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

DEPARTMENT ORDER

IN THE MATTER OF

ATLANTIC SALMON AQUACULTURE		)	MAINE POLLUTANT DISCHARGE
GENERAL PERMIT		)	ELIMINATION SYSTEM PERMIT
STATE OF MAINE		)	AND
#MEG130000		)	WASTE DISCHARGE LICENSE
#W009020-6H-C-M	**APPROVAL**	)	**MODIFICATION**

Pursuant to *Water pollution control*, 38 M.R.S.A § 413 and *Conditions of licenses,* 38 M.R.S.A. § 414-A, *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 CMR 2 (effective April 1, 2003), *Application Processing Procedures for Waste Discharge Licenses,* 06-096 CMR 522 (effective January 12, 2001), and *General Permits for Certain Wastewater Discharges*, 06-096 CMR 529 (last amended June 27, 2007), the Maine Department of Environmental Protection (Department) hereby modifies Maine Pollutant Discharge Elimination System General Permit #ME130000, *Atlantic Salmon Aquaculture General Permit*, issued by the Department on September 22, 2008 (General Permit). With its supportive data, agency review comments, and other related materials on file and other related materials on file and FINDS THE FOLLOWING FACTS:

PERMIT MODIFICATION SUMMARY

The Department is modifying Special Conditions E.4, *video and photographic monitoring requirements*, E.5, *sediment and benthic monitoring requirements*, and F, *warning level and impact thresholds*, established in the September 22, 2008 General Permit based on new information and to correct technical mistakes. **This General Permit Modification REPLACES Special Condition E.4 through F, inclusive, of the September 22, 2008 General Permit.**

The modifications to Special Condition E.4 include:

1) relocating the monitoring and reporting requirements for *Beggiatoa* and *Capitella* mats and gas formation from Table E.5; and
2) revising Footnote #1 to clarify the technical intent of written report submissions.

The modifications to Special Condition E.5 include:

1) eliminating anoxic sediment monitoring and reporting requirements; and
2) relocating the monitoring and reporting requirements for *Beggiatoa* and *Capitella* mats and gas formation from Table E.5 to Table E.4 as these are video and photographic monitoring requirements.

The modifications to Special Condition F include:

Table F.1 – sediment mixing zone

1) eliminating the anoxic sediment warning level and impact limit and monitoring and reporting requirements;

PERMIT MODIFICATION SUMMARY (cont'd)

2) eliminating the benthic infauna warning level threshold for Shannon-Wiener diversity index and taxa richness (reporting requirements for these metrics are being retained in Table E.5);

3) revising the benthic infauna warning level threshold for total abundance composed of *Capitella capitata* index from 50% to 70%; and

4) modifying the benthic infauna warning level structure such that warning level is exceeded only if there is >70% total abundance of *Capitella capitata* ***AND*** a >50% reduction of total abundance minus *Capitella capitata*;

Table F.2 – sediment impact thresholds >30 m from net pen site

Class SB

1) eliminating the benthic infauna impact limit for Shannon-Wiener diversity index and taxa richness (reporting requirements for these metrics are being retained in Table E.5);
2) modifying the benthic infauna impact limit such that impact level is exceeded only if there is >25% total abundance of *Capitella capitata* ***AND*** a >25% reduction of total abundance minus *Capitella capitata;*

Class SC

3) eliminating the benthic infauna impact limit for Shannon-Wiener diversity index and taxa richness (reporting requirements for these metrics are being retained in Table E.5);
4) modifying the benthic infauna impact limit such that impact level is exceeded only if there is >50% total abundance of *Capitella capitata* ***AND*** a >50% reduction of total abundance minus *Capitella capitata;*

Class SB and SC

5) eliminating the anoxic sediment monitoring and reporting requirements and best professional judgment determination as to whether anoxic sediments cause an exceedence of permit standards; and
6) revising the *Beggiatoa* coverage percent coverage limit from 5% photo coverage to 10% photo coverage.

CONCLUSIONS

Based on the findings in the attached Fact Sheet, dated March 2, 2011, and subject to the conditions listed in General and Special Conditions of this permit modification and the September 22, 2008 General Permit, the Department makes the following **CONCLUSIONS**:

1. The discharge from a salmon aquaculture facility covered under this General Permit, 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 from a salmon aquaculture facility covered under this General Permit, either by itself or in combination with other discharges, will not lower the quality of any unclassified body of water below the classification which the Department expects to adopt in accordance with state law.

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

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

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

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

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

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

4. The discharge from a salmon aquaculture facility covered under this General Permit will be subject to effluent limitations that require application of best practicable treatment as defined in 38 M.R.S.A. § 414-A(1)(D).

ACTION

Based on the findings and conclusions as stated above, the Department hereby MODIFIES General Permit #MEG130000, *Atlantic Salmon General Permit*, issued by the Department on September 22, 2008, SUBJECT TO THE ATTACHED CONDITIONS, including:

1. The attached General Conditions included as Part I of the September 22, 2008 General Permit.

2. The attached Special Conditions included as Part II of the September 22, 2008 General Permit.

3. *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, copy attached to the September 22, 2008 General Permit.

