



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE  
GOVERNOR

PATRICIA W. AHO  
COMMISSIONER

June 7, 2012

Mr. Mark Whiting  
Project SHARE  
14 Boynton Street  
Eastport, Maine 04631

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0002704  
Maine Waste Discharge License (WDL) Application # W-009049-5Z-C-M  
**Final Experimental MEPDES Permit/Maine WDL Modification, Project SHARE**

Dear Mark:

Enclosed please find a copy of your **final** Experimental MEPDES permit and Maine WDL Modification 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,

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

Enc./cc: Matt Young, Lori Mitchell (MEDEP); Sandy Mojica (USEPA)

AUGUSTA  
17 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0017  
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PRESQUE ISLE  
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STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
17 STATE HOUSE STATION  
AUGUSTA, ME 04333

**IN THE MATTER OF**

PROJECT SHARE ) MAINE POLLUTANT DISCHARGE  
WATER QUALITY IMPROVEMENT PROJECT ) ELIMINATION SYSTEM PERMIT  
MACHIAS, EAST MACHIAS RIVER WATERSHEDS) AND  
WASHINGTON COUNTY, MAINE ) WASTE DISCHARGE LICENSE  
#ME0002704 ) EXPERIMENTAL PERMIT  
#W-009049-5Z-C-M APPROVAL ) MODIFICATION

Pursuant to the provisions of the Federal Water Pollution Control Act, Title 33 USC, Section 1251, et. seq and Maine Law 06-096 CMR 414-A et seq., and applicable regulations, the Department of Environmental Protection (Department) is initiating a Minor Revision of the experimental Maine Pollutant Discharge Elimination System (MEPDES) Permit / Maine Waste Discharge License (WDL) for PROJECT SHARE, with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

**APPLICATION SUMMARY**

The Department seeks to modify Experimental MEPDES Permit #ME0002704 / Maine WDL #W-009049-5Z-A-N, which was issued on November 30, 2009, for a five-year term. The Experimental MEPDES Permit / Maine WDL was modified on May 16, 2011 (#ME0002704 / #W-009049-5Z-B-M). The Experimental MEPDES Permit / Maine WDL approved a water quality improvement project in several streams that form the headwaters of the Machias River in Washington County, Maine. The project involves the deposition of shells from clams and similar organisms in and adjacent to study streams as a calcium source to attempt to mitigate for episodic acidification of streams, low buffering capacity, low calcium, high aluminum, poor fish conditions, low freshwater and early marine survival, and occasional fish kills in salmonid populations, most recently in tributaries to Dead Stream, Bowles Stream, Honeymoon Brook, and the upper Crooked River in Townships 37, 31, and 30. The permitting action established operational, monitoring, and reporting requirements. As indicated in the original and modified MEPDES Permit / Maine WDL, information and data obtained is to be used to assess the potential for larger scale water quality improvement projects of similar nature. This modification will enable the permittee to conduct the experimental program with performance-based dose rates instead of pre-determined rates and to expand to other affected streams as identified and upon Department approval. The subject streams are all classified as Class A or Class AA waters with watersheds of less than ten square miles.

## PERMIT SUMMARY

This permitting action is similar to the November 30, 2009 MEPDES Permit / Maine WDL and May 16, 2011 Modification in that it is carrying forward all previous terms and conditions with a few exceptions. This permitting action is different in that, in response to information obtained during the first two years, it is allowing for:

1. revision of previous application rates, methods of shell distribution, and monitoring requirements;
2. expansion of the experimental program to tributaries within the watersheds of the Machias and East Machias Rivers as part of the annual reporting requirement and pursuant to Department approval.

## CONCLUSIONS

BASED on the findings in the attached Fact Sheet dated June 06, 2012 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, 06-096 CMR 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 above noted modification of PROJECT SHARE's Experimental MEPDES Permit / Maine WDL to conduct a water quality improvement project by depositing clam and similar shells in and adjacent to tributaries within the watersheds of the Machias River and East Machias River in Washington County, Maine, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations including

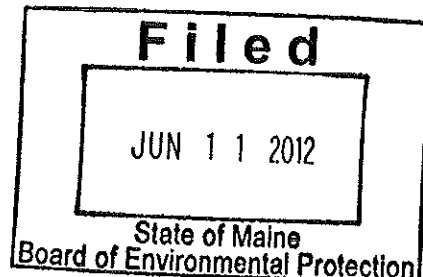
1. "Maine Pollutant Discharge Elimination System Permit Standard Conditions applicable To All Permits," revised July 1, 2002, copy attached to the 11/30/09 Experimental MEPDES Permit / Maine WDL cited above.
2. The attached Special Conditions, including any effluent limitations and monitoring requirements.
3. All other terms and conditions in the November 30, 2009 Experimental MEPDES Permit / Maine WDL and May 16, 2011 Permit Modification not modified by this action remain in effect and enforceable.
4. This permit modification and the authorization to discharge expire at midnight on November 30, 2014, concurrent with the 11/30/09 Experimental MEPDES Permit / Maine WDL and 5/16/11 Modification. If a renewal application is submitted in a timely manner and accepted as complete for processing prior to the expiration of this permit, the authorization to discharge and the terms and conditions of this permit and all modifications and minor revisions thereto remain in effect until a final Department decision on the renewal application becomes effective. [*Maine Administrative Procedure Act*, 5 M.R.S.A. § 10002 and *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 CMR 2(21)(A) (effective April 1, 2003)]

DONE AND DATED AT AUGUSTA, MAINE, THIS 7<sup>th</sup> DAY OF June, 2012.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Michael Kuhns  
For Patricia W. Aho, Commissioner

Date of initial receipt of application: April 11, 2012  
Date of application acceptance: April 12, 2012



Date filed with Board of Environmental Protection: \_\_\_\_\_

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 conduct a water quality improvement project by depositing shells from clams and similar organisms in and adjacent to tributaries within the watersheds of the Machias River and East Machias River in Washington County. Such discharges shall be limited and monitored by the licensee as specified below.

1. All sampling and analysis must be conducted in accordance with: (a) methods approved by 40 Code of Federal Regulations (CFR) Part 136, (b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136, or (c) as otherwise specified by the Department. Samples that are sent out for analysis shall be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services.
2. This Experimental Permit authorizes Project SHARE to conduct the approved water quality improvement project in and adjacent to tributaries within the watersheds of the Machias River and East Machias River. Associated monitoring will be conducted as described below.
3. Shells will be distributed in study streams as follows. (a) placement of approximately 75% of a site's allocation of shells directly in the streams for an instantaneous effect, (b) placement of approximately 25% of the site allocation on the stream banks so that more shells are submerged during high flows to boost the buffering capacity when the stream needs it the most, and finally (c) application of additional shells and/or limestone to logging roads and roadside ditches at stream crossings in the vicinity to boost the buffering capacity of stormwater runoff. All shells used will be aged, clean shells. The target pH at each location is 7.0 standard units (su) with a maximum pH of 7.6 su, equivalent to the highest summer pH recorded in the Machias River watershed. Any future project modifications shall be addressed through the process described in Permit Special Condition F, Reopening of Permit for Modifications.
4. Project SHARE shall post signs at all treatment sites to explain the nature and purpose of the project and to provide contact information for people having questions or concerns.
5. Ambient monitoring will be conducted in study streams as indicated below. Monitoring will be conducted at each site through the use of automated data sondes, manual sampling, and electrofishing, according to the sample parameter. Data sondes will be used to collect continuous field data, with data retrieved from the sondes monthly. Field data will also be collected with handheld meters monthly during sonde calibration. The aluminum species indicated refer to total aluminum, total dissolved aluminum, organic aluminum, and ionic aluminum (also referred to as exchangeable or labile aluminum).

