. The hatchery facility uses a maximum of 6 lines of egg troughs for treatment at a time. The hatchery facility wastewater joins with the total facility wastewater prior to discharge to the receiving water. With a total facility

## 6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

discharge flow of 3.0 MGD, the flow during the 15-minute treatment period equates to 31,250-gallons (3.0 MGD / 24-hours / 4) available for dilution of the 1.03 gallons of formalin administered (0.172 gal x 6 troughs). The combined wastewater flow is then discharged to the receiving water. The end of pipe concentration from egg treatments can be calculated as follows, using 1 million parts per million to provide for the concentration of undiluted formalin.

$$\begin{aligned} 31,250\text{-gal wastewater} / 1.03 \text{ gal formalin} &= 30,340:1 \text{ dilution} \\ 1,000,000 \text{ ppm (undiluted) formalin} / 30,340 &= 33 \text{ ppm formalin discharged} \end{aligned}$$

For treatments on fish in rearing structures, the same facility adds approximately 6-gallons of undiluted formalin at the head of raceway pools by drip and allows it to flow through the entire line over a one hour period. As in the example above, the rearing facility wastewater joins with the total facility wastewater prior to discharge to the receiving water. With a total facility discharge flow of 3.0 MGD, the flow during the one hour treatment period equates to 125,000-gallons (3.0 MGD / 24-hours) available for dilution of the 6.0 gallons of formalin administered. The combined wastewater flow is then discharged to the receiving water. The end of pipe concentration from fish treatment can be calculated as follows:

$$\begin{aligned} 125,000\text{-gal rearing facility wastewater} / 6 \text{ gal formalin} &= 20,833:1 \text{ dilution} \\ 1,000,000 \text{ ppm (undiluted) formalin} / 20,833 &= 48 \text{ ppm formalin discharged} \end{aligned}$$

These examples consider hatchery and rearing facility treatments to be conducted on different occasions. If multiple treatments occur simultaneously, the total amount of formalin must be considered in calculating the end of pipe concentration. For brevity, these examples do not include a broodstock function, which would be calculated in a similar manner. If extended period pool treatments are conducted at the facility, the time during which the pool volume is discharged into the facility waste-stream should be used to determine an appropriate dilution volume instead of the time the formalin is added to the pool. Also, these examples utilized a facility that discharges its effluent without significant wastewater settling. If the facility used a 500,000-gallon settling basin, the rearing facility discharge under the one-hour discharge scenario could be analyzed as follows.

$$\begin{aligned} 125,000\text{-gal rearing facility wastewater} / 6 \text{ gal formalin} &= 20,833:1 \text{ dilution} \\ 500,000\text{-gal basin volume} / 125,000 \text{ combined wastestream} &= 4:1 \text{ dilution} \\ 1,000,000 \text{ ppm (undiluted) formalin} / 20,833 / 4 &= 12 \text{ ppm formalin discharged} \end{aligned}$$

Use of the settling basin volume as an additional dilution is only applicable for the one-hour treatment scenario. Under a greater period of time of treatment and discharge, the additional settling volume becomes part of the facility infrastructure and the total facility discharge flow is used. It must be noted that to obtain an accurate end-of-pipe calculation, each facility must utilize accurate amounts of formalin used for all treatment functions,

## 6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

accurate volumes of the facility's effluent flow during the treatment period, and accurate volumes of water within any large settling structures. Effluent flow limits and design criteria can not be used. These examples illustrate end-of-pipe (EOP) concentrations, which would be further diluted depending upon the facility's effluent dilution in the receiving water. If a facility receives a 3:1 effluent dilution in the receiving water, the calculated EOP concentration should be divided by three to provide the concentration in the receiving water after mixing.

- g. Dissolved Oxygen (effluent): The previous permitting action established a seasonal daily minimum effluent dissolved oxygen (DO) limit of 7.5 mg/L and twice per week monitoring requirements from June 1 through September 30 each year. This limit was established because of the low dilution of facility effluent provided in the receiving water. It was based on Department modeling and to ensure compliance with Class B dissolved oxygen standards. The previous permitting action also established monthly average and daily maximum effluent DO monitoring requirements at a minimum frequency of twice per week. A review of the DMR data for the Gardner Lake facility for the period of November 2004 through June 2009 indicates the following.

### EFFLUENT DISOLVED OXYGEN CONCENTRATION

Value	Limit	Minimum	Maximum	Average	# Values
Monthly Avg.	report mg/L	8.8 mg/L	11.3 mg/L	9.8 mg/L	14
Daily Max.	report mg/L	9.8 mg/L	12.5 mg/L	10.9 mg/L	14
Daily Min.	7.5 mg/L	8.3 mg/L	10.2 mg/L	8.9 mg/L	14

This permitting action carries forward the daily minimum limit and monthly average and daily maximum monitoring requirements for DO, but revises the minimum monitoring frequency to once per week based on the data observed. The permittee shall maintain copies of all data from effluent dissolved oxygen monitoring at the facility for a period of five years and shall provide copies of data to the Department upon request.

- h. Instantaneous Stream Flow: The 2006 Permit Modification established an instantaneous minimum ambient flow requirement, which is being carried forward in this permitting action with a revised frequency based on Department BPJ. Between June 1 and September 30 of each year the permittee shall measure, record and report stream flows in Chase Mills Stream at a frequency of five days per week. Flow measurements shall be obtained from the staff gauge constructed in calendar year 2005 located just downstream of the hatchery. The reported stream flow value shall be calculated by subtracting the hatchery effluent flow from the stream flow value obtained from the stage discharge curve developed for said gauge. The minimum flow value for each month shall be reported on the applicable DMRs. The staff gauge shall be calibrated annually in the spring as soon as the site is safely accessible. The permittee shall prepare a spreadsheet containing the daily staff gauge readings, the daily stream flows derived from the stage discharge curve, the daily hatchery effluent flow and the daily calculated stream flow in Chase Mill Stream. The spreadsheets for each month shall be submitted as an attachment to the applicable monthly DMR.

## 6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

- i. pH: This permitting action is carrying forward the daily maximum pH range limit of 6.0 – 8.5 standard units (su), considered by the Department as a best practicable treatment standard for fish hatcheries and rearing facilities and consistent with the pH limit established in discharge permits for these facilities. This permitting action carries forward the minimum pH monitoring frequency requirement of once/week to provide for more accurate characterization of facility effluent conditions. A review of the DMR data for the Gardner Lake facility for the period of November 2004 through June 2009 indicates the following.

### pH RANGE

Value	Limit	Minimum	Maximum	Average	# Values
Monthly Avg.	---	6.0 s.u.	6.6 s.u.	---	50
Daily Max.	6.0-8.5 s.u.	6.0 s.u.	6.9 s.u.	---	50

## 7. ANTI-BACKSLIDING

Federal regulation 40 CFR, §122(l) contain the criteria for what is often referred to as the anti-backsliding provisions of the Federal Water Pollution Control Act (Clean Water Act). In general, the regulation states that except for provisions specified therein, effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards or conditions in the previous permit. Allowable exceptions to the anti-backsliding provisions include when:

- (1) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation and
- (2) information is available which was not available at the time of the permit issuance (other than revised regulations, guidance or test methods) and which would justify the application of less stringent effluent limitations at the time of permit issuance.

This permitting action establishes a daily maximum formalin mass limit that is less stringent than the previous limit. The revised limit is recalculated based on methods consistent with the industry, where receiving water standards will allow. This method was established after issuance of the Gardner Lake facility's 2004 MEPDES permit/WDL. Though the new mass limit is larger than the previously established mass limit, the Department views the formalin concentration limit and timing restrictions as ensuring that formalin will not be discharged in toxic amounts. The Department believes that these actions are consistent with the anti-backsliding provisions.