4. All terms and conditions in combination WDL #W009020-5Y-B-R / MEPDES permit #MEG130000, dated September 22, 2008, not modified by this permitting action remain in effect and enforceable.

5. This General Permit modification expires on September 22, 2013, concurrent with the September 22, 2008 MEPDES General Permit. Prior to expiration of the September 22, 2008 General Permit, the Department shall make a determination if it is to be renewed, and, if so, will commence renewal proceedings. If the General Permit is to be renewed, the September 22, 2008 General Permit shall remain in force until the Department takes final action on the renewal. [*General Permits for Certain Wastewater Discharges*, 06-096 CMR 529 (last amended June 27, 2007) and *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 2nd DAY OF March 2011.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
DARRYL N. BROWN, Commissioner

for

Filed
MAR - 2 2011
State of Maine
Board of Environmental Protection

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

Date of Public Notice: January 24, 2011
This Order prepared by Bill Hinkel, BUREAU OF LAND & WATER QUALITY

PART II – SPECIAL CONDITIONS

E. MONITORING REQUIREMENTS (cont'd)

4. **Video and photographic monitoring requirements**. The facility shall conduct color video or photographic evaluations of the sea floor under and adjacent to each net pen system at a minimum frequency of **twice per year (once in April or May and again in August through October)** as follows. Multiple evaluations may be needed where independent pens or systems preclude coverage by one transect. Monitoring and evaluation shall be conducted in accordance with methods specified by the Department.

   The Department may provide a permittee with an annual written waiver for the spring monitoring for individual facilities when: 1) there have been no fish on the site since the previous video monitoring event; or 2) monitoring the preceding fall indicates that the warning levels specified in Special Condition F are not exceeded and there are no other indications of adverse conditions resulting from the facility's operation; and 3) the permittee provides written request (return receipt required for postal mail; delivery receipt required for electronic mail) to the Department compliance inspector for consideration of said waiver.

Table E.4. Video and photographic monitoring requirements. [1-5]

Monitoring Characteristic	Substrate Video Monitoring/Transect			
	Transect Beneath Pens	Transect 60 m up-current from edge of pens	Transect 60 m down-current from edge of pens	Frequency
Video Records or Photographs of Substrate	Report	Report	Report	2 per year
Beggiatoa and *Capitella* mats	Report	Report	Report	2 per year
Gas Formation	Report	Report	Report	2 per year

Footnotes to Table E.4.

1. Reports of monitoring shall include the date(s) on which monitoring was conducted and the video records or photographs, along with all supporting information including a site schematic of the video track or still photo locations in relation to the net pens. The beginning and ending points of transects, all sample points, and all reference site sample points, if applicable, shall be located by GPS following Department standards, including but not limited to, an accuracy of less than 10 meters.

   Video records and schematic of the video track shall be submitted to the Department **as soon as possible following a reasonable opportunity to review data prior to submission, or within 45 days following the monitoring event, which ever period is sooner.**

   The permittee shall **immediately report** to the Department any evidence of non-compliance, water quality or benthic impacts observed during the video survey.

PART II – SPECIAL CONDITIONS

E. MONITORING REQUIREMENTS (cont'd)

Footnotes to Table E.4. (cont'd)

Written reports of video/photographic monitoring events must be submitted to the Department **as soon as possible following a reasonable opportunity to review data prior to submission and no later than 90 days following the monitoring event**. Written reports must describe all conditions specified in Footnote #2 below.

The Department may provide a written extension for these data submission deadlines if necessary due to extenuating circumstances beyond the control of the permittee.

2. Except as provided below, the survey shall be documented with continuous video footage. The recorded survey shall document:

   a. The sediment type and color, as well as features, noting erosional or depositional areas;

   b. The flora/fauna observed as to their relative abundance;

   c. The presence of feed pellets or other debris lost as a result of the facility operation;

   d. The presence of *Beggiatoa* or *Capitella* type mats and its growth described as light, moderate, or heavy;

   e. Relative abundance of *Beggiatoa* or *Capitella* shall be characterized approximately as follows: abundant (frequently present within the video coverage); common (seen occasionally throughout the video coverage or existing in patches); rare (only seen once or in a few places throughout the dive);

   f. The presence of black or dark colored sediments, spontaneous or induced gassing, or the presence of pimpled sediments. **Sediments shall be tested for gassing by at least two separate hand swipes wherever *Beggiatoa* or *Capitella* type mats or dark colored sediments are observed or at random locations if mats or dark sediments are not observed**; and

   g. The location and appearance of any nets located on the bottom and their locations relative to the pen system, the extent to which the net(s) is buried beneath sediments.