**SPECIAL CONDITIONS**

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

Table 1 – Monitoring Requirements

Measurements	Method	Analysis	When	Who
Water chemistry (pH)	Data sonde	Before/after Up/down stream	Hourly, May-Nov	USFWS/DEP
Water chemistry (alkalinity, Ca, Al)	Grab sample	Before/after Up/down stream	Quarterly	DEP
Water chemistry (field pH, Conductivity)	Field meter	Before/after Up/down stream	Monthly	DEP
Algae	Grab sample	Before/after	Yearly	DEP
Leaf packs *	Stroud Water Research Center, Leaf Pack Network Manual	Before/after Up/down stream	2012 and 2013 (1/year)	DEP
Macroinvertebrates *	DEP biomonitoring protocol	Before/after Up/down stream	2012 (1/year)	DEP
Fish abundance *	Electrofishing	Before/after Up/down stream	Yearly	USFWS

\* Leaf pack, macroinvertebrate, and fish abundance studies / measurements will be conducted on sites based on recommendations from DEP and USFWS as necessary to provide data on new sites and/or to supplement data on current sites. Any future project modifications shall be addressed through the process described in Permit Special Condition F, Reopening of Permit for Modifications.

- Reporting will be conducted as follows. **On or before January 15 of each year**, Project SHARE shall submit to the Department a report that provides a detailed description of the treatment activities conducted at the study sites for that calendar year. The annual report will also include and evaluate the results of all monitoring conducted in that year, a narrative of lessons learned from the results, and Project SHARE's plans for the sites for the next year, reflecting feedback from stakeholders. [PCS codes 90199, 90299, 90399, 90499, 90599]. Any future project modifications shall be addressed through the process described in Permit Special Condition F, Reopening of Permit for Modifications.

Additionally, if adverse effects are observed or indicated at any of the project sites during the year, Project SHARE will notify the Department's compliance inspector **within one working day of discovery**. As necessary or as instructed by the Department, Project SHARE will also notify the organizations noted below, requesting input on appropriate responses to discovered effects. The advisory group shall consist of: the Maine Department of Marine Resources (Joan Trial, Ernie Atkinson); the Maine Department of Inland Fisheries and Wildlife (Greg Burr, Merry Gallagher); the US Fish and Wildlife Service (Robert Dudley, Wende Mahaney, Scott Craig); the University of Maine (Steve Norton), NOAA Fisheries (Dan Kircheis), Project SHARE (Steve Koenig), and the University of Maine at Machias (William Otto). The advisory group can be amended upon Department approval.

## **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 September 1, 2009 and April 14, 2011; 2) the terms and conditions of this permit; and 3) only in areas and with materials and methods approved by this permitting action. Discharges of pollutants 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 licensee shall notify the Department of the following:

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

## SPECIAL CONDITIONS

### E. MONITORING AND REPORTING

The permittee shall conduct a monitoring program as described in Permit Special Condition A.5 and Fact Sheet Section 2.h and report information to the Department as described in Permit Special Condition A.6 and Fact Sheet Section 2.i. **Annual reports shall be submitted to the Department on or before January 15 of each year.** A signed copy of all reports required herein shall be submitted to the Department assigned compliance inspector (unless otherwise specified by the Department) and to the permitting staff at the following addresses, respectively:

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

Department of Environmental Protection  
Bureau of Land and Water Quality  
Division of Water Quality Management Permitting Staff  
17 State House Station  
Augusta, Maine 04333-0017

### F. REOPENING OF PERMIT FOR MODIFICATIONS

Upon evaluation of the tests results or monitoring requirements specified in Special Conditions of this permitting action, new site specific information, or any other pertinent test results or information obtained during the term of this permit, the Department may, at any time and with notice to the permittee, modify this permit to; 1) include effluent limits necessary to control specific pollutants or whole effluent toxicity where there is a reasonable potential that the effluent may cause water quality criteria to be exceeded, (2) require additional effluent and or ambient water quality monitoring if results on file are inconclusive; or (3) change monitoring requirements or limitations based on new information including, but not limited to, new information from ambient water quality studies of the receiving water.

This is an experimental program in which the results of the current and previous field seasons help determine the scope of future work. Thus, it is anticipated that further project modifications may be necessary in the future. As noted in Permit Special Conditions A.6 and E, the permittee is required to submit to the Department annual reports that include detailed descriptions of the treatment activities conducted at the study sites for that calendar year, results and evaluations of all monitoring conducted in that year, a narrative of lessons learned from the results, and Project SHARE's plans for the sites for the next year, reflecting feedback from stakeholders. The recommendations shall be provided to the Department for review and approval with or without a formal modification of the permit at the Department's discretion. The permittee shall review all proposed new and expanded in-stream clam shell deposition areas with MDIFW regional fisheries biologists **prior to treatment** and shall provide any input received to the Department.



**SPECIAL CONDITIONS**

**G. SEVERABILITY**

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

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

EXPERIMENTAL PERMIT FACT SHEET MODIFICATION

Date: June 06, 2012

MEPDES PERMIT NUMBER      #ME0002704  
MAINE WDL NUMBER          #W-009049-5Z-C-M

NAME AND ADDRESS OF APPLICANT:

**Project Share  
14 Boynton Street  
Eastport, Maine 04631**

COUNTY:      WASHINGTON

NAME AND ADDRESS WHERE DISCHARGE OCCURS: Tributaries within the watersheds of the Machias River and East Machias River in Washington County, Maine

RECEIVING WATER CLASSIFICATION:              Class A, Class AA

COGNIZANT OFFICIAL AND TELEPHONE NUMBER: Mr. Mark Whiting, Maine DEP DEA  
mark.c.whiting@maine.gov; (207) 356-5977

**1. APPLICATION SUMMARY**

- a. Application: The Department seeks to modify Experimental MEPDES Permit #ME0002704 / Maine WDL #W-009049-5Z-A-N, which was issued on November 30, 2009, for a five-year term. The Experimental MEPDES Permit / Maine WDL was modified on May 16, 2011 (#ME0002704 / #W-009049-5Z-B-M). The Experimental MEPDES Permit / Maine WDL approved a water quality improvement project in several streams that form the headwaters of the Machias River in Washington County, Maine. The project involves the deposition of shells from clams and similar organisms in and adjacent to study streams as a calcium source to attempt to mitigate for episodic acidification of streams, low buffering capacity, low calcium, high aluminum, poor fish conditions, low freshwater and early marine survival, and occasional fish kills in salmonid populations, most recently in tributaries to Dead Stream, Bowles Stream, Honeymoon Brook, and the upper Crooked River in Townships 37, 31, and 30. The permitting action established operational, monitoring, and reporting requirements. As indicated in the original and modified MEPDES Permit / Maine WDL, information and data obtained is to be used to assess the potential for larger scale water quality improvement projects of similar nature. This modification will enable the permittee to conduct the experimental program with performance-based dose rates instead of pre-determined rates and to expand to other affected streams as identified and upon Department approval. The subject streams are all classified as Class A or Class AA waters with watersheds of less than ten square miles.

## 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 MEDEP has issued joint MEPDES Permits and Maine WDLs.

Maine law, 38 M.R.S.A. Section 362-A, Experiments and Scientific Research in the Field of Pollution and Pollution Control states, "*Notwithstanding any other law administered or enforced by the department, the board is authorized to permit persons to discharge, emit or place any substances on the land or in the air or waters of the State, in limited quantities and under the strict control and supervision of the commissioner or the commissioner's designees, exclusively for the purpose of scientific research and experimentation in the field of pollution and pollution control. The research and experimentation conducted under this section is subject to such terms and conditions as the board determines necessary in order to protect the public's health, safety and general welfare, and may be terminated by the board or commissioner at any time upon 24 hours' written notice.*"

- b. Terms and Conditions - This permitting action is similar to the November 30, 2009 MEPDES Permit / Maine WDL and May 16, 2011 Modification in that it is carrying forward all previous terms and conditions with a few exceptions. This permitting action is different in that, in response to information obtained during the first two years, it is allowing for:
1. revision of previous application rates, methods of shell distribution, and monitoring requirements;
  2. expansion of the experimental program to tributaries within the watersheds of the Machias and East Machias Rivers as part of the annual reporting requirement and pursuant to Department approval.

- c. History: The relevant licensing and regulatory actions include the following:

August 1, 2008 – The Department reviewed and approved as a de minimus pollutant discharge, Project Share's pilot study of experimental calcium enhancement in the Machias River watershed. The pilot study involved placement of a contained quantity of clam shells in five streams. The purpose of the study was to determine degradation rates and ambient water chemistry changes for use in designing future larger scale projects to enhance buffering capacities in waters experiencing significant effects from acid rain.