## 8. ANTI-DEGRADATION

Maine's anti-degradation policy is included in 38 M.R.S.A., Section 464(4)(F) and addressed in the *Conclusions* section of this permit. Pursuant to the policy, where a new or increased discharge is proposed, the Department shall determine whether the discharge will result in a significant lowering of existing water quality. Increased discharge means a discharge that would add one or more new pollutants to an existing effluent, increase existing levels of pollutants in an effluent, or cause an effluent to exceed one or more of its current licensed discharge flow or effluent limits, after the application of applicable best practicable treatment technology. As revisions to previous effluent limitations may appear less restrictive, the Department is addressing the implications under the anti-degradation policy.

The monthly average total phosphorus mass and concentration limits are less stringent than those in the previous permitting action, as noted in the 2006 Permit Modification, based on consideration of a revised chronic ambient to effluent dilution ratio. However, from an assimilative capacity perspective of Chase Mill Stream, the limits are equivalent proportional to low flow stream values.

The daily maximum formalin concentration limits consist of a two-tiered treatment scenario, based on more targeted toxicity testing and a revised Department BPJ of ambient water quality criteria. As noted in Fact Sheet Section 6.f, the limits are less stringent than those in the 2008 Permit Revision based on consideration of a revised acute ambient to effluent dilution ratio. The daily maximum formalin mass limit is recalculated based on methods consistent with the industry, where receiving water standards will allow. Though the new mass limit is larger than the previously established mass limit, the Department views the formalin concentration limit and timing restrictions as ensuring that formalin will not be discharged in toxic amounts.

Based on the information provided, the Department does not consider either action to result in a lowering of the existing water quality.

## 9. SETTLING TANK CLEANING:

Discharge of inadequately treated fish hatchery wastewater (excess feed and fish waste) contributes solids, BOD, and nutrients to receiving waters, which can contribute to eutrophication and oxygen depletion. This, in combination with other pollutant specific toxic effects, impacts the aquatic life and habitat value in the receiving water. Typical hatchery wastewater treatment practices include effluent filtration and settling with solids removal.

This permitting action carries forward requirements that the permittee must clean any settling structures at a minimum when accumulated materials occupy 20% of a basin's capacity, when material deposition in any area of the basin exceeds 50% of the operational depth, or at any time that said materials in or from the basins are contributing to a violation of permit effluent limits.

## 10. DISEASE AND PATHOGEN CONTROL AND REPORTING:

Maine Department of Inland Fisheries and Wildlife (MDIFW) Rules (Chapter 2.03-A) and Maine Department of Marine Resources (MeDMR) Rules (Chapter 24.21) state that “*the transfer and/or introduction of organisms fall within the jurisdiction of the Department of Marine Resources (12 MRSA, §6071) into coastal waters within the State of Maine and the Department of Inland Fisheries and Wildlife (12 MRSA, §§7011, 7035 and 7201, 7202) into public and/or private waters within the State of Maine. These rules are intended to protect wild and farmed salmonid fish populations and shall be applicable to all individuals involved in the culture and movement of live salmonids and gametes.*” Further, both agencies’ rules define Diseases of Regulatory Concern as “*...infectious agents that have been demonstrated to cause a significant increase in the risk of mortality among salmonid populations in the State of Maine. Diseases of Regulatory Concern are classified by the Commissioner into three (3) disease categories: exotic, endemic (limited distribution) and endemic based on an annual review and analysis of epidemiological data.*” This permitting action carries forward requirements that the permittee must comply with MDIFW and MeDMR salmonid fish health rules (12 MRSA, §6071; 12 MRSA, §§7011, 7035, 7201, and 7202, or revised rules). The cited rules include requirements for notification to the appropriate agency within 24-hours of pathogen detection. In the event of a catastrophic pathogen occurrence, in addition to the requirements of the rules, the permittee shall notify the Department in writing within 24-hours of detection, with information on necessary control measures and the veterinarian involved. The permittee shall submit to the Department for review and approval, information on the proposed treatment including materials/chemicals to be used, material/chemical toxicity to aquatic life, the mass and concentrations of materials/chemicals as administered, and the concentrations to be expected in the effluent. If, upon review of information regarding a treatment pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may restrict or limit such use.

## 11. THERAPEUTIC AGENTS

In the June 30, 2004, USEPA Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (National Effluent Guidelines), EPA requires proper storage of drugs, pesticides and feed and requires facilities to report use of any investigational new animal drug (INAD), extra-label drug use, and spills of drugs, pesticides or feed that results in a discharge to waters of the U.S. This permitting action carries forward the previous requirements that all medicated fish feeds, drugs, and other fish health therapeutants shall be approved by the US Food and Drug Administration (USFDA) and applied according to USFDA accepted guidelines and manufacturer’s label instructions and that therapeutic agents must also be registered with USEPA, as appropriate. Further, records of all such materials used must be maintained at the facility for five years.

## 11. THERAPEUTIC AGENTS (cont'd)

This permitting action does not authorize routine off-label or extra-label drug use. Such uses shall only be permitted in emergency situations when they are the only feasible treatments available and only under the authority of a veterinarian. The permittee shall notify the Department in writing within 24-hours of such use. This notification must be provided by the veterinarian involved and must include the agent(s) used, the concentration and mass applied, a description of how the use constitutes off-label or extra-label use, the necessity for the use in terms of the condition to be treated and the inability to utilize accepted drugs or approved methods, the duration of the use, the likely need of repeat treatments, and information on aquatic toxicity. If, upon review of information regarding the use of a drug pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may restrict or limit such use.

This permitting action does not authorize the discharge of drugs authorized by the USFDA pursuant to the Investigational New Animal Drug (INAD) program. As the INAD program typically involves the long-term study of drugs, their benefits and effects, the permittee is anticipated to be able to notify the Department of its intent to conduct, and provide information related to, such study. The permittee is required to provide notification to the Department for review and approval prior to the use and discharge of any drug pursuant to the INAD program. This notification must include information to demonstrate that the minimum amount of drug necessary to evaluate its safety, efficacy, and possible environmental impacts will be used. Notifications must also include an environmental monitoring and evaluation program that at a minimum describes sampling strategies, analytical procedures, evaluation techniques and a timetable for completion of the program. The program must consider the possible effects on the water column, benthic conditions and organisms in or uses of the surrounding waters. INAD related uses and discharges will be subject to Department review and approval.

Phoenix Salmon indicates that the following therapeutic agents may be used at Gardner Lake. These agents must be used pursuant to the requirements specified herein.

Formalin. Effluent limitations and monitoring requirements related to the use of formalin at the facility are addressed in Permit Special Condition A, footnote 3 and Fact Sheet Section 6.f.

Perox-Aid 35% hydrogen peroxide for control of fungus on eggs and bacterial gill disease on fish.

Aquaflor antibiotic for the control of cold water disease or furunculosis only under the guidance of a veterinarian. Active ingredient Florfenicol.

Oxytetracycline antibiotic for the control of enteric red mouth and furunculosis only under the guidance of a veterinarian. Active ingredient oxytetracycline dihydrate.

Romet antibiotic for control of furunculosis, enteric red mouth, and cold water disease only under the guidance of a veterinarian.

Chloramine T for control of bacterial gill disease. Active ingredients N-chloro-toluenesulfonamide and sodium salt tri hydrate.

## 11. THERAPEUTIC AGENTS (cont'd)

MS 222 fish anesthetic to allow for close examination including fin clippings and vaccinations. Active ingredient ethyl m-amino benzoate.

SLICE contained in feed mixture prior to shipping fish to marine sites to combat sea lice in sea water. Active ingredient Emamectin Benzoate. SLICE was used at Gardner Lake in 2006 and 2009 pursuant to a 2006 Administrative Modification (Fact Sheet Section 2.c) as part of USFDA INAD program #10-418. As with prior use, SLICE will only be used under the guidance of a veterinarian and according to USFDA and/or USEPA requirements as specified above. Also, as previous, the Emamectin concentration within the Gardner Lake facility shall not exceed 36.1 ppt unless previously approved by the Department based on Whole Effluent Toxicity (WET) testing results to compliment 2006 WET testing conducted.