PART II – SPECIAL CONDITIONS

E. MONITORING REQUIREMENTS (cont'd)

Footnotes to Table E.4. (cont'd)

3. If water depths at a facility exceed the State of Maine's safe working depth limit of 85 feet for SCUBA diving or divers determine that conditions are not safe to perform the scheduled video monitoring event, video surveys normally conducted by divers may instead be obtained using one or more of the following methods: a video camera mounted on a tethered sled, a tethered drop still camera, tethered drop video camera or equivalent. If still photos are taken with a tethered camera, one photograph shall be taken at least every 10 meters along each transect. If divers determine that they can not safely conduct the video monitoring, 1) the video monitoring event shall be rescheduled, if possible, when safe diving conditions resume; or 2) the monitoring event may proceed using the alternate methodologies specified above and the permittee shall provide as part of the written video/photographic report(s) documentation of the unsafe condition(s) and reason(s) the video survey could not be rescheduled.

4. A video/photo transect shall be conducted beneath the pens (or, if not possible due to depths beyond 85 feet or physical constraints, directly adjacent to the up-current edge of the pens) along an axis representing the direction of the prevailing current, and extend 60 meters beyond the pen system on each end, and located to best reflect the extent of the facility's impact on benthic conditions. Video coverage of sediments beneath or adjacent to feed or service barges shall be noted on the video narrative.

5. The video coverage shall be in color, and of sufficient detail and clarity to allow for the accurate assessment of benthic conditions. The camera should be positioned at a height above the substrate that will provide approximately one square meter of bottom coverage, and be illuminated with sufficient artificial light to enable the accurate identification of epibenthic organisms and sediment conditions. A brief written narrative with the video record or photos describing reference points shall be provided. All video documentation shall include the dates on which it was taken, the direction of the current, and the geographic positions of the start and endpoints of the transects. The Department reserves the right to require a permittee to conduct additional video or photo transects if: 1) the quality of the videos/photos is deemed insufficient or not representative to determine compliance with this General Permit or applicable water quality standards; or 2) conditions observed in the videos/photos warrant additional monitoring to determine compliance with this General Permit.

PART II – SPECIAL CONDITIONS

E. MONITORING REQUIREMENTS (cont'd)

5. **Sediment and benthic monitoring requirements.** The permittee shall conduct monitoring of the sediments on the sea floor as follows. Benthic monitoring shall focus on sediment conditions and the infaunal community. The reference site is described in Special Condition G. The Department may require that the monitoring required by this condition be continued following removal or relocation of a net pen as necessary to evaluate residual impacts. Monitoring and evaluation shall be conducted in accordance with methods specified by the Department.

Table E.5. Sediment and benthic grab sample monitoring requirements. **(1) (2) (3) (8)**

Monitoring Characteristics	**Sample Stations and Reporting Requirements**		**Minimum Monitoring Frequency Requirements**
	Within the mixing zone	30 m from net pens	
Sulfide **(4)**	Report uM	Report uM	2/year in Apr-May and Aug-Oct **(5)**
Benthic Infauna **(9)** [Taxa Present, Taxa Abundance, Total Abundance minus abundance of *Capitella capitata*, and Shannon-Wiener Diversity Index]	Report /0.1 square m	Report /0.1 square m	1/5 years **(6)**
Percent Solids	Report %	Report %	1/5 years **(6)**
Sediment grain size	Report % sand, silt, clay and gravel	Report % sand, silt, clay and gravel	1/5 years **(6)**
Total Organic Carbon in Sediment	Report mg/g	Report mg/g	1/5 years **(6)**
Copper, Total metal	Report mg/kg Dry weight	Report mg/kg Dry weight	1/5 years **(7)**
Zinc, Total metal	Report mg/kg Dry weight	Report mg/kg Dry weight	1/5 years **(7)**
Medications used **(10)**	Report ug/kg Dry weight	Report ug/kg Dry weight	Not less than 7 days nor more than 30 days following use of each medication

PART II – SPECIAL CONDITIONS

E. MONITORING REQUIREMENTS (cont'd)

Footnotes to Table E.5.

1. Sampling stations. Samples for all parameters ("Monitoring Characteristics" listed in Table E.5) shall be collected in triplicate from four sampling stations required by this section. Results for all individual samples shall be reported to the Department in addition to mean values. The transect utilized for sediment sampling shall be the same as that utilized for video/photo monitoring as described in Special Condition E.4 Footnote #4 (that is, along an axis representing the direction of the prevailing current, and extending 60 meters beyond the pen system on each end, and located to best reflect the extent of the facility's impact on benthic conditions).

   There shall be a minimum of 4 sampling stations along the transect with a minimum of 2 on each end of the net pens to represent conditions outside of and within the designated mixing zone as follows:

   a. Outside Mixing Zone: Along the transect at a point 30 meters from the outside edge of the pens

   b. Within Mixing Zone: Samples shall be collected along the transect at a point 5 meters from the outside edge of the pens. However, the Department reserves the right to require sampling at other specific locations based on reviews of video records or other site-specific considerations.

   At each of the 4 sample stations, a minimum of 3 individual samples (total of 12 discrete sample points) shall be collected along a line perpendicular to the transect line. One sample shall be taken adjacent to the transect line and the other two samples shall be taken at a distance of 2 meters away from the transect line in both directions. If a sample is not possible at the 2-meter distance due to rocky conditions or other impediments, the sample should be taken as close to the 2-meter point as possible.