## 2. PERMIT SUMMARY (cont'd)

June 24, 2009 – Project Share submitted to the Department a report of the findings of the 2008 pilot study. The results indicated that the shells dissolved rapidly, but that the small amounts used did not have a detectable effect on downstream water chemistry. Project Share viewed the pilot study as a success, indicating the potential for use of lessons learned in larger water quality improvement efforts.

November 30, 2009 – The Department approved MEPDES Permit #ME0002704 / Maine WDL #W-009049-5Z-A-N for Project Share for an experimental discharge permit for placement of clam shells in tributaries of up to three streams in the Machias River watershed to investigate the feasibility of reversing effects from episodic acidification of the streams and improving water quality and habitat value for salmonids. The MEPDES Permit / Maine WDL was issued for a five-year term.

January 24, 2011 – Project SHARE submitted its annual report covering the first year of the water quality improvement project covered by MEPDES Permit #ME0002704 / Maine WDL #W-009049-5Z-A-N. A limited project was conducted in 2010, with results demonstrating immediate but localized improvements in water quality following clam shell applications.

May 16, 2011 – The Department issued a Modification of Project SHARE's Experimental MEPDES Permit #ME0002704 / Maine WDL #W-009049-5Z-B-M. The Permit Modification added an additional treatment site and monitoring areas, expanded one existing treatment area, and allowed for changes in materials and methods used.

December 16, 2011 – Project SHARE submitted its 2011 project annual report covering the second field season of the experimental project. The 2011 experimental program indicated positive, short-term improvements at study sites with on-going, significant episodic pH fluctuations. The report summarized work completed in 2011, lessons learned from the project, and proposed changes for the 2012 field season.

### d. The Permittee and Partners:

Project SHARE is a public-private partnership that was formed to oversee collaborative salmon recovery issues in the downeast Maine salmon rivers. Project Share's partners include the US Fish and Wildlife Services, the Washington County Soil and Water Conservation Service, the Downeast Resource, Conservation & Development (RC&D) Council, the Natural Resource Conservation Service (NRCS), the Maine Department of Marine Resources Bureau of Sea Run Fisheries and Habitat, NOAA Fisheries Service, Maine DEP Division of Environmental Assessment, other natural resource agencies, private land owners, and grass-roots watershed councils.

## 2. PERMIT SUMMARY (cont'd)

### e. Description of Problem:

Maine is known for its clean rivers and streams with high water quality and habitat values. However, brook trout and Atlantic salmon populations are suffering from the cumulative effect of several stressors, including fishing pressure, competition from invasive species, habitat degradation, and effects from global climatic change. Additionally, some of the best brook trout and Atlantic salmon habitats are in parts of Maine with documented acid rain impacts. The acidification of freshwaters in Maine is actually influenced by a combination of processes, namely (1) the impact of decades of acid rain, (2) partial recovery from acid rain with cation storage in soils (and less export to surface waters), (3) loss of cations due to repeated forest harvests, and (4) storage of cations in new biomass during the regrowth of forests (and again less export of cations to surface waters). These factors have had a profound and widespread impact on large parts of eastern North America (Jeziorski et al 2008). Using a database of sediment cores from 770 Eastern North American lakes, the authors conclude that many of these systems have lost so much calcium that they have passed critical thresholds (2.0 mg/L Ca) needed to support normal aquatic communities. Salmonids are known to have narrow tolerances for water quality and this issue is the impetus for Project SHARE's application for an experimental permit for water quality improvements.

Water quality problems from the combined acidification issues include the episodic acidification of streams, low buffering capacity, low calcium, high aluminum, poor fish condition, low freshwater and early marine survival, and occasional fish kills. These are the same issues that have been identified as contributing factors to the lack of salmon recovery in Maine (Dill et al 2002). Wild Atlantic salmon are on the brink of extinction in the United States (WWF 2001). Both freshwater and marine survival are very low. We are currently not producing enough fish to sustain our endangered Maine populations. Today Atlantic salmon in Maine are surviving only because of a massive hatchery and stocking program. Maine stocks millions of salmon fry, parr, and smolts each year and reportedly gets a return of 30-60 fish in the eight federally listed rivers.

There are at least three toxic effects that Project SHARE believes are currently limiting fisheries in the downeast area. These are chronic or episodic acidity, very low calcium levels, and exchangeable Al (also called "labile Al" or "ionic Al" by some authors). These three effects interact with each other in complicated ways. For instance, increasing Ca will boost alkalinity and pH, and a higher pH will reduce toxic Al. Fact Sheet Attachment A contains plotted exchangeable Al (Al<sub>x</sub>) data for several Crooked River sites and some tributary sites for a single sample date in June 2008 during baseflow conditions. The pH values during this period were around 6.0 for the mainstem ( $\pm 0.2$  pH units), while some of the tributaries had pH values in the low 5's. While pH in the mainstem remained within healthy limits, Al<sub>x</sub> values are highly variable and range from less than 10 (probably harmless) to values in the 20's (stressful, with some gill damage evident), to the 30's (gill damage is bad enough to be lethal to some smolts making a sea water transition), to values above 50 (a para-lethal condition, fish are impaired and some fish will die depending on how long the conditions last), to values above 60 (lethal, death is expected within days or hours)

## 2. PERMIT SUMMARY (cont'd)

(McCormick & Monette 2006). The saving grace for the Crooked River is that Alx is not lethal unless the pH is below 6.0, which mostly happens during high flow events. Calcium is a third water quality parameter that indicates trouble for fish. Calcium concentrations at these same sites ranged from 0.83-1.74 mg/L. All are below thresholds (greater than 2.5 mg/L) where we would expect brook trout to experience catastrophic reproductive failure (Russ Danner, MDIFW, unpublished experimental results). These are also well below the thresholds needed to sustain lake zooplankton (Jeziorski et al 2008). Since the conditions (Fact Sheet Attachment A, Aluminum Results) represent summer baseflow conditions, water quality would be expected to be worse during high flows when pH and temperature are lower and total Al and Alx are higher.

In its 2008 Pilot Study, Project SHARE collected data in five streams that demonstrated that pH goes through a daily cycle with higher pH during the day due to photosynthesis that removes carbon dioxide and lower pH at night due to respiration that releases carbon dioxide. They also observed large scale dips in pH due to heavy rainstorms that dilute stream alkalinity and carry organic acids from soil runoff into the streams. Calcium, pH and alkalinity are directly related to toxic exchangeable aluminum. All forms of aluminum increase as pH falls below pH 7. By increasing the pH, alkalinity, and calcium concentration of streams Project SHARE hopes to minimize the effect of aluminum on fish health.

### f. Historical Treatments and Results:

Acid mitigation projects in the United States include both streams and lakes which have been successfully limed in New Hampshire, New York, Massachusetts, Pennsylvania, Maryland, West Virginia, and Virginia. In Canada, acid rain mitigation projects are beginning in Nova Scotia where there are more than 50 rivers with lost or threatened salmon runs (Amiro & Gibson 2006). Limestone is often used as a buffering and calcium source, both for in-stream and terrestrial applications. In general, terrestrial applications are more expensive, use more material, and take longer to have an effect, but persist for longer periods of time between applications. Aquatic treatments often use an automated limestone doser. But limestone silos are very expensive; they require an electrical power source, a computerized dose regulation system, automated stream monitoring, and some kind of application, mixing and delivery system. An alternative to a lime doser is simply to add sand-sized limestone to a stream (e.g., Clayton et al, 1998). Limestone sand has been used in Maine hatcheries to improve the survival and health of brook trout (Russ Danner, MDIFW). The problem with this strategy is that sand-sized particles cause stream bed embeddedness (i.e., the filling of voids between rocks with fine particles), which eliminates habitat for fish eggs and fry, and for the invertebrates that support aquatic food chains. Clam shells (*Mya arenaria*) have been used in Norway and Sweden to buffer acidic streams and to protect salmon spawning beds (Hindar, 2006). Project SHARE reports that clam shells are approximately 90% calcium carbonate. Shell sand has also been used in hatcheries to improve fish health (Rosseland & Skogheim 1986). In stream applications, the large particle size and complicated shape of the shells avoids smothering fish eggs, fry, and invertebrates. The large surface/volume ratio promotes relatively rapid dissolution in acidic water, providing calcium and buffering

## 2. PERMIT SUMMARY (cont'd)

capacity. The resulting higher, more neutral pH, causes aluminum to precipitate as hydroxides or to be bound in harmless organic complexes. Shells have the additional advantage of having local sources, while limestone must be imported from New Brunswick or southern Maine. Clam shells are a waste product which is now a liability for local seafood processors.