## 12. DISINFECTING/SANITIZING AGENTS

Phoenix Salmon indicates that the following disinfecting/sanitizing agents may be used at Gardner Lake. These agents must be used pursuant to the requirements specified herein.

Ovadine for disinfection of salmonid eggs ( $\leq 100$  ppm during February/March) and equipment ( $\leq 200$  ppm year round). Active ingredient 10% polyvinylpyrrolidinone iodine and 90% inert ingredients. Approximately 20 gallons used per year.

Virkon Aquatic footbath disinfectant ( $\leq 2\%$  solution). Active ingredients potassium peroxymonosulfate, sodium chloride, other inert ingredients. Approximately 40 pounds of powder used per year.

Citrus Crystal for cleaning and disinfection of tanks. Active ingredients sodium metasilicate, sodium phosphate tribasic. Approximately 20 pounds of powder used per year generally during May, June, October, November.

I2R disinfectant for vehicles (100 ppm throughout year). Active ingredients iodine, phosphoric acid. Approximately 15 gallons used per year on incoming vehicles.

Wastewater from egg and equipment disinfection can be expected to enter the facility wastewater stream. Phoenix Salmon disinfects the interior of its smolt truck once annually using approximately 1 gallon of iodine solution, followed by an approximately 50 gallon clean water rinse, followed by disposal into the facility wastewater stream ahead of the drum filters. All iodine solution disposed of in the facility wastewater stream is further diluted in the full facility wastewater flow prior to discharge to the receiving water. At this time, there are no ambient water quality criteria for iodine. Footbath wastes are disposed of in the facility's sludge storage tank for disposal offsite. As noted in Fact Sheet Section 2.e, a deminimus amount of chlorine in the form of 4 disinfectant pucks per week is used to maintain the filter spray bars used in cleaning the drum filters. The spray enters and is diluted in the full facility wastewater flow. The Department considers the resulting chlorine discharge to be deminimus.

## **12. DISINFECTING/SANITIZING AGENTS (cont'd)**

In this permitting action, the Department carries forward the requirement that the permittee must maintain records of all sanitizing agents and/or disinfectants used that have the potential to enter the waste-stream or receiving water, their volumes and concentrations as used and concentrations at the point of discharge, at the facility for a period of five years. This permitting action only authorizes the discharge of those materials applied for, evaluated by the Department, and either regulated or determined to be de minimus in this permitting action or in subsequent Department actions. The discharges of any other agents or waste products not specifically included in this permitting action are considered unauthorized discharges pursuant to Permit Special Condition C.

## **13. MINIMUM TREATMENT TECHNOLOGY REQUIREMENT**

Between 2000 and 2002, eleven Maine fish hatcheries were evaluated to identify potential options for facility upgrades. All nine Maine Department of Inland Fisheries and Wildlife hatcheries were evaluated by FishPro Inc., while the two USFWS hatcheries were evaluated by the Freshwater Institute. Recommended wastewater treatment upgrades for each of the facilities included microscreen filtration of the effluent. In the previous permitting action, based on the information provided and Department BPJ, the Department required that the permittee shall provide minimum treatment technology for the Gardner Lake facility that shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, removal of solids. This determination is being carried forward in this permitting action. Phoenix Salmon shall provide treatment and/or effluent quality equal to or better than the BPJ minimum treatment technology and shall comply with all effluent limitations, monitoring requirements, and operational requirements established in this permitting action. Additional treatment may be necessary to achieve specific water quality based limitations.

## **14. AMBIENT MACROINVERTEBRATE BIOMONITORING**

Based on limited available data and Department concerns with potential effects of the facility's effluent discharges on the aquatic life in Chase Mills Stream, the previous permitting action required the permittee to conduct ambient macroinvertebrate biomonitoring annually beginning calendar year 2005. Results were to be reported to the Department annually. The previous permitting action contained provisions for modification or discontinuance of the biomonitoring requirement if the receiving water was determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class.

The permittee conducted the required sampling in August 2005 and submitted the results to the Department for review shortly thereafter. On January 6, 2006, the Department evaluated the results of the macro-invertebrate sampling and determined that Chase Mills Stream was attaining Class B aquatic life standards below the discharge from the Gardner Lake facility.

#### **14. AMBIENT MACROINVERTEBRATE BIOMONITORING (cont'd)**

Pursuant to the conditions described above, the Department modified the MEPDES Permit / Maine WDL in 2006 (#W-007149-5Q-G-M) to remove requirements for annual macroinvertebrate biomonitoring. The Department has no information that indicates that additional macroinvertebrate testing is required at this time.

#### **15. AMBIENT DISSOLVED OXYGEN AND TEMPERATURE MONITORING**

Based on the low effluent dilution provided in the receiving water and the need for additional data on the effects of the Gardner Lake facility's effluent on the water quality of Chase Mills Stream, the previous permitting action required the permittee to seasonally monitor ambient dissolved oxygen and temperature levels at two locations in Chase Mills Stream. The permittee monitored ambient dissolved oxygen and temperature (Celsius) at a frequency of twice per week from June 1 through September 30 from 2005 through 2009. Upon review of the Chase Mills Stream data, the Department's Division of Environmental Assessment identified no adverse impacts on these ambient water quality parameters from the Gardner Lake facility discharge. The Department has no information that indicates that additional ambient dissolved oxygen and temperature monitoring is required at this time, therefore the monitoring requirement is being eliminated in this permitting action.

#### **16. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION**

The US Fish and Wildlife Service and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) formally listed the Atlantic salmon as an endangered species on November 17, 2000. In that decision, the Gulf of Maine Distinct Population Segment (DPS) encompassed all naturally reproducing remnant populations of Atlantic salmon downstream of the former Edwards Dam site on the Kennebec River northward to the mouth of the St. Croix River. The watershed structure, available Atlantic salmon habitat, and abundance of Atlantic salmon at various life stages were best known for the following eight rivers: Dennys River, East Machias River, Machias River, Pleasant River, Narraguagus River, Ducktrap River, Sheepscot River, and Cove Brook. On June 15, 2009, the two agencies expanded the Gulf of Maine DPS to include salmon in the Penobscot, Kennebec, and Androscoggin Rivers and their tributaries. Two significant issues of concern regarding the rearing of salmon in Maine involve the genetic integrity of the salmon and escape prevention to avoid impacts on native fish.

On December 4, 2000, in regard to the Department's pending delegation to administer the NPDES Permit Program, USEPA Region I informed the Department that "*permits issued to freshwater hatcheries raising salmon will require that the facility be designed or modified to achieve zero escapement of fish from the facility*". The EPA also stated, "*The information contained in the (US Fish and Wildlife and NOAA Fisheries) Services' listing documents indicates that a remnant population of wild Atlantic salmon is present in...*" Maine waters "*...and that salmon fish farms and hatcheries are activities having a significant impact on*

## 16. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION (cont'd)

*the...*” Gulf of Maine Distinct Population Segment of Atlantic salmon “...*through, among other things, the escape of farmed and non-North American strains of salmon which may interbreed with the wild Maine strains, compete for habitat, disrupt native salmon redds, and spread disease.*” “Based on this information, the Services have concluded that the escape of farm-raised salmon from fish farms and hatcheries is likely to significantly impair the growth, reproduction and habitat of wild salmon, thereby impairing the viability of the DPS.” “EPA has analyzed current information, including these findings, and based on this information believes that this remnant population constitutes an existing instream use of certain Gulf of Maine rivers and considers that the above-described impacts to the population would be inconsistent with Maine’s water quality standards. Assuming the information discussed above does not significantly change, EPA will utilize its authorities to ensure compliance with Maine water quality standards by ensuring that conditions to protect the remnant population of Atlantic salmon are included in NPDES permits for salmon fish farms and hatcheries, which are subject to regulation as concentrated aquatic animal production facilities.” “In view of the substantial danger of extinction to the DPS described by the Services, it is EPA’s view that proposed permits authorizing activities that would adversely affect the population, as described earlier in this letter, would be inconsistent with Maine’s water quality standards and objectionable under the CWA.”