   In order to fully evaluate conditions, the Department may require additional sampling locations on a case-by-case-basis.

2. Sampling times. Sediment and benthic monitoring shall be conducted at the same time that video monitoring is conducted.

3. Sediment sample collection, handling, preservation, storage, and analysis shall be conducted in accordance with USEPA approved methods.

PART II – SPECIAL CONDITIONS

E. MONITORING REQUIREMENTS (cont'd)

Footnotes to Table E.5. (cont'd)

4. Sulfide monitoring. Core samples for sulfide must consist of the top 2 cm of the seafloor. If sediment grain size or sediment depth at one or more sampling locations does not allow for the collection of sediments for sulfide analysis as required herein, the permittee shall provide a narrative in the report required by this section describing these.

5. Sulfide monitoring shall be conducted at least **twice per year** (once during the months of April – May and once during the months of August – October). The Department may provide an individual facility with an annual written waiver for the April – May sulfide sampling event if the video monitoring is waived pursuant to Special Condition E.4 of this General Permit.

6. Benthic infauna, sediment grain size, total organic carbon monitoring, percent solids, and metals (copper and zinc) shall be monitored at least **once every 5 years** during the months of August – October and sampling shall be performed in the first year when fish at the facility are at or near their maximum biomass for that growing cycle.

   The Department reserves the right to require additional benthic infauna sampling based on best professional judgment taking into account the timing, frequency and severity of monitoring results that exceed the Warning Level or Impact Limit thresholds for any parameter established in Special Condition F of this General Permit, *Warning and Impact Thresholds*. When benthic infauna testing is determined to be the most appropriate Department response to an exceedence, the permittee shall coordinate with the Department to ensure monitoring is performed as soon as possible after such a determination is made.

   The Department reserves the right to require more frequent or additional sediment or benthic infauna measurements for an individual facility based on test results, video surveys, or other relevant information.

   Sediment grain size, total organic carbon monitoring, metals (copper and zinc) and percent solids determinations shall be performed **every time benthic infauna are sampled**.

7. Copper and zinc monitoring. Measurements shall be conducted **once every five years and each time benthic infauna measurements are made**, and shall be performed at a time when fish at the facility are at or near their maximum biomass for that monitoring period. Reports shall include the percent solids of the sediment sampled. Core samples for metals must consist of the top 2 cm of the seafloor.

PART II – SPECIAL CONDITIONS

E. MONITORING REQUIREMENTS (cont'd)

Footnotes to Table E.5. (cont'd)

8. Reports shall include the date(s) of the sampling and the results of the analyses, along with all supporting information including a site schematic of the sample locations. Reports, in a format approved by the Department, **shall be submitted to the Department within 150 days** of the monitoring event. However, based on prior monitoring or other information that indicate the facility may be adversely impacting the sediment, the Department may require, in writing, earlier submission of monitoring reports. The Department may provide a written extension for this submission deadline if necessary due to extenuating circumstances beyond the control of the permittee.

9. Single core samples of 4 inches or greater in diameter shall be taken from the sediment for taxa measurements (infauna samples) and must be inserted to resistance or 15 cm, whichever is less. Depth of the core shall be reported. Infauna samples shall be sieved through a 1.0 mm mesh sieve. Organisms shall be fixed in 10% buffered formalin solution and stained with a 1% Rose Bengal staining solution. After one day or more in the formalin solution, the formalin shall be replaced with 70% ethanol to ensure preservation of the organism's integrity. Organisms shall be identified to the lowest practical taxonomic level, enumerated, and reported to the Department in raw form and per square meter or 0.1 m^2. Species diversity, richness, total abundance and total abundance minus the number of *Capitella capitata* shall also be reported. Shannon-Weiner Diversity Index results shall not be reported if the cumulative number of organisms present in all samples from one sampling station is less than 50. Reference specimens shall be maintained at the facility (or facility headquarters) for examination by Department staff or its designee for a period of at least 3 years following collection. The Department may require more specific identification of organisms in order to determine compliance with this General Permit.

10. Sediment monitoring for medications shall include analysis for the compound(s) used and any known primary metabolites. The Department may provide a written waiver for this monitoring requirement if the facility provides conclusive evidence (as determined by the Department) that medications used do not pose a potential to accumulate in sediments or organisms for sufficient time as to pose a potential threat to water quality or aquatic life. Core samples for medications must consist of the top 2 cm of the seafloor.

PART II – SPECIAL CONDITIONS

F. WARNING LEVEL AND IMPACT THRESHOLDS

With respect to the sediment and benthic monitoring specified in Special Conditions E.4 and E.5 of this General Permit, the following criteria will be applied by the Department in determining if discharges from a facility are causing or contributing to impairment of the State's water quality criteria.

Table F.1. Sediment Mixing Zone [under or within 30 m of net pen(s)] Warning and Impact Thresholds At Any Sampling Station.