In 2008 the Department authorized Project SHARE to conduct a Pilot Study in Harmon Brook, Kerwin Brook, Lanpher Brook, Dead Stream, and the upper Crooked River. That study involved placement of a maximum of ten, 10-pound mesh bags of clam shells in each of the five streams. The primary focus of the Pilot Study was to verify assumptions that the shells would dissolve rapidly enough to produce a beneficial boost to stream alkalinity and provide adequate calcium nutrition for fish, that the shells can be added to streams without causing embeddedness of the stream and loss of fish and invertebrate habitat, and that the open bags will allow for colonization of macroinvertebrates. The 2008 Pilot Study confirmed the findings of earlier studies in Tunk Stream at the outlet of Spring River Lake (2004) and Downing Bog Stream (2004) that clam shells dissolve at different rates depending on the flow and pH of the receiving waters. Based on this research, Project SHARE projected that the shells in Dead Stream, Honeymoon Brook, and the upper Crooked River would dissolve in 100-200 days. The 2008 Pilot Study yielded results on shell degradation, however it was found that the volume of shells used was too little to affect detectable improvements in water chemistry. In its final report, Project SHARE noted, "*The most important result is that we now know that clam shells will dissolve quickly enough in acidic freshwater that they could be used to change pH, alkalinity and calcium. Also, if added to downeast streams, we can expect to add a second dose of shells within the first year of an experimental liming project. We can also tell that the dose will be large, involving tons of clam shells per stream. This application will have to be spread out thinly in order to not fill in our small tributaries. Because of the large application area, we will probably want multiple sites to minimize filling of the stream bed.*" In the 2004 studies, the pH values of Tunk Stream and Downing Bog Stream were found to be 6.2 su and 5.4 su respectively. In the 2008 Pilot Study, pH values in the five streams were found to be in the healthy 6.0-7.0 su range during baseflow periods. However, the pH in all streams was found to drop during storm events, with three of the streams having pH values less than 5 su for several weeks, a level that is known to be toxic to salmonids.

In 2010, the project was conducted at a single site on Dead stream at the 55-50-0 Road. Project SHARE indicated, "*water quality improved immediately after each (of three) application(s) and settled down to a 0.5 pH unit increase over baseflow values by the end of the field season. The effect was mostly local with very little noticeable effect farther downstream at the 58-00-0 Rd.*". Based on this, Project SHARE proposed several project modifications, for the 2011 field season.

## 2. PERMIT SUMMARY (cont'd)

Project SHARE initially proposed to conduct experimental liming projects in four headwater streams with clear acidification problems, providing a source of calcium carbonate to reduce acidity and add buffering capacity to salmon and trout streams affected by acid rain. The initial project involved tributaries to Dead Stream and Bowles Stream (T31 and T37 MD), Honeymoon Brook (T31 MD), and the upper Crooked River (T30 MD). The first phase of the project targeted one fishless tributary, one tributary with brook trout, and one tributary with other minnow species in the Dead Stream –Bowles Lake drainage, in the Old Stream watershed. Subsequent phases were identified to potentially involve two sites on an unnamed tributary to Honeymoon Brook and a single site on an unnamed tributary to the upper Crooked River. The Honeymoon Brook tributary has brook trout, but experienced fish kills in 2008 that was apparently acidification and Alx related. The upper Crooked River tributary maintains downstream salmon and brook trout populations and has occasionally been used for stocking Atlantic salmon fry. Honeymoon Brook is in the Old Stream drainage and the Crooked River flows directly into the Machias River. Project Share proposed to use three application strategies at all project locations: (1) placement of shells directly in the streams for an instantaneous effect, (2) placement of additional shells on the stream banks so that more shells are submerged during high flows to boost the buffering capacity when the stream needs it the most, and finally (3) application of shells and/or limestone to logging roads and roadside ditches at stream crossings to boost the buffering capacity of stormwater runoff. Project SHARE proposed to use aged, clean shells for applications directly in streams or on stream banks for exposure to water during high flows. The amounts of shells to be used at each site were determined from research conducted by Clayton et al (1998) based on the size of the watershed and the predominant pH in the receiving water. Either clean shells and/or limestone gravel may be used on logging roads and in roadside ditches at stream crossings. Treatments were proposed to occur for two years at each site.

Initially, Project SHARE had the financial capacity and partner support to pursue the Dead Stream and Bowles Stream study sites, but funding was not yet in place for the Honeymoon Brook and Crooked River study sites. Additionally, Project SHARE wished to seek further discussion with its partners on these latter study areas because of the proximity of Atlantic salmon populations downstream. Based on this, the 2009 permitting action authorized the described activities in the tributaries to Dead Stream and Bowles Stream upon its effective date. The described activities in the tributaries to Honeymoon Brook and the upper Crooked River were authorized pursuant to demonstration of adequate funding, partner input and support, and upon Department review and approval.

In 2011 based on lessons learned during the 2010 field season, the experimental permit was modified to add an additional treatment site and monitoring areas on Bowles Stream, expand one treatment area and eliminate bagging of shells on another area on Dead Stream, and allow for the use of other types of shells in the experimental project. The 2011 field season yielded more information and a greater understanding of the successes and needs of future efforts under this experimental permit.



## 2. PERMIT SUMMARY (cont'd)

The 2011 annual report describes shell application and water quality monitoring efforts undertaken and observations during the 2011 field season. *“Water quality has improved, and was noticeable within 60 minutes of shell applications. Stream pH is higher and exchangeable aluminum is lower. However, both pH and aluminum can still reach harmful levels during high flows. Dissolved calcium levels have improved even in high flow conditions and even at sites farthest from the clam shells.”*

*“Fish are doing better, but are likely responding to all of the improvements in the watershed”, including the shell applications, culvert improvements, road crossing stabilizations, and addition of coarse woody debris. “By expanding to other sites, such as Honeymoon Brook and First Lake Stream, we can establish a baseline after more time has passed since culverts have been replaced.”*

*“Plant and animal communities have become more diverse. There are more fish and the likelihood of finding different species has improved. Among the macroinvertebrates, the clean water indicators have become more numerous. We have more mayflies, dragonflies and damselflies. Algal communities are more diverse. Summer blooms which were once common have not been observed since. The fact that we can apply calcium carbonate and apparently restore streams is a strong argument that they were ‘impaired’ in the first place. We feel that episodic acidification is probably one of the most important drivers of poor water quality and poor fish survival in eastern coastal Maine. Forestry practices have probably accelerated these impacts. Naturally, as we collect more years of data, we can become more confident about the cause and effect relationships.”*

*“Just like fish use thermal refugia to escape summer heat, salmon streams in sensitive watersheds may need water quality refugia. These occur to some extent naturally. Marine-derived and carbonate-rich bedrock in the Lanpher Brook watershed is a natural source of buffering capacity. However, Washington County is dominated by silica-rich and nutrient-poor granite bedrock, so well-buffered refugia are rare. Our goal is to create more of these safe places for fish. If enough headwaters are treated, then even the larger rivers will have better water chemistry. We believe that this is a good time to expand our experiment to Honeymoon Brook, First Lake Stream, and Canaan Brook.”*

### g. Project Details:

In 2009, Project SHARE was granted an experimental MEPDES Permit / Maine WDL for a water quality improvement project in several streams that form the headwaters of the Machias River in Washington County, Maine. The project involved the deposition of clam shells in and adjacent to study streams as a calcium source to attempt to mitigate for episodic acidification of streams, low buffering capacity, low calcium, high aluminum, poor fish conditions, low freshwater and early marine survival, and occasional fish kills in salmonid populations in tributaries to Dead Stream, Honeymoon Brook, and the upper Crooked River in Townships 37, 31, and 30. The permitting action established operational, monitoring, and

## 2. PERMIT SUMMARY (cont'd)

reporting requirements. It was intended that information and data obtained would be used to assess the potential for future larger scale water quality improvement projects of similar nature.