Leading up to the 2000 listing and in review of MEPDES Permit / Maine WDLs for other fish hatchery and rearing facilities in Maine, the USFWS and NOAA Fisheries have advocated for genetic testing of Atlantic salmon housed at hatchery and rearing facilities to ensure that they are of North American origin, as well as employment of a fully functional Containment Management System (CMS) at facilities to prevent the escape of raised salmon or other species of concern in order to avoid impacts on native fish populations. The escape of reared fish also has the potential for transmission of diseases and pathogens to native fish populations. These issues are of particular concern for the Gulf of Maine DPS and resulted in establishment of CMS requirements for the Gardner Lake facility in the previous permitting action. The East Machias River, which is located downstream of the facility, is an identified DPS river. US Fish and Wildlife Service and NOAA Fisheries previously reported that Gardner Lake, Chase Mills Stream, and the East Machias River provide habitat for, and are used by Atlantic salmon.

**A. Genetic Integrity:** Gardner Lake receives all of its’ eggs/fish from internal sources in Phoenix Salmon and its’ Canadian partner Kelly Cove Salmon located in New Brunswick. Phoenix utilizes only one strain of salmon in its production, the St. John River Strain. All brood fish are analyzed according to Microsatellite Protocols described in this permit with results submitted to USFWS. Only those fish which are deemed to be twice as likely to be of North American origin are utilized. Prior to each individual brood fish being analyzed, they are pit tagged and given unique ID numbers. At time of result receipt, any fish which fail to pass the required score are destroyed and thusly not used for spawning. All testing is performed at the Research Productivity Council (RPC), located in Fredericton, NB with results sent directly from RPC to USFWS. Gardner Lake receives offspring either from the

## 16. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION (cont'd)

Bingham Hatchery or can on rare occasion obtain product from Oak Bay Hatchery located in Oak Haven , NB. 100% of the Bingham brood fish originate from the United States Department of Agriculture Coldwater Marine Aquaculture Center in Franklin, Maine.

As stated above, Maine's Aquaculture General Permit (#MEG130000, Part II, Section I) and individual MEPDES Permits for marine aquaculture facilities contain requirements to address the genetic integrity of Atlantic salmon raised in Maine for aquaculture. The genetic requirements are implemented at the marine sites as well as at the hatchery and rearing facilities that raise and supply salmon for marine aquaculture. As this is precisely the nature of Phoenix Salmon's business and the purpose of the Gardner Lake facility, it is assumed that all salmon at the facility shall comply with these requirements. In the event that Phoenix Salmon Inc intends to keep Atlantic salmon eggs or fish at the Gardner Lake facility that are not intended for marine aquaculture, or are otherwise not included in the above described genetic testing requirements, the permittee shall comply with the requirements specified in Permit Attachment A, *Genetic Testing Requirements for non-Marine Aquaculture Atlantic Salmon*, pursuant to Permit Special Condition L. The use of Atlantic salmon eggs or fish originating from non-North American stock is prohibited at the Gardner Lake facility.

**B. Escapement:** Phoenix Salmon raises salmon from eggs or fry to smolts over a 12 to 18 month cycle for use ultimately in human consumption. As part of the Gardner Lake Containment Management System, Phoenix incorporates several different barriers to inhibit the escapement of fish into receiving waters. In the hatch house, each tank has 2 separate barriers. Firstly, each individual tank has a tank screen. The second barrier in the hatch house is the 60 micron Rotary Drum filter which contacts all water from the hatch house. Upon exiting the hatch house, all filtered water mixes with water from the smolt field in the collection trench. Each smolt field tank has an individual tank screen. Water leaving each individual tank is mixed in the collection trenches which houses fish-sized appropriate slant screens. Water leaves the trenches where it passes through one of four 60-micron Rotary Drum Filters before passing through one final fish sized appropriate barrier prior to being sent to the receiving water. Phoenix performs daily checks to insure all barriers are functional and in place. In addition, Gardner Lake has an externally performed audit conducted once per year with results submitted to the Department. Since inception of the CMS program, Gardner Lake has received perfect scores on all audits.

Based on requirements established in Maine's Aquaculture General Permit, individual MEPDES Permits for marine aquaculture facilities, and guidance developed by the Maine Aquaculture Association, this permitting action carries forward the requirement that the permittee shall employ a fully functional CMS at the facility designed, constructed, and operated so as to prevent the accidental or consequential escape of fish to open water. The CMS plan shall include a site plan or schematic with specifications of the particular system. The permittee shall develop and utilize a CMS consisting of management and auditing methods to describe or address the following: site plan description, inventory control procedures, predator control procedures, escape response procedures, unusual event

## **16. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION (cont'd)**

management, severe weather procedures and training. The CMS shall contain a facility specific list of critical control points (CCP) where escapes have been determined to potentially occur. Each CCP must address the following: the specific location, control mechanisms, critical limits, monitoring procedures, appropriate corrective actions, verification procedures that define adequate CCP monitoring, and a defined record keeping system.

The CMS site specific plan shall describe the use of effective containment barriers appropriate to the life history of the fish. The facility shall have in place both a three-barrier system for fish up to 5 grams in size and a two barrier system for fish 5 grams in size or larger. The three-barrier system shall include one barrier at the incubation/rearing unit, one barrier at the effluent from the hatch house/fry rearing area and a third barrier placed inline with the entire effluent from the facility. Each barrier shall be appropriate to the size of fish being contained. The two-barrier system shall include one barrier at the individual rearing unit drain and one barrier inline with the total effluent from the facility. Each barrier shall be appropriate to the size of fish being contained. Barriers installed in the system may be of the screen type or some other similarly effective device used to contain fish of a specific size in a designated area. Barriers installed in the system for compliance with these requirements shall be monitored daily. Additional requirements include:

1. The CMS shall be audited at least once per year and within 30 days of a reportable escape (more than 50 fish) by a party other than the facility operator or owner qualified to conduct such audits and approved by the Department. A written report of these audits shall be provided to the permittee and the Department for review and approval within 30 days of the audit being conducted. If deficiencies are identified during the audit, the report shall contain a corrective action plan, including a timetable for implementation and re-auditing to verify deficiencies are addressed as in the corrective action plan approved by the Department. Additional third party audits to verify correction of deficiencies shall be conducted in accordance with the corrective action plan or upon request of the Department. The permittee shall notify the Department upon completion of corrective actions.
2. Facility personnel responsible for routine operation shall be properly trained and qualified to implement the CMS. Prior to any containment system assessment associated with this permit, the permittee shall provide to the Department documentation of the employee's or contractor's demonstrated capabilities to conduct such work.
3. The permittee shall maintain complete records, logs, reports of internal and third party audits and documents related to the CMS on site for a period of 5 years.
4. For new facilities, a CMS shall be prepared and submitted to the Department for review and approval prior to fish being introduced into the facility.

**16. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION  
(cont'd)**

The permittee shall report any known or suspected escapes of more than 50 fish within 24 hours to the Maine Dept of Marine Resources Bureau of Sea-Run Fisheries and Habitats at 207-941-9973 (Pat Keliher and Joan Trial), Maine Department of Inland Fisheries and Wildlife at 207-287-5202 (Commissioner's office), USFWS Maine Field Office at 207-827-5938, and NOAA Fisheries Maine Office at 207-866-7379. During off-hours, the reports can be called to 800-432-7381.

**17. DISCHARGE IMPACT ON RECEIVING WATER QUALITY:**

As permitted, based on the information available to date and best professional judgement, the Department has determined the existing water uses will be maintained and protected and the discharge will not cause or contribute to the failure of Chase Mills Stream to meet standards for Class B classification.

**18. PUBLIC COMMENTS:**

Public notice of this application was made in the Bangor Daily News on or about August 5, 2009. 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.