Metric	Warning Level	Impact Limit
Sulfide **(1)**	Mean 2500 – 6000 uM at any station	Mean >6000 uM at any station
Beggiatoa Coverage	≥25% photo coverage **(2) (3)**	≥ 50% photo coverage **(2) (3)**
Benthic Infauna **(4)**	>50% reduction of total abundance minus *Capitella capitata* AND >70% total abundance composed of *Capitella capitata*	Report Information

PART II – SPECIAL CONDITIONS

F. WARNING LEVEL AND IMPACT THRESHOLDS (cont'd)

Table F.2. Sediment Impact Thresholds At Any Sampling Station Beyond Sediment Mixing Zone (≥ 30 m from the nets pens).

Metric	Impact Limits
Class SB waters	**The habitat must be characterized as unimpaired. Discharges shall be of sufficient quality to support all estuarine and marine species indigenous to the receiving water without detrimental changes to the resident biological community**
Benthic Infauna	>25% decrease in total abundance minus *Capitella capitata* AND >25% total abundance composed of *Capitella capitata*
Class SC waters	**The habitat must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community.**
Benthic Infauna	>50% decrease in total abundance minus *Capitella capitata* AND >50% total abundance composed of *Capitella capitata*
Class SB and SC waters	
Sulfide [(1)]	Mean >3000 uM at any station
Beggiatoa Coverage	>10% photo coverage

Footnotes to Tables F.1 and F.2:

1. Mean values for sulfide shall be the average of all individual samples collected at a station at a given distance from the net pens (for example, mean value of all samples taken at a distance of 30 meters from net pen). **Results of individual samples shall also be provided to the Department**.

2. Percent coverage shall be determined by the Department from the review of video footage and /or photographs taken beneath or adjacent to each net pen.

3. Unless similar abundance or values exist in the baseline or reference site specified in this permit, or are the result of natural conditions, as determined by the Department based on best professional judgment.

PART II – SPECIAL CONDITIONS

F. WARNING LEVEL AND IMPACT THRESHOLDS (cont'd)

Footnotes to Tables F.1 and F.2 (cont'd):

4. Benthic infauna criteria shall be evaluated taking into consideration changes in grain size and the number of organisms in each sample.

The forgoing impact limits represent one definition of conditions that would represent non-attainment of narrative water quality standards. To assess compliance, the Department may consider the results of monitoring conducted pursuant to this permit, the conditions found in available baseline or reference site for comparative purposes and other available information. This information may include, but is not limited to, total abundance, diversity indices, dominant taxa, the percentage of mollusks, echinoderms and crustaceans, and trophic levels. In doing so, the Department may determine that other conditions found at an individual station may constitute a violation of narrative water quality standards.

The Department may take into account the presence of pollution-sensitive species when making a determination about the impact under this section. A list of pollution-sensitive taxa is determined from pre-operation baseline studies and/or available reference site specified in this permit. Such species include, but are not limited to, amphipods and cumaceans. Pollution-tolerant taxa include: *Capitella capitata*, Oligochetata, and other taxa that may be present as determined from baseline information and/or the reference site.

Physical disturbance such as harrowing, dragging, or other mechanical means shall not be used to mitigate bottom conditions unless approved in writing by the Department.

The permittee shall notify the Department as soon as it has reason to believe the warning levels that are specified for the Sediment Mixing Zone may be exceeded. At that time, or upon notification by the Department, the facility shall review its past operations and propose any changes that it deems necessary to assure that impact levels are not exceeded. If the degree by which warning levels are exceeded in subsequent monitoring events is increased, or if an impact level is exceeded at any time, the facility shall include in its notification, for the Department's for review and approval, a plan and implementation schedule for modification of operations. Such modifications may include, but are not limited to, reducing standing stock, reduced feeding, and/or fallowing of the site. New fish shall only be stocked into pens as described in a plan approved by the Department. The Department may require additional monitoring to determine the effectiveness of these measures or continuing trends in benthic conditions.

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

DATE: **MARCH 2, 2011**

GENERAL PERMIT NUMBER: **#MEG130000**
WASTE DISCHARGE LICENSE: **#W009020-6H-C-M**

ATLANTIC SALMON AQUACULTURE GENERAL PERMIT MODIFICATION

AREA OF COVERAGE AND RECEIVING WATER CLASSIFICATION:

CLASS SB OR SC MARINE WATERS EAST OF NASKEAG POINT IN BROOKLIN, EXCEPT THOSE WATERS IN THE AREA NORTH OF A LINE FROM SCHOODIC POINT IN WINTER HARBOR TO BAKER ISLAND IN CRANBERRY ISLES, THEN WEST TO NASKEAG POINT IN BROOKLIN, MAINE

DEPARTMENT CONTACTS:

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A. PERMIT MODIFICATION SUMMARY

Pursuant to *Water pollution control,* 38 M.R.S.A § 413 and *Conditions of licenses,* 38 M.R.S.A. § 414-A, *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 CMR 2 (effective April 1, 2003), *Application Processing Procedures for Waste Discharge Licenses,* 06-096 CMR 522 (effective January 12, 2001), and *General Permits for Certain Wastewater Discharges*, 06-096 CMR 529 (last amended June 27, 2007), the Maine Department of Environmental Protection (Department) has initiated a modification of Maine Pollutant Discharge Elimination System (MEPDES) General Permit #ME130000, *Atlantic Salmon Aquaculture General Permit*, issued by the Department on September 22, 2008 (General Permit). The purpose of the modification is to revise sediment and benthic monitoring requirements and the associated warning level and impact limit thresholds based on new information or technical mistakes made at the time the September 22, 2008 General Permit was issued.