As approved in the 2009 MEPDES Permit / Maine WDL and 2011 Modification, clean shells will be collected and transported in a 15-cubic yard dump truck to the application sites. The shells will be distributed at stream sites by hand or mechanical devices. In previous years, approximately one-half of shells were placed in erosion control socks so that shells could be easily removed if needed. The other half of the in-stream application were scattered on the stream bed and along the stream banks below the seasonal high water mark without bags, to increase the surface area and so that Project SHARE could observe the redistribution of shells by stream currents. The use of several sites (two on the Honeymoon Br tributary) or tributaries (two tributaries on Dead Stream and one on Bowles Stream) was to avoid abrupt transitions in water chemistry which could be harmful for fish. Project SHARE reapplied shells during the season in the streams when smaller sized clamshells were used to replace shell mass that was lost to dissolution and as needed after major storms. Shells were redistributed downstream by the current, thereby increasing the treatment area and reducing the pH change per stream km. Limestone gravel or clean shells were applied directly to road surfaces and roadside ditches. Project SHARE expects terrestrial applications will last for decades. The stream applications will likely have to be repeated, two per year.

Project SHARE's hypothesis is that clam shells will increase fish density and health (fish condition index) in and below the applications areas. Project SHARE views success as restoring fish to stream reaches that are currently fishless, improving the health of fish already in residence, increasing the diversity and abundance of aquatic macroinvertebrates, maintaining Ca:H rations above 10, and providing the necessary information to more accurately calculate application rates. Potential negative impacts could include mixing zone toxicity and aggressive blooms of algae due to possible release from toxic effects, though neither of which has been reported for these kinds of projects (Clair & Hindlar 2005). During the life of the project, Project SHARE will submit annual reports to the Department as described in Permit Special Condition A.6 and Fact Sheet Section 2.i.

Project SHARE expects that shell additions will increase stream pH above 6.0 su and possibly above 7.0 su, depending on stream flows. Because the solubility of calcium carbonate declines exponentially above pH 7.0 su, Project SHARE does not expect treatment site stream pHs to get much above pH 7.2 su. Project SHARE notes that a pH range of 6.0-7.6 su is common in the Machias and Penobscot Rivers and among many tributaries in their drainages. Though a pH near 8.0 su would be well within the tolerance ranges for salmon and trout, Project SHARE intends to limit stream pH values to 7.6 su or less to avoid potential harm to less tolerant species.

## 2. PERMIT SUMMARY (cont'd)

As dissolution is dependent upon stream flow, temperature, and pH, all three of which being affected by weather, the required application rates are approximate. Based on experiments in Tunk Stream, Downing Bog Stream, and in a 2008 pilot project, Project SHARE expects shell dissolution in 100-200 days. As noted from the beginning, if the project was deemed successful, Project SHARE would seek approval to expand the project downstream to the middle and lower portions of the watershed.

In May 2012, the permittee informed the Department that the pH in Dead Stream was discovered to be 5.9 standard units, which is viewed as too low to adequately protect smolting salmon. According to the permittee, "*The Norwegian liming project tries to maintain a pH of 6.4 from February through June to protect smolts, even a pH of 6.2 shows noticeable losses of fish.*" In consideration of the information obtained during the 2010 and 2011 field seasons and the pH information on Dead Stream, the permittee noted that the current dose rates are too conservative and requested the ability to increase the amount of shells applied.

Based on two years of field data, the temporary water quality improvements observed, and the ongoing involvement of the permittee's stakeholder group, the Department seeks to provide the permittee with greater opportunities to conduct the experimental program. The Department is modifying the experimental MEPDES Permit / Maine WDL to better meet its original intention of collecting and applying project data to new sites, situations, methods, etc., toward increasing knowledge of the water quality limitations, impacts on salmonids, and methods of improving current conditions. Accordingly, this permit modification allows the permittee and stakeholder group to collect and analyze data during each field season and to recommend modifications to the experimental program in each annual project report, for Department review and approval. (Permit Special Condition F)

After consultation with its stakeholders, the permittee proposes to begin shell applications on new study sites with a single dose following the West Virginia model currently utilized. This will be followed with incremental increases in shell applications, such as a 0.25 dose, and evaluation of stream pH following a subsequent storm event. This methodology will utilize a performance-based dose rate instead of a pre-determined dose rate, thus allowing the experimental treatments to be more responsive to site specific conditions and results. The goal of the performance-based method is a pH of 6.4 during an average spring flow, consistent with the Norwegian program. Based on the results of the experimental program thus far, the permittee does not expect the dose to exceed two times the West Virginia rate, which corresponds to West Virginia's current recommendation for starting application rates. For the 2012 field season, the permittee proposed to continue shell applications at Dead Stream and Bowles Stream and expand to a tributary to Honeymoon Brook, First Lake Stream, and Canaan Brook. The permittee indicated that it needs "*a few field seasons to see if our success can be replicated at other sites. Also, we want at least one site where we can try doubling the application rate.*" The planned dose rates for streams in 2012 are shown in Table 2. In 2013, if things go well, the permittee plans to double the application rate at Canaan Brook and expand efforts in Honeymoon Brook to treat the whole watershed at the normal rate.

**2. PERMIT SUMMARY (cont'd)**

Table 2, Phase 2 study site information. (Coordinates are UTM Zone 19N NAD83). One metric ton is 2,205 lbs.

Study Site	Study Site (Road)	Watershed	Watershed Size	pH	Clam Shells Required (Metric Tons) <sup>1</sup>	Fish Present	Data Sondes	UTM E	UTM N
Dead Stream	55:00:00	Old Stream	236.1 Ha	5.8	3.5 tons	Yes	2	592,761	4,982,518
Tributary to Bowles Stream	55:50:0 West	Old Stream	207.3 Ha	5.1	5.97 tons	No		594,727	4,978,322
Bowles Stream	55-38-0	Old Stream	174.0 Ha	6.2	2.00 tons	Yes		594,214	4,979,321
Dead Stream	58:00:00 <sup>2</sup>	Old Stream	1282 Ha		12 tons	Yes	1	594,942	4,980,684
			Downstream water quality site						
Honeymoon Brook (3 sites)	09:95:0	Old Stream	218 Ha	5.5	5.5 tons	Yes fishkills	2	598,359	4,976,870
Canaan Brook	59:00:0	Old Stream	18 Ha	5.2	0.54 tons <sup>3</sup>	Yes	2	596,868	4,979,788
First Lake Stream	59:00:00	Old Stream	246 Ha	4.7	11 tons	Yes	2	596,494	4,982,425
Harmon Brook	Beech Hill Road	East Machias	989 Ha	6.4	9.9 tons	Yes	2	609,064	4,984,874

1. from Clayton et al 1998

2. a non-treatment site, monitoring only

3. a double dose is planned for this stream, up to 1.08 tons

The following information was included in the permittee's 2011 annual report. At Dead - Bowles Lake Streams, the permittee expects *"that there will be incremental value to maintaining the stream in its current state. For instance, in Norway, Atlantic salmon in limed salmon rivers improved over a five year period after the initial liming (Hesthagen & Larsen 2003); and the authors estimated that it would take 8-12 years to fully restore salmon populations in their study rivers. Since our experience in 2011 shows this dose to be safe, we plan to remove the bagged shells in this watershed. The monitoring program will be modified somewhat, in that some of the sondes would be moved to the new watersheds. Water samples will continue to be taken in upstream and downstream positions three times per year at all sites. Macroinvertebrates will be sampled in early November. "*

For Honeymoon Brook, the watershed is 218 hectares and the initial baseflow pH averages 5.5. The permittee *"originally proposed two application sites, but given the small size of the stream and the large amount of shells"*, now plans *"to spread it over three sites in 2012. Two sondes will be deployed in upstream and downstream positions. Macroinvertebrates will be sampled for the first time in August 2012 in upstream and downstream locations."*

For Canaan Brook, the watershed is only 18 hectares and the initial baseflow pH is 5.2. Because the stream is small and the initial water chemistry is relatively good, the dose is small and manageable. If the 2012 field season goes well, the permittee plans *"to double the application rate in 2013. From our experience with the normal dosing rate and some data from a doubled dosing rate, we can build a dose/response and cost/benefit analysis. To be conservative, we chose a watershed without salmon and we propose to start with a normal dose. Macroinvertebrates will be sampled in August."*

**2. PERMIT SUMMARY (cont'd)**

For First Lake Stream, the “watershed is 246 hectares and the initial baseflow pH is 4.7. Because the stream is small, we may not be able to apply the whole dose even if we spread the shells between two road crossings. We will put in as many shells as we can without completely covering the bottom as long as the total is 11 tons or less. Macroinvertebrates will be sampled in August.”