**19. DEPARTMENT CONTACTS:**

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

Robert D. Stratton  
Division of Water Quality Management  
Bureau of Land and Water Quality  
Department of Environmental Protection  
17 State House Station  
Augusta, Maine 04333-0017

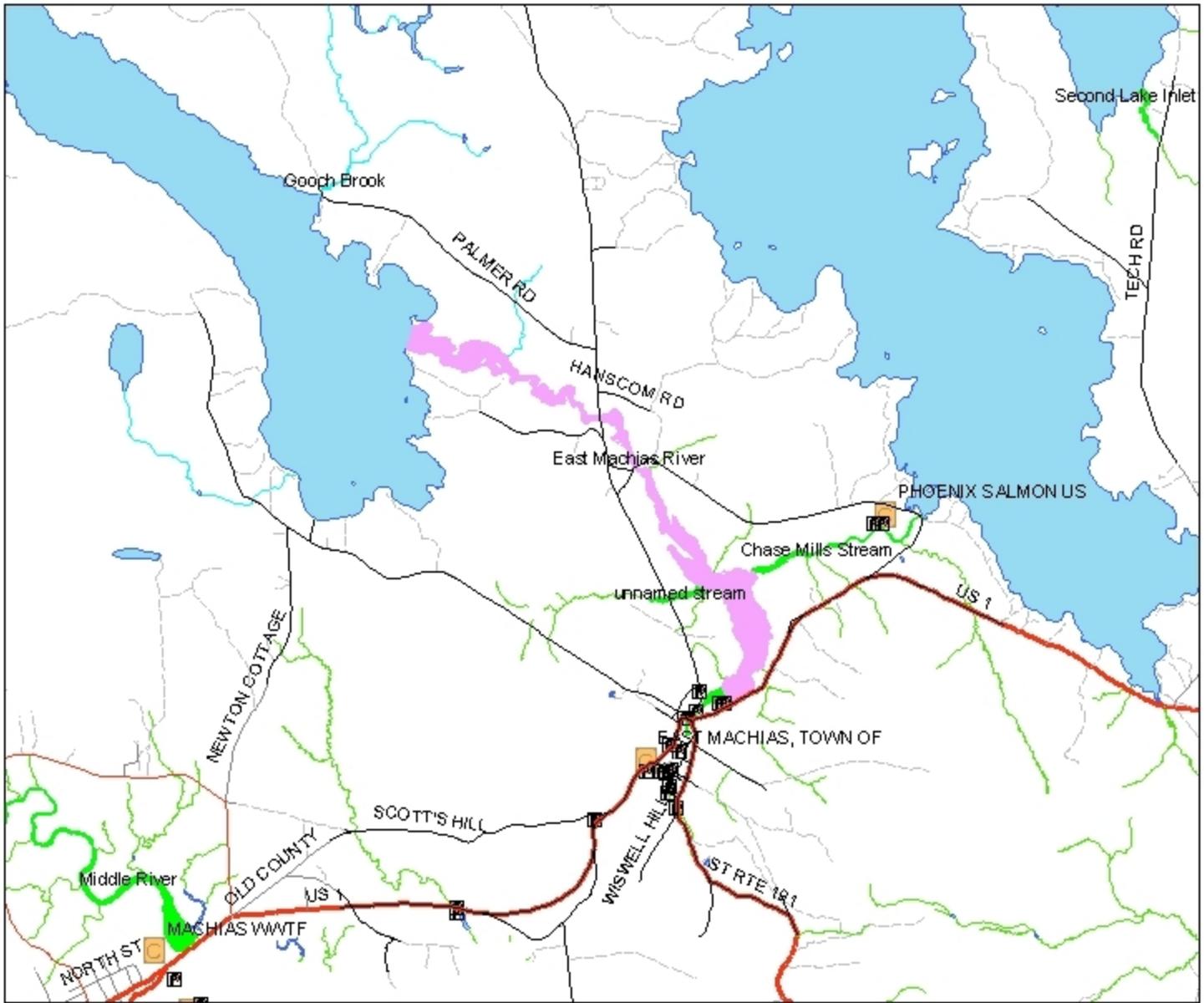
Telephone (207) 215-1579  
Fax (207) 287-3435  
email: Robert.D.Stratton@maine.gov

**20. RESPONSE TO COMMENTS:**

During the period of February 1, 2010 through March 2, 2010, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit / Maine Waste Discharge License to be issued to Phoenix Salmon US INC for the proposed discharge. The Department did not receive any comments that resulted in significant revisions to the permit, but made some minor internal revisions. Therefore, no response to comments has been prepared.

**ATTACHMENT A**  
Site Map

**ATTACHMENT B**  
Site Plans (2)



**Legend**

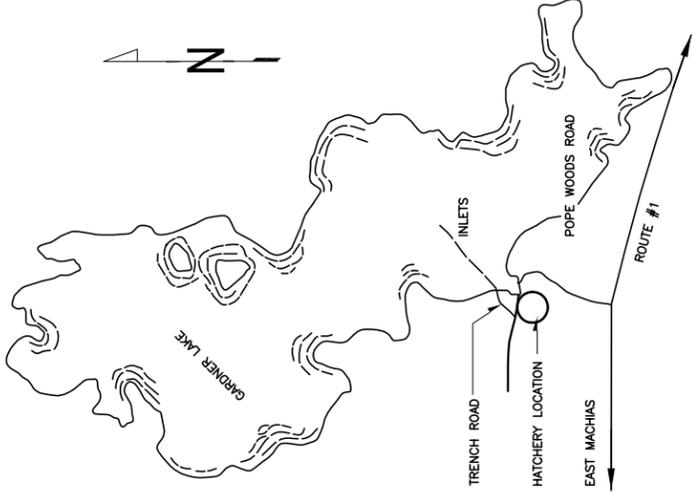
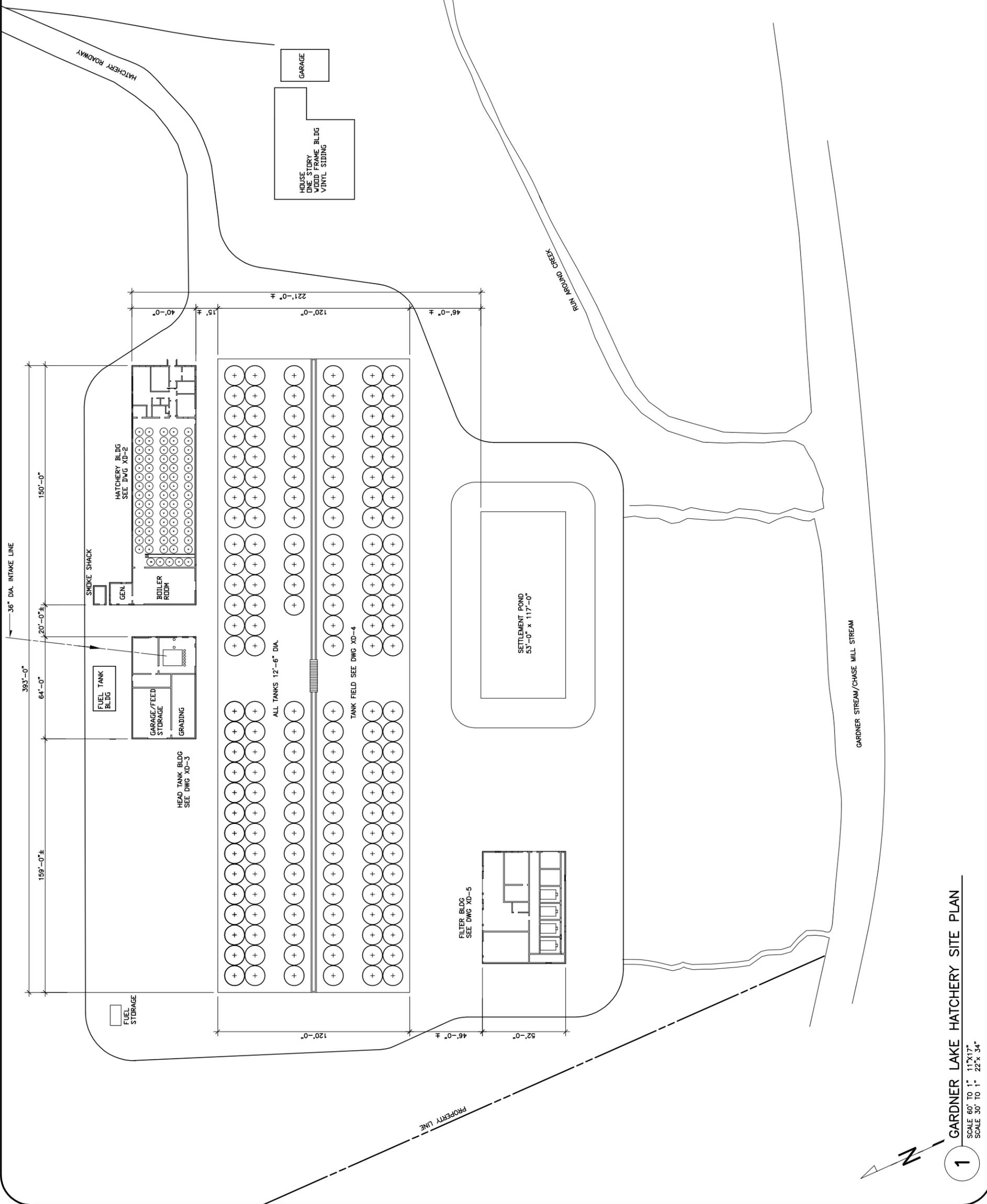
- Rivers**
- AA (Pink)
- A (Cyan)
- B (Green)
- C (Orange)
- Streams**
- AA (Purple)
- A (Light Blue)
- B (Light Green)
- C (Light Orange)
- Ponds and Lakes**
- (Blue)
- Wastewater\_Facilities**
- (Orange square)
- Wastewater\_Outfalls**
- (Black square)
- Roads**
- JURISDICTION**
- Town Road (Thin black line)
- Town Road - Summer (Thick black line)
- Town Road - Winter (Thin grey line)
- State-aided Highway (Thin red line)
- State Highway (Thick red line)
- Toll Highway (Thick black line)
- Private Road (Dashed black line)
- Reservation Road (Dashed grey line)
- Seasonal Parkway (Dashed orange line)