1. Terms and Conditions: **This general permit modification modifies the September 22, 2008 General Permit as follows:**

   The Department is modifying Special Conditions E.4, *video and photographic monitoring requirements*, E.5, *sediment and benthic monitoring requirements*, and F, *warning level and impact thresholds*, established in the September 22, 2008 General Permit based on new information and to correct technical mistakes. **This General Permit Modification REPLACES Special Condition E.4 through F, inclusive, of the September 22, 2008 General Permit.**

   The modifications to Special Condition E.4 include:

   1) relocating the monitoring and reporting requirements for *Beggiatoa* and *Capitella* mats and gas formation from Table E.5; and
   2) revising Footnote #1 to clarify the technical intent of written report submissions.

   The modifications to Special Condition E.5 include:

   1) eliminating anoxic sediment monitoring and reporting requirements; and
   2) relocating the monitoring and reporting requirements for *Beggiatoa* and *Capitella* mats and gas formation from Table E.5 to Table E.4 as these are video and photographic monitoring requirements.

   The modifications to Special Condition F include:

   Table F.1 – sediment mixing zone

   1) eliminating the anoxic sediment warning level and impact limit and monitoring and reporting requirements;
   2) eliminating the benthic infauna warning level threshold for Shannon-Wiener diversity index and taxa richness (reporting requirements for these metrics are being retained in Table E.5);

A. PERMIT MODIFICATION SUMMARY (cont'd)

3) revising the benthic infauna warning level threshold for total abundance composed of *Capitella capitata* index from 50% to 70%; and

4) modifying the benthic infauna warning level structure such that warning level is exceeded only if there is >70% total abundance of *Capitella capitata* ***AND*** a >50% reduction of total abundance minus *Capitella capitata*;

Table F.2 – sediment impact thresholds >30 m from net pen site

Class SB

1) eliminating the benthic infauna impact limit for Shannon-Wiener diversity index;
2) modifying the benthic infauna impact limit such that impact level is exceeded only if there is >25% total abundance of *Capitella capitata* ***AND*** a >25% reduction of total abundance minus *Capitella capitata;*

Class SC

3) eliminating the benthic infauna impact limit for Shannon-Wiener diversity index;
4) modifying the benthic infauna impact limit such that impact level is exceeded only if there is >50% total abundance of *Capitella capitata* ***AND*** a >50% reduction of total abundance minus *Capitella capitata;*

Class SB and SC

5) eliminating the anoxic sediment monitoring and reporting requirements and best professional judgment determination as to whether anoxic sediments cause an exceedence of permit standards; and
6) revising the *Beggiatoa* coverage percent coverage limit from 5% photo coverage to 10% photo coverage.

B. PROCEDURAL

The Department issued combination MEPDES General Permit #MEG130000 / Waste Discharge License #W009020-5Y-B-R on September 22, 2008 for a five-year term. During calendar year 2010, the Department recognized that certain sediment and benthic standards established in the General Permit should be revised based on new information obtained through compliance monitoring conducted pursuant to the terms and conditions of the General Permit. Additionally, minor technical mistakes regarding the organization of monitoring and reporting requirements were recognized by the Department. Pursuant to 38 M.R.S.A. 414-A(5)(B), the Department is modifying the September 22, 2008 General Permit to correct technical mistakes and to revise certain sediment and benthic standards based on new information that justifies different conditions than those established in the September 22, 2008 General Permit.

Pursuant to 06-096 CMR 522(3)(c)(2), only those conditions being modified in this permitting action shall be reopened. All other terms and conditions not modified by this permitting action remain in effect and enforceable.

C. EXPLANATION OF MODIFIED TERMS AND CONDITIONS

1. Video and photographic monitoring requirements, Special Condition E, Table E.4.

   a. This permitting action is modifying Table E.4 to include *Beggiatoa*, *Capitella*, and gas formation monitoring and reporting requirements. These monitoring requirements are based on video or photographic surveys with required reporting requirements described in Footnotes 2.d, 2.e., and 2.f, respectively, of Special Condition E, Table E.4. *Beggiatoa* and *Capitella* growth characteristics as well as gas formation were mistakenly included in Table E.5 of the September 22, 2008 General Permit. This is not a substantive change and serves only to provide better organization of monitoring requirements.

   b. This permitting action is modifying Table E.4, Footnote # 1 to correct a technical mistake (ambiguous language) regarding intent of written report submissions. Written reports must address the conditions specified in Special Condition E.4, Footnote #2 and must be submitted following each video or photographic survey.