Any future project modifications shall be addressed through the process described in Permit Special Condition F, Reopening of Permit for Modifications.

**h. Monitoring**

Previously, Project SHARE monitored pH, alkalinity, conductivity, dissolved oxygen (DO), water temperature, stream flow, and depth above and below all application sites. In addition, at Dead Stream, Project SHARE monitored below the confluence of the treatment tributaries at the 58-00-0 Road. Data sondes were used to collect continuous field data above and below the treatment sites. Field data was also collected with hand held meters monthly during sonde calibrations for instant feedback on pH, alkalinity, and conductivity. Grab samples were taken quarterly (May, August, Nov) for laboratory analysis of pH, calcium, DO, carbon, major cations, and aluminum species. Algae and macroinvertebrate sampling were done by MEDEP DEA. Electrofishing was done annually below the treatment sites by USFWS and at Dead Stream 58-00-0 by MEDMR. Due to access issues on the logging roads, the sondes were removed from December – April.

For 2012 and subsequent field seasons, Project SHARE proposes site monitoring as follows:

Measurements	Method	Analysis	When	Who
Water chemistry (pH)	Data sonde	Before/after Up/down stream	Hourly, May-Nov	USFWS/DEP
Water chemistry (alkalinity, Ca, Al)	Grab sample	Before/after Up/down stream	Quarterly	DEP
Water chemistry (field pH, Conductivity)	Field meter	Before/after Up/down stream	Monthly	DEP
Algae	Grab sample	Before/after	Yearly	DEP
Leaf packs *	Stroud Water Research Center, Leaf Pack Network Manual	Before/after Up/down stream	2012 and 2013 (1/year)	DEP
Macroinvertebrates *	DEP biomonitoring protocol	Before/after Up/down stream	2012 (1/year)	DEP
Fish abundance *	Electrofishing	Before/after Up/down stream	Yearly	USFWS

\* Leaf pack, macroinvertebrate, and fish abundance studies / measurements will be conducted on sites based on recommendations from DEP and USFWS as necessary to provide data on new sites and/or to supplement data on current sites. Any future project modifications shall be addressed through the process described in Permit Special Condition F, Reopening of Permit for Modifications.

## 2. PERMIT SUMMARY (cont'd)

*In the 2011 annual report, the permittee indicated, "Due to limited resources, we propose to simplify our lab and field sample protocols. To save money on lab analysis we propose to substitute field pH measurements for closed-cell pH (our lab pH). Field measurements of stream pH are the preferred EPA method (the closed cell pH is considered experimental). In addition, the DOC (Dissolved Organic Carbon) lab analyses have not been especially informative and we propose to stop doing this lab analysis. DOC is one of our sources of natural acidity, but it is not needed for any specific analysis. Another issue is that our field alkalinity test uses a drop titration method that is not sensitive enough for our soft water streams. We propose that this be eliminated from the field protocol."*

*"With more total sites, the sondes will have to be deployed differently. We have 7 data sondes, which are no longer enough to maintain upstream and downstream positions at each shell application site. We propose that three sondes be used in Dead – Bowles Streams, two sondes in Honeymoon, and two sondes in Canaan Brook. First Lake Stream would only have shell applications if we can free up two other sondes from other projects. We further propose that macroinvertebrates be evaluated using rock bags in August in Honeymoon, First Lake Stream, and Canaan Brook (6 sites) and that rock bags be collected in early November in Dead Stream (2 sites)."*

Data sondes will be used to collect continuous field data, with data retrieved from the sondes monthly. Field data will also be collected with handheld meters monthly during sonde calibration. The aluminum species indicated refer to total aluminum, total dissolved aluminum, organic aluminum, and ionic aluminum (also referred to as exchangeable or labile aluminum).

For quality assurance, field equipment will be checked against each other (sonde pH and hand held pH meters) and will be checked against lab data (closed cell pH). Ten percent of all lab samples will be duplicated. Field protocols will follow the accepted Salmon Rivers Protocols for sondes, pH, and conductivity. The LaMotte alkalinity field kit is new to this field season and is not in the Salmon Rivers Protocol. This is essentially a field Gran Titration, which is an accepted EPA method. Project SHARE proposes to use the LaMotte protocols, making sure that reagents are fresh at the beginning of each season. Ten percent of all Gran titrations will be duplicated.

### i. Reporting:

Because of the naturally paired data, data from above and below application sites can be analyzed with t-tests. Before and after data can be compared using an analysis of variance. As described in Permit Special Condition A.6, on or before January 15 of each year, Project SHARE shall submit to the Department a report that provides a detailed description of the treatment activities conducted at the study sites for that calendar year. The annual report will also include and evaluate the results of all monitoring conducted in that year, a narrative of lessons learned from the results, and Project SHARE's plans for the sites for the next year.

## 2. PERMIT SUMMARY (cont'd)

Any future project modifications shall be addressed through the process described in Permit Special Condition F, Reopening of Permit for Modifications.

### j. Public Information and Involvement:

Project SHARE held a public informational meeting on August 25, 2009 at the University of Maine at Machias to provide information and respond to questions regarding the experimental water quality improvement project. Public notice of Project SHARE's application to the Department was provided as described in Fact Sheet Section 7, below.

Because of the large quantity of shells to be deposited at the treatment sites and different methods of deposition to be employed, the project has the potential to draw public attention and questions when observed. Project SHARE expects the shells to stain with organic matter and become less obvious within a matter of days following deposition. Even so, Project SHARE will post signs at treatment sites to explain the nature and purpose of the project and to provide contact information for people having questions or concerns.

## 3. CONDITIONS OF LICENSES

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.

Maine law, 38 M.R.S.A. Section 362-A, establishes conditions for the discharge, emission, or placement of materials for the purpose of scientific research and experimentation in the field of pollution and pollution control, "*Notwithstanding any other law administered or enforced by the department...*".

#### 4. RECEIVING WATER QUALITY STANDARDS:

Tributaries to Dead Stream, Honeymoon Brook, the upper Crooked River, Canaan Brook, and First Lake Stream are classified as Class A waters pursuant to Maine Law, 06-096 CMR 467.5(B), as "*Machias River, tributaries – Class A unless otherwise specified*". Bowles Stream and Harmon Brook are classified as Class AA waters pursuant to 06-096 CMR 467.5(B)(9) and 467.3(B)(4) respectively. Maine Law, 06-096 CMR 465(2) describes the classification standards for Class A waters and 06-096 CMR 465(1) describes the classification standards for Class AA waters.

#### 5. RECEIVING WATER QUALITY CONDITIONS:

The State of Maine 2010 *Integrated Water Quality Monitoring and Assessment Report* (DEPLW1187), prepared pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act contains no references to the tributaries of Dead Stream, Honeymoon Brook, the upper Crooked River, Canaan Brook, First Lake Stream, Bowles Stream, or Harmon Brook, indicating by default that they are not officially known to be impaired waters. However, as noted herein, the study streams have suffered the effects of episodic acidification as demonstrated by impacts on their water chemistries and aquatic biota.

#### 6. DISCHARGE IMPACT ON RECEIVING WATER QUALITY:

This experimental project is intended to reverse the trends noted in Fact Sheet Section 5 above, restoring fish to stream reaches that are currently fishless, improving the health of fish already in residence, increasing the diversity and abundance of aquatic macroinvertebrates, maintaining Ca:H ratios above 10, and providing the necessary information to more accurately calculate application rates. The Department notes that the placement of clam and similar shells in the study streams will cover bottom habitat and potentially alter flow dynamics in the streams. However, the Department views these changes as temporary and far outweighed by the potential benefits sought.