**Phoenix Salmon US Inc  
Gardner Lake Facility  
East Machias, Maine**

Map created by:  
Bob Stratton  
Division of Water Quality Management  
Maine Department of Environmental Protection



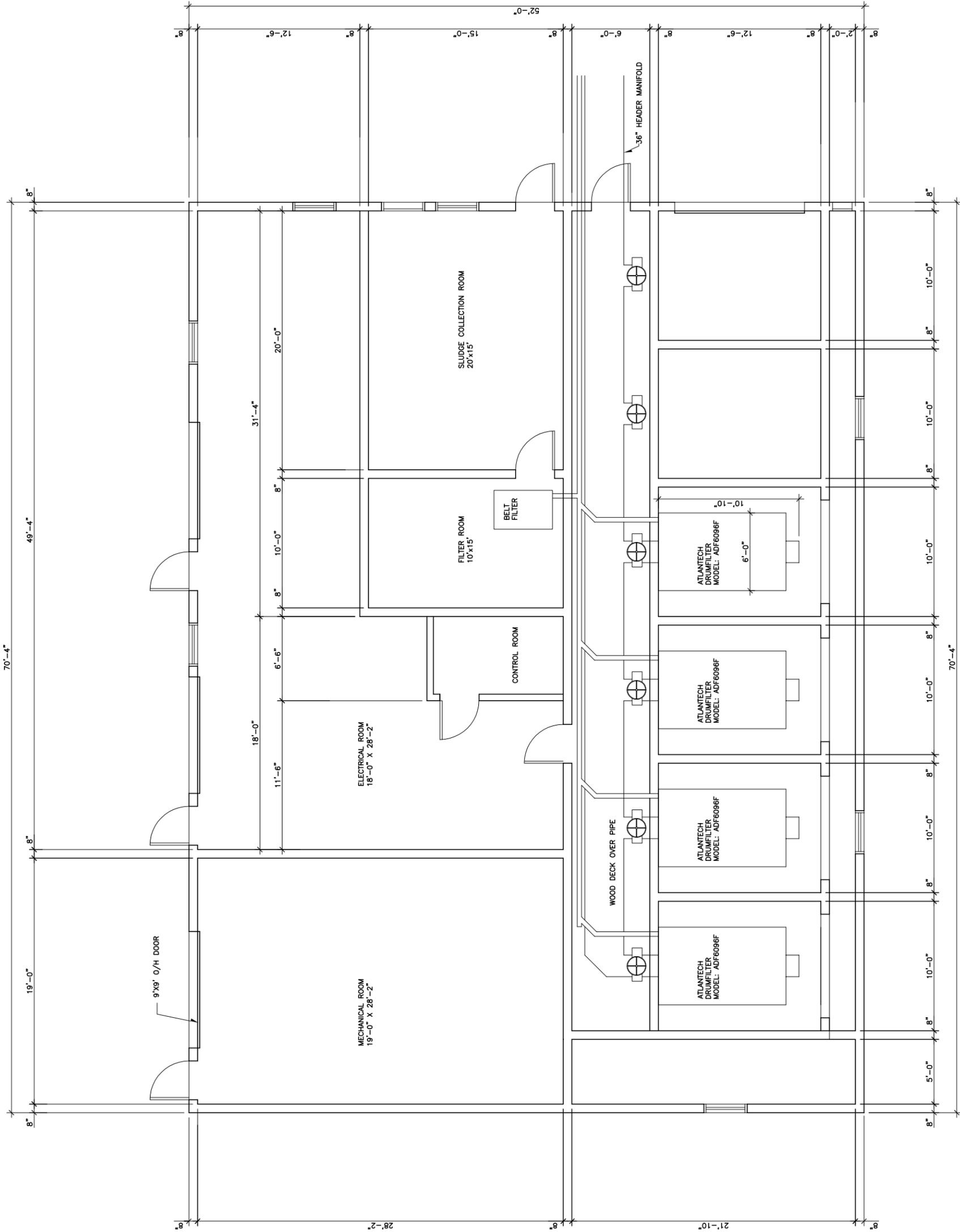


2 LOCATION MAP  
NTS

PROJECT	C8-04
DATE	08/05/16
CLIENT	COOKE AQUACULTURE
DESIGN	O.S.D.
SCALE	AS SHOWN
DATE	08/05/16
BY	...
CHECKED	...
DATE	...
PROJECT	XD-1

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 PHONE: (02) 728-2913 FAX: (02) 728-8794

1 GARDNER LAKE HATCHERY SITE PLAN  
 SCALE 60' TO 1" 11"x17"  
 SCALE 30' TO 1" 22"x 34"



PROJECT	COS-ES CERTIFICATION
DATE	08/05/16
CLIENT	COOKE AQUACULTURE
DESIGNER	O.S.D.
TITLE	GARDNER LAKE RDF BUILDING PLAN

**1** DRUMFILTER BUILDING PLAN  
 SCALE 1/8" TO 1'-0" 11"x17"  
 SCALE 1/4" TO 1'-0" 22"x34"

PRINTED ON: 08/06/02

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NO. **XD-5**

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

STANDARD CONDITIONS APPLICABLE TO ALL PERMITS

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MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

STANDARD CONDITIONS APPLICABLE TO ALL PERMITS

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**A. GENERAL PROVISIONS**

**1. General compliance.** All discharges shall be consistent with the terms and conditions of this permit; any changes in production capacity or process modifications which result in changes in the quantity or the characteristics of the discharge must be authorized by an additional license or by modifications of this permit; it shall be a violation of the terms and conditions of this permit to discharge any pollutant not identified and authorized herein or to discharge in excess of the rates or quantities authorized herein or to violate any other conditions of this permit.