2. Sediment and benthic monitoring requirements, Special Condition E, Table E.5.

   a. This permit modification is revising the title of Table E.5 to include the term "grab sample" to clarify that all monitoring characteristics established in this table are to be analyzed from a physical sediment grab sample. This is not a substantive change and serves only to clarify the technical intent of this condition.

   b. This permit modification is eliminating anoxic sediment monitoring and reporting requirements. The Department has reviewed compliance data submitted since issuance of the September 22, 2008 General Permit and has determined that anoxic sediment monitoring is highly subjective, is not a quantitative test, and does not provide value in evaluating sediment and benthic impacts that may result from operation of net pen facilities. Other monitoring requirements established in the General Permit, such as sulfide and gas formation, are adequate indicators of anoxia. Sulfide is a quantitative test and hand swipes for presence of gas is a reliable and more consistent methodology for evaluating anoxic conditions. Footnote #6 to Table E.5 in the September 22, 2008 General Permit is being eliminated as this addressed anoxic sediments and is now irrelevant.

3. Sediment mixing zone, Special Condition F, Table F.1.

   a. This permit modification is eliminating the anoxic sediment warning level and impact limit for the reasons described in this section at C.2.b above. Footnotes #4 and 6 to Tables F.1 and F.2 are being eliminated as these addressed anoxic sediments and are now irrelevant.

   b. This permit modification is eliminating the Shannon-Wiener Diversity Index warning level and impact limit standards associated with benthic infauna. The Shannon-Wiener Diversity Index was not used as an impact threshold in the initial aquaculture general permit issued on June 19, 2003. Warning level and impact limit standards for this indicator were established in the September 22, 2008 based on best professional judgment by Department staff. The Department has reviewed compliance data submitted since issuance of the September 22, 2008 General Permit which indicates a high failure rate to comply with the Shannon-Wiener

C. EXPLANATION OF MODIFIED TERMS AND CONDITIONS (cont'd)

Diversity Index when evaluated discretely. The numeric warning level and impact limit standards established for this metric in the September 22, 2008 General Permit are based on best professional judgment. While the Department continues to believe that this diversity index provides important information about the resident biological community, assessment and evaluation of new information indicates that the numeric warning level and impact limit may have been established prematurely. In consultation with the Department's Division of Environmental Assessment, the Department has determined that additional new information is necessary to develop defensible standards for this metric and to evaluate the role of this diversity index in assessing changes in the biological community. This permit modification does not alter the reporting requirement for Shannon-Wiener Diversity Index as set forth in Special Condition E, Table E.5. Thus, the Department will continue to receive new information that is intended to be used to define appropriate standards for this category of discharges to marine waters. It is the express intent of this Department to evaluate diversity index data once a statistically significant dataset is available and to use this information in future aquaculture general permit renewals.

c. This permit modification is eliminating the taxa richness warning level and impact limit standards associated with benthic infauna. The numeric standards established in the September 22, 2008 General Permit are based on best professional judgment. This metric is a coarse assessment tool for which precise and accurate standards for Class SB and SC waters have not been developed. As with the Shannon-Wiener Diversity Index, these data will continue to be reported to the Department and will be used in conjunction with other data to evaluate appropriate numeric standards for Class SB and SC waters. The Department intends to use taxa richness information in future general permit renewals.

d. This permit modification is revising the warning level standard for percent total abundance of *Capitella capitata* from 50% to 70% as was established in the initial June 19, 2003 General Permit. The Department has evaluated new compliance data submitted since issuance of the September 22, 2008 General Permit and has concluded that this best professional judgment based numeric standard is excessively and unnecessarily stringent to ensure water quality standards within the sediment mixing zone are achieved. The Department concludes that the reduction from 70% to 50% in the September 22, 2008 General Permit was not based on defensible statistics.

e. This permit modification is revising benthic infauna warning level structure such that warning level is exceeded only if there is >70% total abundance of *Capitella capitata* ***AND*** a >50% reduction of total abundance minus *Capitella capitata*. The September 22, 2008 General Permit established % total abundance of *C. capitata* (*i.e.*, pollution tolerant species) and % reduction in total abundance minus *C. capitata* (*i.e.*, pollution sensitive species) as discrete measures of compliance. The Department has reviewed compliance data submitted since issuance of the September 22, 2008 General Permit which indicates a high failure rate to comply with these standards when evaluated discretely. In consideration of this new information, the Department has determined that evaluating both metrics together provides a more accurate understanding of possible impacts resulting from the operation of net pen sites. The Department is concerned about changes to both pollution tolerant AND pollution

C. EXPLANATION OF MODIFIED TERMS AND CONDITIONS (cont'd)

sensitive species and establishing the benthic infauna compliance structure in this manner is consistent with anticipated changes to the biological community. That is, impacts resulting from net pen operation are anticipated to affect pollution tolerant and pollution sensitive species concurrently. The Department believes that establishing stand-alone metrics for pollution tolerant and pollution sensitive species as compliance measures is therefore inappropriate and may result in violations of the permit when water quality standards have not been violated. The June 19, 2003 General Permit was structured with the "AND" rather than "OR" conjunction for these metrics.