As licensed, the Department has determined in the long-term that the existing water uses will be maintained and protected and the discharges will not cause or contribute to the failure of the receiving waters to meet the standards of their classifications.

#### 7. PUBLIC COMMENTS:

Public notice of the original experimental permit application was made in the Ellsworth American newspaper on or about August 13 and August 20, 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 licenses 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.



**8. DEPARTMENT CONTACTS:**

Additional information concerning this licensing 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

**9. RESPONSE TO COMMENTS:**

The permittee reports that comments from the project stakeholders, especially the Maine Department of Marine Resources, were reflected in proposed revisions for the 2012 project field season and beyond contained in the 2011 annual project report. This Experimental Permit Modification was initiated by the Department based on information obtained from the first two project field seasons and contained in the 2011 annual project report. Therefore, no response to comments was prepared.

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# **ATTACHMENT A**

**(Location and Resource Maps)**

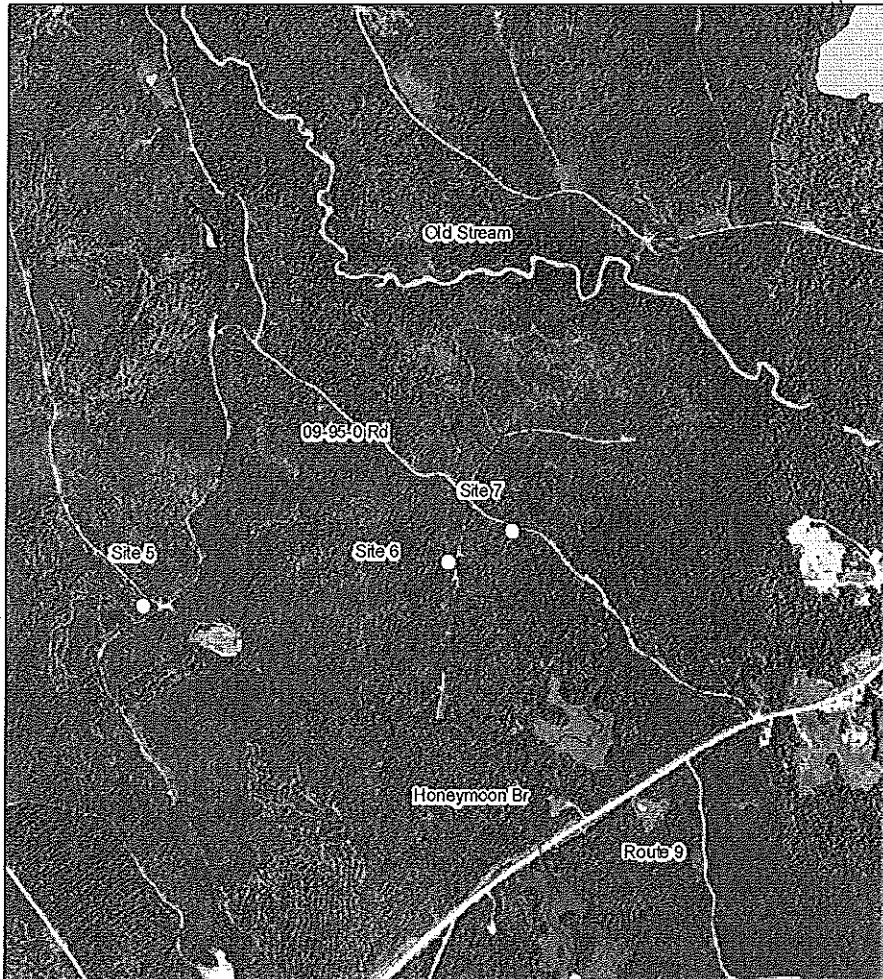
- 1. Dead Stream – Bowles Lake Sites**
- 2. Honeymoon Brook Sites**
- 3. Canaan Brook Sites**
- 4. First Lake Stream Sites**
- 5. Harmon Brook Sites**
- 6. Upper Crooked River Chemistry Survey Aluminum Results**



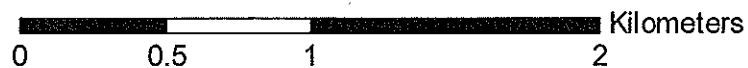
Dead Stream - Bowles Lake  
3 Clam Shell Sites and Water  
Quality Sites for 2012



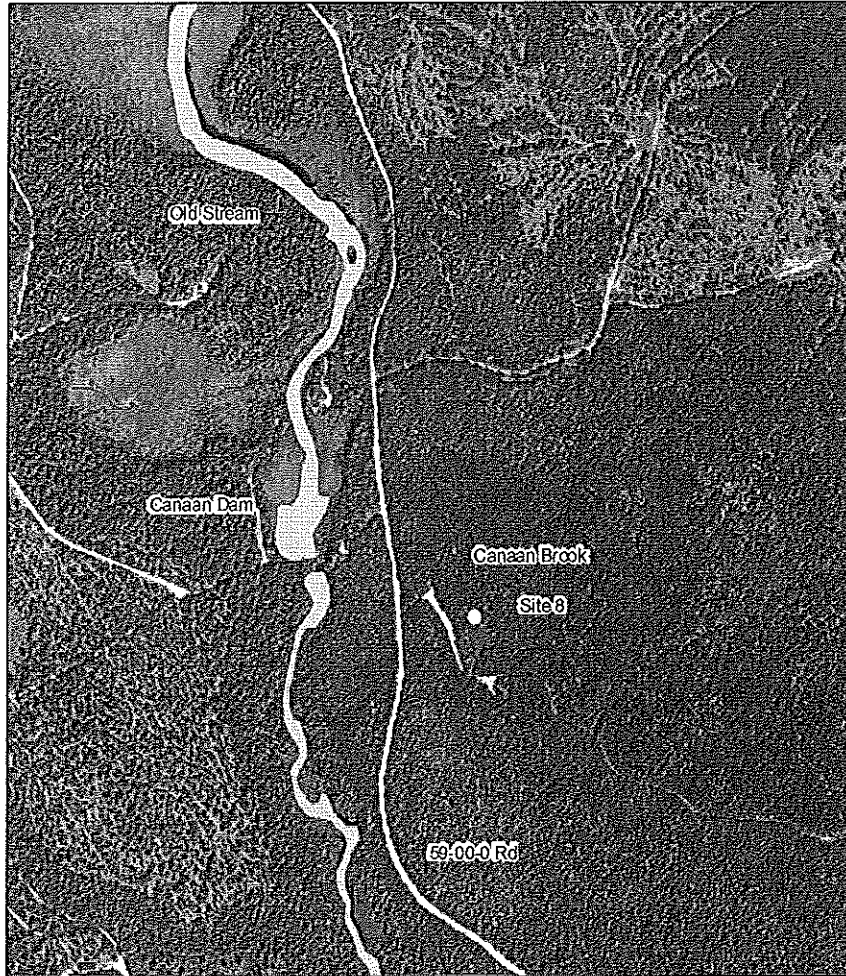
Map of shell application sites (yellow dots) and sonde water quality monitoring sites (red) proposed for the 2012 field season for Dead – Bowles Lake Streams. Macroinvertebrate sites will continue to be sampled at the 55-00-0 and 58-00-0 Roads and would be collected in early November.