**2. Other materials.** Other materials ordinarily produced or used in the operation of this facility, which have been specifically identified in the application, may be discharged at the maximum frequency and maximum level identified in the application, provided:

- (a) They are not
  - (i) Designated as toxic or hazardous under the provisions of Sections 307 and 311, respectively, of the Federal Water Pollution Control Act; Title 38, Section 420, Maine Revised Statutes; or other applicable State Law; or
  - (ii) Known to be hazardous or toxic by the licensee.
- (b) The discharge of such materials will not violate applicable water quality standards.

**3. Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of State law and the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

- (a) The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act, and 38 MRSA, §420 or Chapter 530.5 for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.
- (b) Any person who violates any provision of the laws administered by the Department, including without limitation, a violation of the terms of any order, rule license, permit, approval or decision of the Board or Commissioner is subject to the penalties set forth in 38 MRSA, §349.

**4. Duty to provide information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

**5. Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

**6. Reopener clause.** The Department reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedule of compliance or other provisions which may be authorized under 38 MRSA, §414-A(5).

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

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**7. Oil and hazardous substances.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under section 311 of the Federal Clean Water Act; section 106 of the Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980; or 38 MRSA §§ 1301, et. seq.

**8. Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

**9. Confidentiality of records.** 38 MRSA §414(6) reads as follows. "Any records, reports or information obtained under this subchapter is available to the public, except that upon a showing satisfactory to the department by any person that any records, reports or information, or particular part or any record, report or information, other than the names and addresses of applicants, license applications, licenses, and effluent data, to which the department has access under this subchapter would, if made public, divulge methods or processes that are entitled to protection as trade secrets, these records, reports or information must be confidential and not available for public inspection or examination. Any records, reports or information may be disclosed to employees or authorized representatives of the State or the United States concerned with carrying out this subchapter or any applicable federal law, and to any party to a hearing held under this section on terms the commissioner may prescribe in order to protect these confidential records, reports and information, as long as this disclosure is material and relevant to any issue under consideration by the department."

**10. Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

**11. Other laws.** The issuance of this permit does not authorize any injury to persons or property or invasion of other property rights, nor does it relieve the permittee of its obligation to comply with other applicable Federal, State or local laws and regulations.

**12. Inspection and entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the EPA Administrator), upon presentation of credentials and other documents as may be required by law, to:

- (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- (d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

**B. OPERATION AND MAINTENANCE OF FACILITIES**

**1. General facility requirements.**

- (a) The permittee shall collect all waste flows designated by the Department as requiring treatment and discharge them into an approved waste treatment facility in such a manner as to

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

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- maximize removal of pollutants unless authorization to the contrary is obtained from the Department.
- (b) The permittee shall at all times maintain in good working order and operate at maximum efficiency all waste water collection, treatment and/or control facilities.
  - (c) All necessary waste treatment facilities will be installed and operational prior to the discharge of any wastewaters.
  - (d) Final plans and specifications must be submitted to the Department for review prior to the construction or modification of any treatment facilities.
  - (e) The permittee shall install flow measuring facilities of a design approved by the Department.
  - (f) The permittee must provide an outfall of a design approved by the Department which is placed in the receiving waters in such a manner that the maximum mixing and dispersion of the wastewaters will be achieved as rapidly as possible.

**2. Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

**3. Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

**4. Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

**5. Bypasses.**

- (a) Definitions.
  - (i) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
  - (ii) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- (b) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this section.
- (c) Notice.
  - (i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

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- (ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D(1)(f), below. (24-hour notice).
- (d) Prohibition of bypass.
  - (i) Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
    - (A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
    - (B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
    - (C) The permittee submitted notices as required under paragraph (c) of this section.
  - (ii) The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in paragraph (d)(i) of this section.

**6. Upsets.**

- (a) Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- (b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (c) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- (c) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - (i) An upset occurred and that the permittee can identify the cause(s) of the upset;
  - (ii) The permitted facility was at the time being properly operated; and
  - (iii) The permittee submitted notice of the upset as required in paragraph D(1)(f) , below. (24 hour notice).
  - (iv) The permittee complied with any remedial measures required under paragraph B(4).
- (d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

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**C. MONITORING AND RECORDS**

**1. General Requirements.** This permit shall be subject to such monitoring requirements as may be reasonably required by the Department including the installation, use and maintenance of monitoring equipment or methods (including, where appropriate, biological monitoring methods). The permittee shall provide the Department with periodic reports on the proper Department reporting form of monitoring results obtained pursuant to the monitoring requirements contained herein.

**2. Representative sampling.** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. If effluent limitations are based wholly or partially on quantities of a product processed, the permittee shall ensure samples are representative of times when production is taking place. Where discharge monitoring is required when production is less than 50%, the resulting data shall be reported as a daily measurement but not included in computation of averages, unless specifically authorized by the Department.

**3. Monitoring and records.**

- (a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- (b) Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years, the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.
- (c) Records of monitoring information shall include:
  - (i) The date, exact place, and time of sampling or measurements;
  - (ii) The individual(s) who performed the sampling or measurements;
  - (iii) The date(s) analyses were performed;
  - (iv) The individual(s) who performed the analyses;
  - (v) The analytical techniques or methods used; and
  - (vi) The results of such analyses.
- (d) Monitoring results must be conducted according to test procedures approved under 40 CFR part 136, unless other test procedures have been specified in the permit.
- (e) State law provides that any person who tampers with or renders inaccurate any monitoring devices or method required by any provision of law, or any order, rule license, permit approval or decision is subject to the penalties set forth in 38 MRSA, §349.

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**D. REPORTING REQUIREMENTS**

**1. Reporting requirements.**

- (a) Planned changes. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
  - (i) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
  - (ii) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Section D(4).
  - (iii) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
- (b) Anticipated noncompliance. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- (c) Transfers. This permit is not transferable to any person except upon application to and approval of the Department pursuant to 38 MRSA, § 344 and Chapters 2 and 522.
- (d) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
  - (i) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Department for reporting results of monitoring of sludge use or disposal practices.
  - (ii) 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 the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Department.
  - (iii) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Department in the permit.
- (e) Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
- (f) Twenty-four hour reporting.
  - (i) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance

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has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(ii) The following shall be included as information which must be reported within 24 hours under this paragraph.

(A) Any unanticipated bypass which exceeds any effluent limitation in the permit.

(B) Any upset which exceeds any effluent limitation in the permit.

(C) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit to be reported within 24 hours.

(iii) The Department may waive the written report on a case-by-case basis for reports under paragraph (f)(ii) of this section if the oral report has been received within 24 hours.

(g) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (d), (e), and (f) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (f) of this section.

(h) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

**2. Signatory requirement.** All applications, reports, or information submitted to the Department shall be signed and certified as required by Chapter 521, Section 5 of the Department's rules. State law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan or other document filed or required to be maintained by any order, rule, permit, approval or decision of the Board or Commissioner is subject to the penalties set forth in 38 MRSA, §349.

**3. Availability of reports.** Except for data determined to be confidential under A(9), above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by State law, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal sanctions as provided by law.

**4. Existing manufacturing, commercial, mining, and silvicultural dischargers.** In addition to the reporting requirements under this Section, all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Department as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(i) One hundred micrograms per liter (100 ug/l);

(ii) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

(iii) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with Chapter 521 Section 4(g)(7); or

(iv) The level established by the Department in accordance with Chapter 523 Section 5(f).

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- (b) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
- (i) Five hundred micrograms per liter (500 ug/l);
  - (ii) One milligram per liter (1 mg/l) for antimony;
  - (iii) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with Chapter 521 Section 4(g)(7); or
  - (iv) The level established by the Department in accordance with Chapter 523 Section 5(f).

**5. Publicly owned treatment works.**

- (a) All POTWs must provide adequate notice to the Department of the following:
- (i) Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA or Chapter 528 if it were directly discharging those pollutants.
  - (ii) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
  - (iii) For purposes of this paragraph, adequate notice shall include information on (A) the quality and quantity of effluent introduced into the POTW, and (B) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
- (b) When the effluent discharged by a POTW for a period of three consecutive months exceeds 80 percent of the permitted flow, the permittee shall submit to the Department a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans.