4. Sediment impact thresholds, Special Condition F, Table F.2.

   a. This permit modification is eliminating the anoxic sediment impact limit of "compelling evidence." The basis for this modification is discussed under section C.3.b above.

   b. This permit modification is eliminating the Shannon-Wiener Diversity Index impact limits for Class SB and SC waters. The basis for this modification is discussed under section C.3.b above.

   c. This permit modification is eliminating the taxa richness impact limits associated with benthic infauna for Class SB and SC waters. The basis for this modification is discussed under section C.3.c above.

   d. This permit modification is revising the impact limit for *Beggiatoa* coverage from 5% photo coverage to 10% photo coverage. The June 19, 2003 General Permit established a limit of 25% photo coverage and the September 22, 2008 General Permit revised this limit down to 5% coverage. The Department has evaluated new compliance data submitted since issuance of the September 22, 2008 General Permit and has concluded that compliance determinations cannot be made on a consistent and accurate basis at the 5% coverage level. The Department has determined through experience reviewing video surveys that the lowest percent coverage determination that can consistently and accurately be achieved for compliance purposes is 10% photo coverage. This determination is based on new information concerning the new limit and new standard by which determination were made under the September 22, 2008 General Permit.

D. ANTI-BACKSLIDING

Waste Discharge License Conditions, 06-096 CMR 523(5)(l) (effective January 12, 2001) contains the criteria for what is often referred to as the anti-backsliding provisions of the Federal Water Pollution Control Act (Clean Water Act) (40 CFR Part 122.41). This permit modification is establishing less stringent permit limitations for certain sediment and benthic metrics. The basis for these revised limitations is new information that was not available at the time the September 22, 2008 General Permit was issued (new compliance data) and technical mistakes with respect to the administrative organization of certain video monitoring requirements. The Department concludes that the modifications described herein are consistent with the provisions of the anti-backsliding regulation.

F. CONDITIONS OF PERMIT

Conditions of licenses, 38 M.R.S.A. § 414-A, requires that the effluent limitations prescribed for discharges, including, but not limited to, effluent toxicity, require application of best practicable treatment (BPT), be consistent with the U.S. Clean Water Act, and ensure that the receiving waters attain the State water quality standards as described in Maine's Surface Water Classification System. In addition, 38 M.R.S.A., § 420 and 06-096 CMR 530 require the regulation of toxic substances not to exceed levels set forth in *Surface Water Quality Criteria for Toxic Pollutants*, 06-096 CMR 584 (effective October 9, 2005), and that ensure safe levels for the discharge of toxic pollutants such that existing and designated uses of surface waters are maintained and protected.

G. RECEIVING WATER QUALITY STANDARDS

The September 22, 2008 General Permit and this General Permit Modification authorize discharges to Class SB and SC waters. 38 M.R.S.A. § 465-B describes the standards for Class SB and SC waters. The September 22, 2008 General Permit and this General Permit Modification specifies for clarity that the habitat criteria established in Maine law for Class SB and SC waters, respectively, is applicable for the areas outside the sediment mixing zone.

H. RECEIVING WATER QUALITY CONDITIONS

This General Permit allows discharges only in locations where properly managed facilities are not anticipated to cause or contribute to violation of receiving water classification standards. There are only limited general monitoring data for marine waters in the area of coverage. In general, the Department has not identified any significant areas of concern that would indicate non-attainment of classification standards. Dissolved oxygen saturation has been observed to fall below minimum standards in limited areas and times in the summer. These conditions are often attributable to natural conditions such as thermal stratification. (Facilities covered by this General Permit shall not be located in waters that demonstrate significant, persistent vertical stratification during summer months.) While several areas are closed to shellfishing due to bacterial contamination, this does not bear on finfish aquaculture operations since they are not a source of bacteria of human origin. Limited information regarding the presence of toxic substances (for example, PCBs, PAHs, metals, etc.) indicates these are most likely to occur in locations in proximity to higher population densities or industrial uses such as marinas or petroleum terminals. Such activities are less prevalent in those regions of the State covered by this General Permit. Adverse benthic impacts may occur on the sea floor beneath facilities. A mixing zone has been established to limit impacts from accumulations of excess feed and/or fecal matter.

I. PUBLIC COMMENTS

Public notice of the a draft general permit modification was made in the *Portland Press Herald* and *Bangor Daily* newspapers on January 24, 2011 in accordance with *Application Processing Procedures for Waste Discharge Licenses*, 06-096 CMR 522 (effective January 12, 2001).

The draft general permit modification is available for review and public comments or request for public hearing on the draft general permit modification may be submitted to the Department for consideration for a period of at least 30 days from the date of the public notice, or February 23, 2011. Only those conditions to be modified are reopened for consideration. All other aspects of the existing General Permit remain in effect.

The Department did not receive significant comments on the draft permit modification; therefore, a Response to Comments section was not prepared.

J. DEPARTMENT CONTACTS

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

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