Honeymoon Brook Shell Sites for 2012  
(un-named trib does not show on topo)



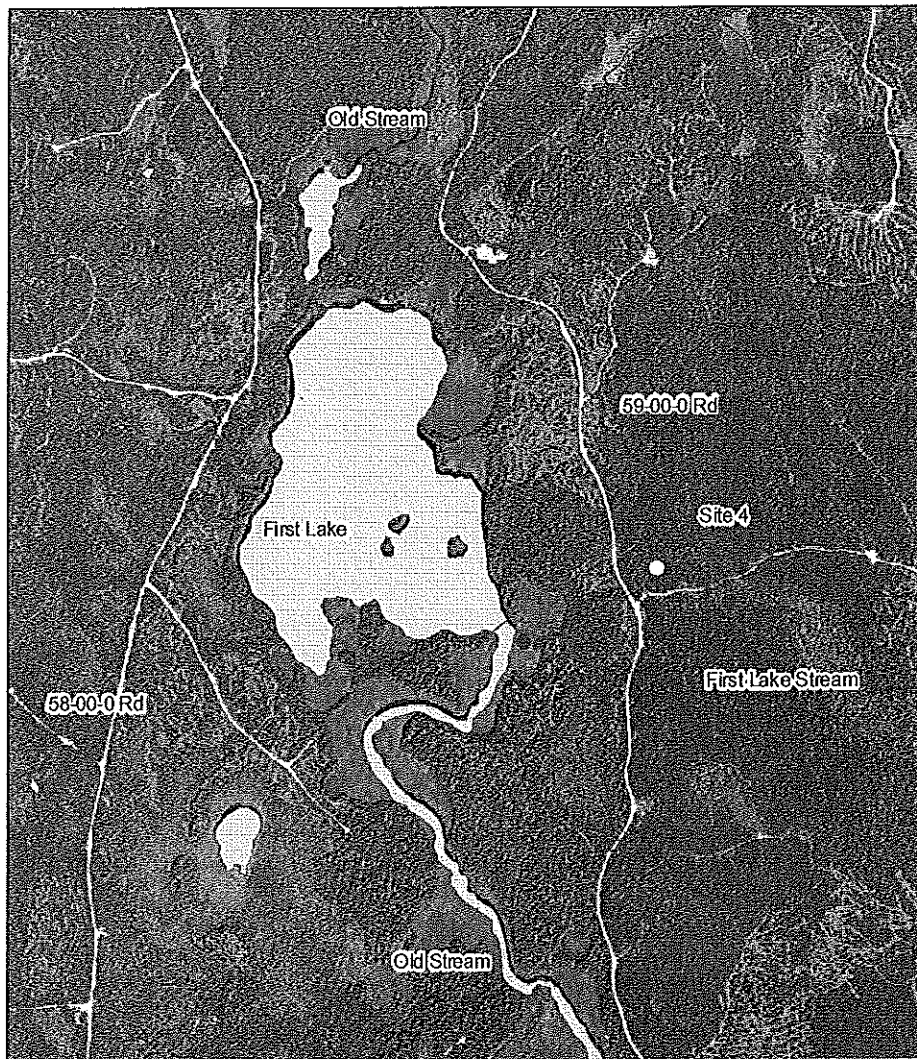
Map of shell application sites (yellow) and sonde water quality monitoring sites (red) proposed for the 2012 field season for Honeymoon Brook. The un-named tributary does not show on this GIS layer. Macroinvertebrates will be sampled in August at the sonde sites.



### Canaan Brook, Clam Shell Site 8, and Water Quality Sites for 2012



Map of shell application sites (yellow) and sonde water quality monitoring sites (red) proposed for the 2012 field season for Canaan Brook. This tributary to Old Stream does not show on this GIS layer. Macroinvertebrates will be sampled in August at the sonde sites.



### First Lake Stream, Clam Shell Site 4, and Water Quality Sites for 2012



Map of shell application site (yellow) and sonde water quality monitoring sites (red) proposed for the 2012 field season at First Lake Stream. Macroinvertebrates will be sampled in August at the sonde sites.

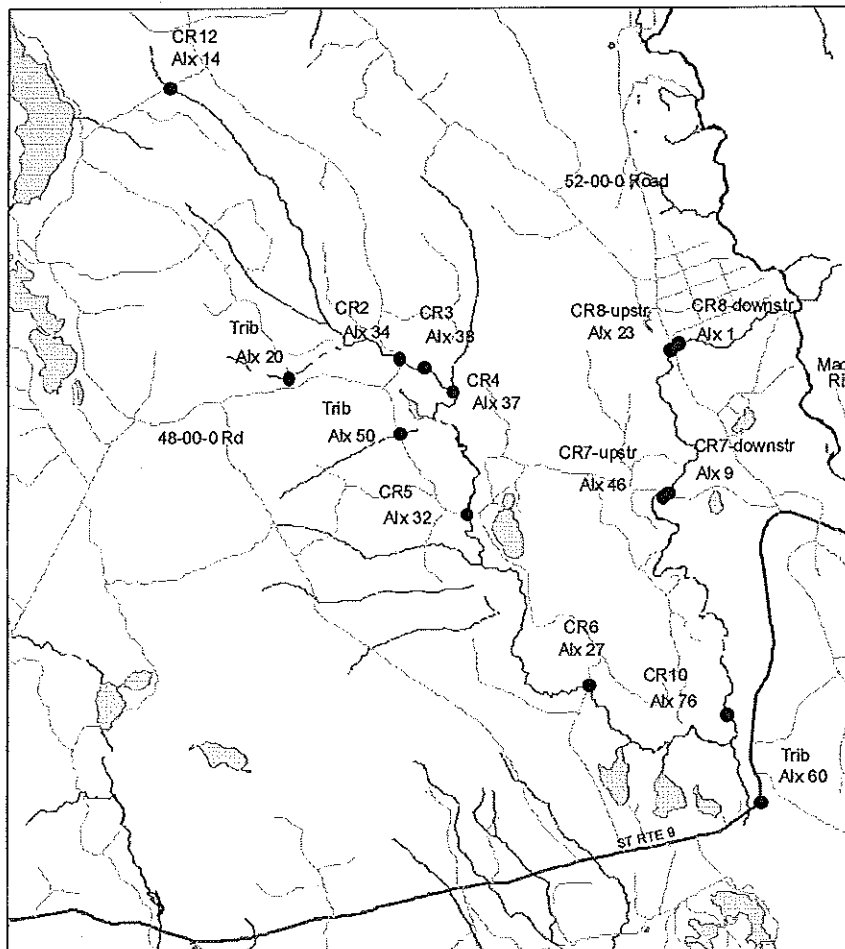


**Harmon Brook, Monitoring Sites (pink)  
and Shell Application Sites (yellow)**



Map of shell application sites (yellow) and sonde water quality monitoring sites (red)  
proposed for the 2012 field season for





### Crooked River SHARE Chemistry Survey Aluminum Results



A map of the Crooked River, one of the better nursery areas in the Machias River drainage for young salmon. This shows lab results for exchangeable Al (Alx) in ug/L during baseflow conditions in June 2008. The Crooked River sites are named with “CR” and a site number. Tributary sites are simply identified as “Trib.” The minimum detection limit for Alx is about 10 ug/L so values below this level are not to be taken too literally. Note, Alx values are highly variable and range from less than 10 (probably harmless) to values in the 20’s (stressful, with some gill damage evident), to the 30’s (gill damage is bad enough to be lethal to some smolts making a sea water transition), to values above 50 (a para-lethal condition, fish are impaired and some fish will die depending on how long the conditions last), to values above 60 (lethal, death is expected within days or hours) (McCormick & Monette 2006).

Calcium, pH and alkalinity are directly related to toxic exchangeable aluminum. All forms of aluminum increase as pH falls below pH 7. Alx is not lethal unless the pH is below 6.0. During this period, some of the tributaries had pH values in the low 5’s. By increasing the pH, alkalinity, and calcium concentration of streams Project SHARE hopes to minimize the effect of aluminum on fish health.

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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).

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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 if 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

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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.

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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.

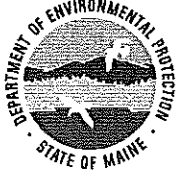
**Septage** means, for the purposes of this permit, any waste, refuse, effluent sludge or other material removed from a septic tank, cesspool, vault privy or similar source which concentrates wastes or to which chemicals have been added. Septage does not include wastes from a holding tank.

**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 Department Licensing Decision

Dated: March 2012

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. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

### I. ADMINISTRATIVE APPEALS TO THE BOARD

#### LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

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

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board 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 the Board's 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 a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of 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

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status.* The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of 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 on the appeal 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, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that 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 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.

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

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, 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.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder 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 receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the 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 or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

## II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

### ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

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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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