**E. OTHER REQUIREMENTS**

**1. Emergency action - power failure.** Within thirty days after the effective date of this permit, the permittee shall notify the Department of facilities and plans to be used in the event the primary source of power to its wastewater pumping and treatment facilities fails as follows.

- (a) For municipal sources. During power failure, all wastewaters which are normally treated shall receive a minimum of primary treatment and disinfection. Unless otherwise approved, alternate power supplies shall be provided for pumping stations and treatment facilities. Alternate power supplies shall be on-site generating units or an outside power source which is separate and independent from sources used for normal operation of the wastewater facilities.
- (b) For industrial and commercial sources. The permittee shall either maintain an alternative power source sufficient to operate the wastewater pumping and treatment facilities or halt, reduce or otherwise control production and or all discharges upon reduction or loss of power to the wastewater pumping or treatment facilities.

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**2. Spill prevention.** (applicable only to industrial sources) Within six months of the effective date of this permit, the permittee shall submit to the Department for review and approval, with or without conditions, a spill prevention plan. The plan shall delineate methods and measures to be taken to prevent and or contain any spills of pulp, chemicals, oils or other contaminants and shall specify means of disposal and or treatment to be used.

**3. Removed substances.** Solids, sludges trash rack cleanings, filter backwash, or other pollutants removed from or resulting from the treatment or control of waste waters shall be disposed of in a manner approved by the Department.

**4. Connection to municipal sewer.** (applicable only to industrial and commercial sources) All wastewaters designated by the Department as treatable in a municipal treatment system will be cosigned to that system when it is available. This permit will expire 90 days after the municipal treatment facility becomes available, unless this time is extended by the Department in writing.

**F. DEFINITIONS.** For the purposes of this permit, the following definitions shall apply. Other definitions applicable to this permit may be found in Chapters 520 through 529 of the Department's rules

**Average** means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For bacteria, the average shall be the geometric mean.

**Average monthly discharge limitation** means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. Except, however, bacteriological tests may be calculated as a geometric mean.

**Average weekly discharge limitation** means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

**Best management practices ("BMPs")** means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

**Composite sample** means a sample consisting of a minimum of eight grab samples collected at equal intervals during a 24 hour period (or a lesser period as specified in the section on monitoring and reporting) and combined proportional to the flow over that same time period.

**Continuous discharge** means a discharge which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities.

**Daily discharge** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

# MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

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**Discharge Monitoring Report ("DMR")** means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by approved States as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

**Flow weighted composite sample** means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.

**Grab sample** means an individual sample collected in a period of less than 15 minutes.

**Interference** means a Discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- (1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (2) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

**Maximum daily discharge limitation** means the highest allowable daily discharge.

**New source** means any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:

- (a) After promulgation of standards of performance under section 306 of CWA which are applicable to such source, or
- (b) After proposal of standards of performance in accordance with section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal.

**Pass through** means a discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

**Permit** means an authorization, license, or equivalent control document issued by EPA or an approved State to implement the requirements of 40 CFR parts 122, 123 and 124. Permit includes an NPDES general permit (Chapter 529). Permit does not include any permit which has not yet been the subject of final agency action, such as a draft permit or a proposed permit.

**Person** means an individual, firm, corporation, municipality, quasi-municipal corporation, state agency, federal agency or other legal entity.

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**Point source** means any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation or vessel or other floating craft, from which pollutants are or may be discharged.

**Pollutant** means dredged spoil, solid waste, junk, incinerator residue, sewage, refuse, effluent, garbage, sewage sludge, munitions, chemicals, biological or radiological materials, oil, petroleum products or byproducts, heat, wrecked or discarded equipment, rock, sand, dirt and industrial, municipal, domestic, commercial or agricultural wastes of any kind.

**Process wastewater** means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

**Publicly owned treatment works ("POTW")** means any facility for the treatment of pollutants owned by the State or any political subdivision thereof, any municipality, district, quasi-municipal corporation or other public entity.

**Septage** means, for the purposes of this permit, any waste, refuse, effluent sludge or other material removed from a septic tank, cesspool, vault privy or similar source which concentrates wastes or to which chemicals have been added. Septage does not include wastes from a holding tank.

**Time weighted composite** means a composite sample consisting of a mixture of equal volume aliquots collected over a constant time interval.

**Toxic pollutant** includes any pollutant listed as toxic under section 307(a)(1) or, in the case of sludge use or disposal practices, any pollutant identified in regulations implementing section 405(d) of the CWA. Toxic pollutant also includes those substances or combination of substances, including disease causing agents, which after discharge or upon exposure, ingestion, inhalation or assimilation into any organism, including humans either directly through the environment or indirectly through ingestion through food chains, will, on the basis of information available to the board either alone or in combination with other substances already in the receiving waters or the discharge, cause death, disease, abnormalities, cancer, genetic mutations, physiological malfunctions, including malfunctions in reproduction, or physical deformations in such organism or their offspring.

**Wetlands** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

**Whole effluent toxicity** means the aggregate toxic effect of an effluent measured directly by a toxicity test.



# DEP INFORMATION SHEET

## Appealing a Commissioner's Licensing Decision

Dated: May 2004

Contact: (207) 287-2811

### SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner: (1) in an administrative process before the Board of Environmental Protection (Board); or (2) in a judicial process before Maine's Superior Court. This INFORMATION SHEET, in conjunction with consulting statutory and regulatory provisions referred to herein, can help aggrieved persons with understanding their rights and obligations in filing an administrative or judicial appeal.

### I. ADMINISTRATIVE APPEALS TO THE BOARD

#### **LEGAL REFERENCES**

DEP's *General Laws*, 38 M.R.S.A. § 341-D(4), and its *Rules Concerning the Processing of Applications and Other Administrative Matters* (Chapter 2), 06-096 CMR 2.24 (April 1, 2003).

#### **HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD**

The Board must receive a written notice of appeal within 30 calendar days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days will be rejected.

#### **HOW TO SUBMIT AN APPEAL TO THE BOARD**

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner and the applicant a copy of the documents. All the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

#### **WHAT YOUR APPEAL PAPERWORK MUST CONTAIN**

The materials constituting an appeal must contain the following information at the time submitted:

1. *Aggrieved Status.* Standing to maintain an appeal requires the appellant to show they are particularly injured by the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.

5. *All the matters to be contested.* The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence as part of an appeal only when the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or show that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2, Section 24(B)(5).

#### **OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD**

1. *Be familiar with all relevant material in the DEP record.* A license file is public information made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* An applicant proceeding with a project pending the outcome of an appeal runs the risk of the decision being reversed or modified as a result of the appeal.

#### **WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD**

The Board will formally acknowledge initiation of the appeals procedure, including the name of the DEP project manager assigned to the specific appeal, within 15 days of receiving a timely filing. The notice of appeal, all materials accepted by the Board Chair as additional evidence, and any materials submitted in response to the appeal will be sent to Board members along with a briefing and recommendation from DEP staff. Parties filing appeals and interested persons are notified in advance of the final date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision. The Board will notify parties to an appeal and interested persons of its decision.

#### **II. APPEALS TO MAINE SUPERIOR COURT**

Maine law allows aggrieved persons to appeal final Commissioner licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2.26; 5 M.R.S.A. § 11001; & MRCivP 80C. Parties to the licensing decision must file a petition for review within 30 days after receipt of notice of the Commissioner's written decision. A petition for review by any other person aggrieved must be filed within 40-days from the date the written decision is rendered. The laws cited in this paragraph and other legal procedures govern the contents and processing of a Superior Court appeal.

#### **ADDITIONAL INFORMATION**

If you have questions or need additional information on the appeal process, contact the DEP's Director of Procedures and Enforcement at (207) 287-2811.

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**Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.**

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